

EXCELLENCE



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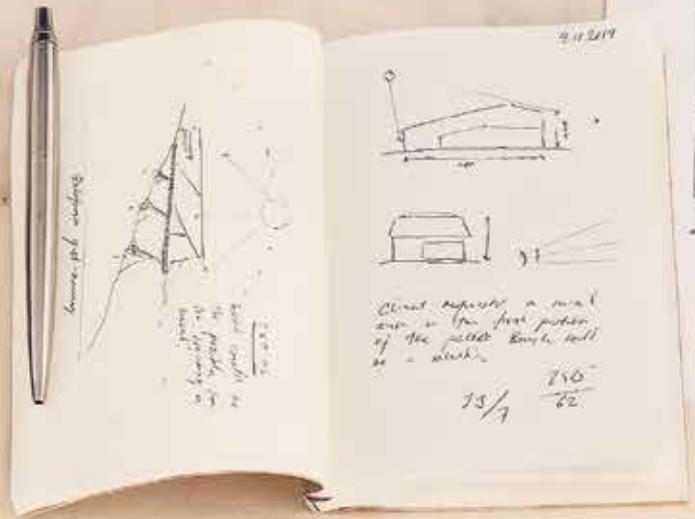
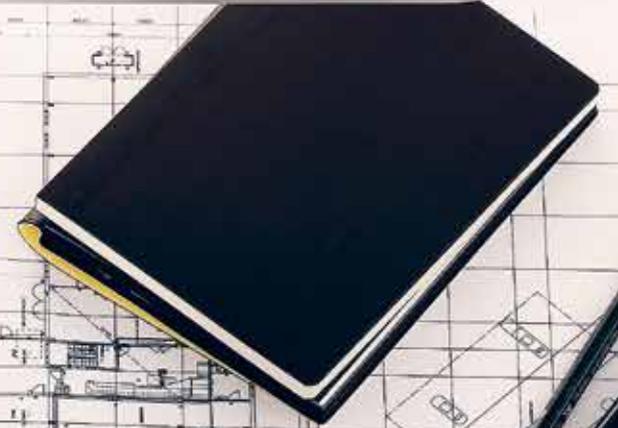
Customers discuss the value of Solibri

BIM BOOM!

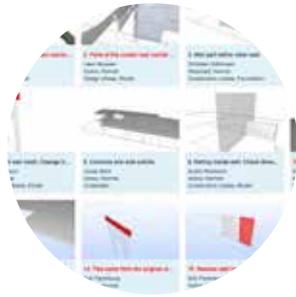
Reports from DACH, UK and US
How BIM is transforming construction

CHANGE IS CONSTANT

What's new in technology and how it
helps you and your business

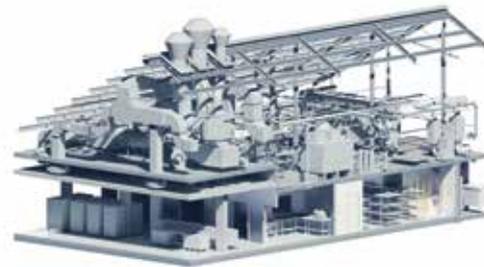


30



Introducing BIMcollab

44



The UK BIM wave

10



Reflex Architects share their thoughts

58



What's your lucky number?

48



Solibri: Your Swiss Army Knife

18



Lex Ransijn stands tall in the world of BIM

56



Looking beyond model checking

22



Bond Bryan talks BIM

PREFACE

A journal overview 6

CUSTOMER INTERVIEWS

Reflex Architects 10
Levs Architects 12
BAU Architects 14
De Nijs 18
Eigen Haard 20
Bond Bryan Architects 22

TECHNOLOGY TIME

Swedish Area Calculations 28
BIMcollab Story 30

GLOBAL UPDATE

DACH 34
UK 40
UK (COBie) 44
US (BIM use cases) 48
US (Autocodes) 52
Italy 54
Australia 56

CREDITS

Editors letter 60
Contact & credits 61



SOLIBRI. YOUR SWISS ARMY KNIFE.

Hello and welcome to this year's Solibri Journal. The journal is a new approach for collecting our customer's experiences when using Solibri technology. By taking a moment to pause and to listen to our customers, we found a wide range of interesting stories that we wanted to share with you. Stories that we feel reflect the true diversity of issues you can identify and resolve with Solibri Model Checker (SMC). It was one of our Australian customers who coincidentally gave us this idea. This year he tweeted that Solibri was his 'Swiss Army knife'. Our tools allowed him to accomplish a variety of tasks like no other on the market. Tasks that he didn't even know about when he first looked at the model in question. It felt like Solibri offered the variety and precision of a Swiss Army knife.

This idea got us thinking. Wouldn't it be better for the entire BIM community to share their great project experiences? What 'lessons learnt' could they pass onto others? How do they use SMC to solve a unique set of challenges with their 'Swiss Army knife'?

We believe you will find the collection of stories published here to be both interesting and relevant. You will see how we are removing the randomness of data and adding quality. How we offer high value tools for you to highly improve your workflow. You will see user cases on new developments like COBie. User cases that show how data is being validated and controlled - how together we are helping shape the quality of models. We see how SMC is becoming a quality control mechanism on multiple BIM projects. How our customers are

getting models up to speed for the task ahead. Solibri technology is actually becoming an informal standard that others can refer to and acknowledge. By using SMC to streamline the workflow, project teams are already experiencing significant benefits and we are seeing this on a global scale.

I remember one advertising slogan 'It's not technology, it's what you do with it'. That's precisely what we feel Solibri offers you. A dependable, high value solution whether you work as an architect, construction company, owner or facility manager.

We have also included an update on our latest technology developments and success stories from several regions (DACH, UK and US). All have seen a leap forward in BIM and Solibri adoption. This will no doubt continue to have a global influence and is something we will keep you updated on. As BIM continues to evolve, so do the ways that our customers choose to implement SMC.

So, sit back, relax and enjoy the stories. Feel free to share projects and SMC success stories with our marketing department (marketing@solibri.com). They will make sure they're promoted in printed and digital media.

Thank you for your continued support,

HEIKKI KULUSJÄRVI – Solibri

**HEIKKI
KULUSJÄRVI**

Heikki is the founder
and CEO of Solibri.

Customer Interviews

Helping our customers in their daily work. Read what customers say and think about us, our solutions and the BIM revolution.





REFLEX ARCHITECTS STOCKHOLM

I catch up with Marco Testa on a cold, January day in Stockholm. The Reflex office is a cool mix of modernity and utility. It's an inspiring creative space. We talk informally about the industry and his current projects. One thing becomes clear in our conversation, Marco Testa isn't scared of a challenge. In fact his office strives on creative challenges. Since its establishment in 1999, Reflex has sought demanding projects. "If it's not complex and demanding, we usually step back from a project. It's become part of our design philosophy". Said Marco.

Reflex are currently working on assignments ranging from a huge new office complex through to luxury private villas. Their team

consists of 70 staff. Marco, an Italian, has been previously working in Italy, Japan and the USA. He believes their success is based on a unique approach to design. "We approach a project in a very process orientated way. We first have a workshop with the client. We make a detailed analysis and really consider the business plan behind the client's needs. By doing so, we can offer a customized product that really fits with the clients expectations".

Complex projects demand simple solutions. Building Information Modelling (BIM) has been one such solution for Reflex. "BIM gives us the opportunity to move from an abstract design to a replica design. It's changed the way



MARCO TESTA

Marco is a partner at Reflex Architects, Stockholm. He believes in using Solibri to keep a grip on projects. Marco tells, "After the training, we were pretty much fully utilizing it from day one".

we illustrate our work. We can now define all the pieces that need to be built. It never happened before BIM. I even feel we've become more competitive, we have been winning business by explaining how we can better control the design and construction process".

It's not unusual for Marco to have 20 architects and a host of other consultants working on a larger project. For him, the world of architecture will continue to grow in complexity. Air conditioning systems and modern data networks all need integral planning. Dealing with such planning lead Marco toward discovering Solibri and its software, the Solibri Model Checker (SMC).

"I am the self-appointed IT responsible person in Reflex. I have a curiosity towards technology and wanted software that could make my life easier. I saw that Solibri could offer me a tool in better managing complexity. I was found myself surrounded by IFC files and I needed to put them together and thoroughly check them. I took a chance and bought Solibri. I'm glad I did, I think Solibri is fantastic. After the training we were pretty much fully utilizing it from day one." Tells Marco.

He also sees Solibri offering project management and an educational role. "Each Monday there is a meeting where we show slides and share issues. I can ask questions like – Why are we designing this wrong? – I can now make statistics with Solibri. By sharing and advising the design team, I see less mistakes and zero collisions". He also feels he has a better grip on the overall project with software like the SMC.

It's not all plain sailing for Marco. Using Solibri within Reflex also means you can see and measure your own mistakes. Something that Marco admitted with a wry smile – "You and your team believe you were all doing well, but Solibri showed we weren't at first."

Before leaving Marco, I asked him thoughts for the future developments of technology. He expects IFC standards to evolve and BIM to be a mandatory in large projects. He also thinks tablets and GPS will play a much greater role when working on site and walking through a new building development. On a different note, he also notices that the younger generation he employs is not afraid of technology. Young architects have a good grounding in BIM and modelling, it's the confidence in design itself on which he often mentors.

It's both refreshing and interesting when talking with Marco. Here's an architect who indeed likes a modern day challenge. A challenge that encourages him to grow and to keep abreast of the latest technology. It's good to see Solibri as a tool that gives him confidence in quality and information sharing. It's no surprise that his office continues to grow through the current recession and can look towards a promising future. ☺



ILLUSTRATION ULLA DONNER

BIM – REMOVING FENCES BETWEEN SPECIALISTS

We meet Marianne Loof in her architectural studio. It's a wonderful space. High windows offering an impressive view across the water. I have asked to meet her to talk about how architects use Solibri in The Netherlands. Marianne is one of the Directors of LEVS architecten here in Amsterdam. Ironically we arrive to see Solibri Model Checker open and being utilized as part of a work meeting with LEVS and one construction company. It's one of those photographic moments that our readers will think we have created just for this article. It is actually a happy coincidence.

LEVS is over 25 years old. Its projects cover urban to interior design. Recent commissions include schools, housing districts and care centers. The LEVS brand is not based merely upon aesthetics. It believes in designing buildings that fit well within their place. Buildings that are well designed and functional. Contextual design is more important than creating icons with no purpose.

Marianne and her team are big believers in BIM. Marianne explains, "We see the future as a place where we have removed the fences between specialists. BIM pushes us to work more together. We need to reinvent the business model and move forward." Marianne explains her way of seeing the world as an architect. They are generalists armed with a lot of specific knowledge. They need to understand the language of other engineers but the architect alone is the key guardian of the building as a whole – the person who thinks how people live and work. This is one of the reasons why she likes Solibri. It allows you to see all the project elements together and then better manage the situation.

"Solibri takes us to a higher level. It saves us a lot of time, money and frustration. One big issue is the different focuses within the team. Sometimes you need to make choices and by doing so, avoid negative energy. We need to make sure the data is without flaws. We can



MARIANNE LOOF

Marianne runs the successful LEVS architecten in Amsterdam. They believe contextual design is more important than creating architectural icons with no purpose. Technology helps her with this endeavor.



ROSA VAN TOUR

Rosa is part of the marketing team for KUBUS BV. She sees a challenge in turning strategic concepts into concrete and practical actions. Using a combination of creative thinking and positive actions

make choices early enough and solve issues to avoid later expense. We can improve the quality for ourselves and the design team" tells Marianne. "Solibri is easy to use and in that way, all the data is integrated. We can see the output of BIM in Solibri. Clashes, reports, up front investments. It makes BIM much stronger."

In the early days, Marianne felt BIM held you back. The software was new and it took time to learn it. Now things are much easier. It's an instrument her office is comfortable with. It flows within the design process. It is a standard for all, not just the specialists. In a way, it has become a mindset. "We need to control the design and project management. We not only designers, providers of sketches. We are responsible for costs and meeting requirements. We can now lead the project management and deliver on time."

Marianne is enchanting with her passion for design. She explains that the architect must consider how the building will be loved for the next 50 years. How society will be poorer if the architect doesn't take responsibility with their vision. Like all technology, it doesn't provide the answer in itself, it simply provides a tool for change. Like her smartphone, Marianne isn't interested in how it works, she is interested in what it allows her to do.

"My dream is that you don't need to know anything about the software. You will be able to do it with intuition." It is not surprising to see that Marianne is on the board of the Dutch equivalent of RIBA. LEVS has been doing consistently well despite the recession. It gave them the opportunity to reinvent how they worked. Adopting BIM was one such opportunity. They are now flourishing. I look forward to meeting Marianne again in the future. I believe she will be able to show us that Solibri helped make LEVS vision a reality. ☉

BAU STOCKHOLM IMPROVING CITY LIVING

We meet Per-Eric Sundby and Stig Bengtsson at the BAU office in Stockholm. Per-Eric is one of the founders and CEO, Stig is responsible for the BIM development. They are a competitive bunch these BAU guys. Per-Eric makes it clear that he does indeed make the best Crème Brule. Stig is inclined to agree. After all, Stigs' wife told him it wasn't a good idea to open a restaurant if architecture didn't work out. I guess we had better move on to some other topics...

BAU – Bureau of Architecture and Urbanism – was established in 1991. It currently has 70 staff. They represent 17 nationalities. The oldest being born in 1933, to the youngest in 1990. It's a 50/50 split between male and female staff. The office is situated in an old factory building, above some local art galleries. Per-Eric describes the staff as 'ambitious' and this fits well with their business success of recent years.

BAU likes to work with complex projects. They work mostly in Sweden and frequently work alongside individual consultants and contractors. Their motivation and mission is to improve urban spaces – to bring quality back into city living for its inhabitants. I feel this is something that fits very well with their Swedish brand of architecture.

"We start from the position of realizing the urban context and how we can support urban life. We develop our work in close collaboration





with our clients. By doing so, we make architecture that fits their business and their end users. We want to make the world a little better, without wanting to sound self-prestigious.” Tells Per-Eric.

It certainly seems to be working. BAU are currently involved in developing the largest shopping mall in Scandinavia. One that is both rewarding and challenging in equal measure. Stig explains how they won that pitch by offering Business Information Modelling (BIM). It convinced the owners that BAU had a great creative idea that could be realized and controlled. BAU combines BIM with eco beliefs – to measure the daylight throughout the building and to shape the design to improve the experience of the visitors. BAU already wants to take it a stage further and use a combined BIM-eco team to take advantage right from the early design stages. With BIM being mandated by many Scandinavian contractors, BAU sees technology as the key for all future building projects.

Stig has been using BIM since 1995 in Sweden and the US. He feels the last 5 years has seen a rapid growth in BIM adoption and now teaches it to many of the younger architects. “The whole industry is becoming more global. We’re all using the same software these days. With similar certifications and standards, it’s possible to have the whole industry thinking about the environment. It’s about changing mindsets.”

I turn to the question of Solibri and how they came to use it. “I first heard about Solibri when in the US around 2001-2002. I was already interested in drawing technology tools and Solibri sounded like an interesting program for model checking. When coordinating the architectural and structural models I want everything to clash to make sure the models match. Solibri will let us know if they don’t. I also want to do deficiency detection. It’s the only program that will do that for us. Overlapping walls and duplicate columns looks fine in CAD but its Solibri that then points out if it’s not.” Said Stig.



**PER-ERIK
SUNBY & STIG
BENGTSSON**

Per-Eric Sundby and Stig Bengtsson from BAU, Stockholm tell us about designing one of the biggest shopping malls in Scandinavia. We also learn which man is better at making a killer Crème Brûlée.

Both gentlemen agree their models wouldn’t be the quality that they are without Solibri. With IFC formats continuing to develop, Solibri continues to help project manage. Stig continues “Solibri is a very capable program, I have used Solibri efficiently and see others being interested in its capabilities when I use it. Its less about clash detection, it’s not just about quality control, it’s about handling complicated models well in various ways. We can save more of our time and the client’s money as we get better and better with the tool.”

We continue to talk about how things had been. Initially there existed only the architectural model and it became the starting point for the other disciplines. These days, the BAU model remains live throughout the project and acts as the main reference for the other contractor teams. In this way, BAU maintain creative and project management of the build. Stig also believes you can offer less environmental waste by utilizing Solibri and the associated drawing software to fix

mistakes before the building actually begins.

As Stig is a curious and explorative user of technology, I ask what more Solibri could do for him. He believes he can do even more with the software if he gets deeper training. He would also like to get more people using Solibri in the office. It’s something I and Robert Priller from Graphisoft Sweden take as an action point.

Its 6pm and we plan to leave BAU. The office is still full with the buzz of people working on their projects. It truly feels like an office full of energy and creativity. I just hope Per-Eric takes time to teach Stig about that perfect Crème Brûlée... ☺

DE NIJS / LEX RANSIJN

“Using Solibri is like child’s play”. Lex Ransijn has a point. He’s the BIM Manager for the Dutch construction company – De Nijs. He’s the man that implements BIM on a daily basis and helps teach others on the usage of Solibri in building projects.

As part of the rising ‘younger generation’ in construction, Lex thinks it’s standard stuff to use technology to improve his work. I take a moment to interview Lex in his Amsterdam office.

De Nijs has a business model based on construction, development and maintenance. They have a range of projects with one valued at 80-100 million euro. In this project, they have one director that has complete responsibility for coordinating all the work disciplines. “We have 20 ongoing projects. These cover retirement homes, health centers, supermarkets and restorations of listed buildings. As all of these projects are different, we need a software program to control them. This is why we use Solibri. It allows us to get a grip on things. We can show others that the model is OK - or not OK - and that they can build it” said Lex.

“With Solibri, I can combine all the IFC models. I check them, classify objects and then make nice presentations that show the faults. It’s easy, saves time and looks good. Normally I would have to wait for paper drawings. Now I get three files on a Friday, I combine them, make notes and share an update with others to review on Solibri Model Viewer. We can fix problems, improve the design and can then make a great building for our clients.”

Lex sees his role very much at the vanguard of the current construction business. He spends much of his time explaining the technology benefits to others in the workflow. He even jokes that he shouldn’t have a role in the future

if others use Solibri to check their models first before sending them to him.

I ask Lex about savings. What savings can he see with Solibri and BIM? “Using Solibri saves 20% coordination time and in turn, money. With turnover costs of 100-150 million euro, if I can save just one percent, we earn back the investment in one project.” Lex also sees additional benefits of adapting to new software. “I don’t need paperwork anymore. I never look at 2D drawings. It’s way nicer to work in construction these days. Using BIM attracts a lot of young people to work in construction with their technology skillsets.”

Lex then shows us some of the projects he is currently leading with Solibri. He opens Solibri Model Checker and navigates the software like a pro. He shows us IFC models and compares them with the PowerPoint directives he sent to others in the project team. De Nijs previously helped build the world famous Eye Film Institute in Amsterdam. There were over 100 IFC files combined in that project and Lex wished he had been a Solibri user at that time.

It’s a pleasure to meet a customer who is equally ambitious with his projects and his technological understanding. I think Lex may well be the perfect beta tester for the future. He certainly has good development ideas for me to take back to the office. ☉

ROSA VAN TOUR – KUBUS BV /
Solibri Gold Partner



LEX RANSIJN

Lex is the BIM Manager for the Dutch construction company, De Nijs. From his perspective – “If I can save just one percent, we earn back the investment in one project”.



DIRK JAN KROON

“Even the Gardener asked how to use BIM...” Dirk Jan Kroon laughs and sits back on the sofa. He’s actually on parental leave but found time to meet us at Eigen Haard’s HQ. I have asked to interview him on Solibri Model Checker and BIM. As a real estate developer, it’s going to be good to hear a different point of view on how the technology works for him.

Dirk Jan works for Eigen Haard, a social housing company based in Amsterdam. They are responsible for 60,000 buildings, normally running 400 restoration projects a year. They also have new builds, office conversions and

responsibility for some historically listed buildings like Het Schip (The Ship) by Michel De Klerk. Dirk Jan sees himself as a Director – a person leading projects that need to be done on time and on budget. No easy task when a small renovation can easily snowball into a full scale project when ‘nice surprises’ appear within the structure of an old building.

“BIM is the future” he tells. “We started using BIM in 2010 and already the first project showed we could get the same level of deliveries in 3D and more insight with all the disciplines working together. It’s a better way to do proj-

ects, it allows us to shorten development and construction time.”

Dirk Jan explained how they had previously worked in 2D. Every discipline did their own drawings and work was compared manually. Negotiations on cost and delivery could take up to three months. This proved a nightmare in scheduling and project management. The situation wasn’t made easier by the team all using different drawing software to complete their work. “We have now seen cost evaluations drop by 50% on some projects. I can now review models, quotes and make agreements within two weeks. It’s not unusual with our skilled subcontractors to be able to now quote within five minutes of negotiation.”

Converting to BIM was no easy task. Eigen Haard sent out a letter to all its subcontractors and told them if they wanted to work with them, they needed to use BIM. There were several reactions. Some architects complained they were being forced to make additional investments. Dirk Jan took the common sense and gentlemanly approach to the challenge. He guaranteed that BIM would save money on the project. He said, “We’re convinced you’ll earn your money back. If you don’t and the budget goes over, Eigen Haard will cover the difference.”

Not all the reactions were bad. One individual took BIM as a challenge. Dirk Jan laughs and tells the most positive response came from their gardener. He had received the letter by mistake. Rather than wondering what to do, the gardener had called Dirk Jan and said he didn’t yet know how he was going to use BIM but you could count on him using this new technology! (In my mind’s eye, I see him arranging tulips in 3D and sending IFC files to the flower shop...).

The conversation moves onto Solibri. I want to know how Dirk Jan uses Solibri Model Checker and his thoughts about the software. “Solibri helps us communicate. We used to talk on the phone and have more meetings. Now we can focus what is or isn’t in the drawings. The content is bigger, gives us more information. Solibri helps us speak with all the different disciplines – architectural, structural etc.” tells Dirk Jan.

EIGEN HAARD

[Eigen Haard, a social housing company based in Amsterdam. Dirk tells how the using BIM has shortened timelines on their restoration and construction projects. He sees savings of 5-15% with BIM.](#)

I then ask him about savings. “People like to talk about savings. I thought we should prove it rather than just say it. We took an old project. Ran it through Solibri and compared our thoughts with the subcontractor. We saw a time saving of 10-15%. We also saw an immediate materials saving of 5% alone. If you think about our whole ongoing portfolio, that’s a huge financial saving for us.”

Dirk Jan went on to explain that their main subcontractors believe they can even lower their costs over the next two years as more of the team use BIM as part of the renovation project. One subcontractor with 30 years of experience said he always added a sum for additional materials. This was now being removed from cost estimates on future projects. “If you think about it, BIM allows you to really know what you want before you start a project. Now you can confidently review throughout the project and finally calculate your savings at the end. I think it even makes the work more fun as the job gets easier” said Dirk Jan.

Ciska Van Der Leeden, Dirk Jan’s colleague, has seen BIM taken to new heights with architects working on Het Schip. “The building itself is complicated to model. It’s a big space with a lot of detailing. Some thought it would be too difficult to handle and model. I am glad to see it wasn’t. Using BIM will allow us to better plan maintenance support for the fully restored building. It’s a perfect example to take a historic building and apply the latest technology.”

Our time is up at Eigen Haard. Dirk Jan needs to go back to being a Dad. It’s been an interesting few hours. Eigen Haard has an impressive HQ and it’s no surprise they are expanding despite the recession. They possess a confidence in finding ways to improve, as well as yearning to utilize the latest technology. Something which combines wonderfully with the responsibility of maintaining historic buildings. ◉

THE MOMENTUM FOR BIM HAS BEEN CREATED

Rob Jackson is a man on a mission. He's responsible for BIM at Bond Bryan Architects. In fact, his email address says it all. It's BIM@bondbryan.co.uk. Rob understands the technology that is driving change within construction. He also understands how it benefits each group within the workflow. It is this understanding that made me travel from Helsinki to Sheffield. I had heard Rob 'knew his stuff'. I wanted him to share that wisdom and to hear how Solibri was helping with the momentum of BIM.

"We started with BIM in 2005. Originally, we saw it as a way of improving our own schedules and designs. We now put information into models because we can now sell such information to people rather than just talking about it. We can provide more quality data within our standard fee. We can provide more value and that value sees us winning more projects" said Rob. It certainly is working. Bond Bryan have 3 offices within the UK, with Sheffield having over 60 staff alone. They are consistently delivering large Government projects (e.g. schools) and Rob is regularly asked to contribute to industry forums and events.

I asked him about the UK Government plan to mandate BIM & COBie (Construction Operations Building information exchange) by 2016. "The Government has been a catalyst for change. They provided the wakeup call for the construction industry. They created the momentum and its effects are far reaching. Would there still be BIM in 2016 if not enforced? Yes. There are many companies like us that have embraced BIM and it's not going away. Five

years ago, I remember saying that traditional architectural drawings would be dead. Colleagues didn't believe me. Now they're starting to understand it's a case of not 'if' but 'when.'"

Rob explains that 'collaboration' is the biggest benefit to him. Simply put, BIM allows more information to be seen and shared. It allows you to correct mistakes upfront. In his words, "even if we only save 0.01% per project, it all adds up over 10 years." Of course it's not all that simple. Following the BIM principle means you have to spend more money upfront to save later during the project. Not all construction companies are comfortable with BIM and too much information can be confusing if not properly managed. Rob was recently in discussion with one construction company. He showed how they benefitted with BIM by explaining the information take off on brick work and cladding allowed them to improve cost and material quotations. It's a mission that going to take time in the 'antiquated' construction industry.

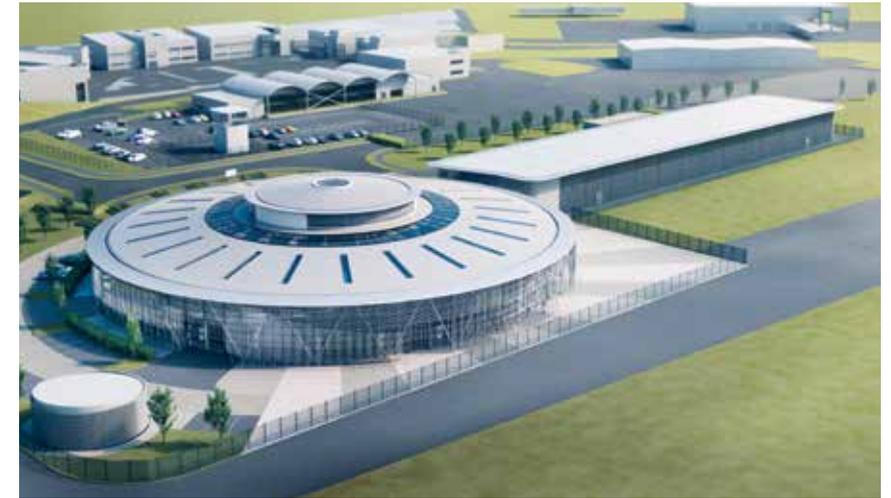
"One of the hardest issues for me is getting people up to speed. I try to make it easier for



ROB JACKSON

[Rob Jackson shares his views on Solibri, BIM and the BIM adoption wave in the UK.](#)





people to understand what BIM is all about. In regards to Solibri, I now write my own rulesets for Bond Bryan. I explain to the new staff how Solibri helps them in their role. Such things as identifying duplicate space or door numbers – things that manually take ages to discover and correct. Sometimes they question is that all? That tells me I've done my job properly. I've succeeded if it makes their lives easier without them even realizing what's 'under the bonnet.'"

We continue to talk more about the benefits Solibri brings to a project. Rob now sees more coordination between structural engineers and the architect's office. Mechanical services are now too understanding the benefits of collaboration. It all contributes to an improved workflow. "We're still learning on all projects. How can we better provide central information and improved processes? We're always juggling huge Government projects and need to find ways of doing things better.

BOND BRYAN ARCHITECTS

Bond Bryan Architects focus upon the creation of lasting sustainable environments that will enrich the lives of people and their communities. They design places where people will gather, learn, make and create.

We don't wish to do things twice and have self-created issues when creating more data. Solibri helps us with that."

One interesting area of discussion was the benefits offered in Facility Management (FM). Rob sees IFC files being useful for the FM team. It would allow a soft handover of information from architect to FM professional. Architects are often responsible for the buildings for a period of three years after handover to its owner. Architectural offices like Bond Bryan could expand their offering by providing strategic consultancy, information take off, cost quotations and data management in the FM arena. "I showed Solibri Model Checker to one FM professional. At first she didn't get it. I then explained how you could view and navigate within the model and how you could filter the information to see what was needed. She then started to understand its benefits for her."

"I believe we're in the top five percent of

architectural offices with such thinking. You first need to master BIM and then understand what software solutions help you in your work role. Once you have this knowledge, it allows the architect to claw back ground they have lost earlier within the workflow. I don't believe architects will ever be software coders. We will always be the creative guardians. However, I do believe we also be the content guardians for future projects." Explained Rob.

We turn our attention to the future. How will the future look with the increasing adoption of technology and BIM? "We're still feeling our way through new learnings and processes. I had one contractor that was amazed you could now hold meetings over the web! Suffice to say, it's going to take time." I asked Rob what he would like to help him in his role – "Cloud collaboration. Models and issues that are centralized on the cloud. The ability to do quality checking, quantity take off and

FACTORY 2050

A center of excellence for advanced manufacturing at Sheffield Business Park. A £43 million stunning circular building combining a range of technologies – including advanced robotics through to flexible automated systems.

cost estimation from one point. I see Solibri's collaboration with 4Projects as a move in this direction."

Interestingly, Rob has mixed feelings on using mobile tablets on the work site. He thinks the industry should focus on collaboration through shared screens as opposed to small, independent handsets.

That's where we leave the discussion. I am in no doubt that Bond Bryan are one of the few architectural offices that are fearless when considering future technologies. Rob understands that if you help shape the future, you're most likely to be one its winners. It's going to be fun to benchmark other companies against Bond Bryan. ○

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Technology Time

An insight into new solutions and the new ways of doing things.



MANAGING SPACES — SWEDISH STYLE

You're mistaken if you think BIM is just about modelling new buildings.

Today BIM is being used to renovate and remodel old Government buildings in Sweden. It's a win - win for the facility management team in Skåne. They can shorten renovation times and then pass the savings onto the tax payer. Not bad in this current economic climate.

In April 2014, Solibri launched a new extension for its Solibri Model Checker solution (SMC). The software complies with the Swedish Standards Institute (SIS) 20154:2009 and empowers users to better organize large area spaces. This project was done in cooperation with Per Erlandsson of the Region Skåne. He approached Solibri after similar projects had been done in Norway and the United States. (The US' General Services Administration (GSA) is responsible for maintaining over 354 million square feet and over 9600 buildings alone).

His brief was simple. He needed to cut down the amount of software programs used between remodeling old buildings and sharing the final information with the facility management department. If done properly, BIM could be the short and long term solution for how all the maintenance is done in all of Sweden.

Wafa Alsakini, the Solibri Project Manager talks us through what was done. "Our customers already use SMC for data mining. We had previously made software for Norway - to calculate the space areas for Information Takeoff. The Swedish project was different because we did f2xml for exporting space areas calculation results - a new feature for SMC. This f2xml is used in many facility management software programs (e.g. Landlord). Using f2xml removes

limitations, you can use it with a variety of software authoring tools. SMC can now be the 'go-between'. When an old building has no existing 3D model, they first need to be created. Once done, you need to connect that model to those facility management programs. SMC provides that connection - Solibri offers quality control, Information Takeoff for calculations and the export of area information in xml. Voila!"

Per Erlandsson said "Within Sweden, current facility management requires the usage of approximately five separate software solutions operated by skilled individuals. Now by using SMC, only one software solution is needed. The IFC model quality is checked and that information is passed on within facility management. This is an immense improvement for tenant management control and maintaining spaces (e.g. when calculating areas for cleaning contracts or planning optimal toilet spaces in a retirement home for elderly needs)."

Per goes on to explain the types of applications for area calculation. There is a wide range of spaces that benefit. For example: schools, retirement homes, correctional facilities and all general office spaces within Government control can now be better managed. Per believes these learnings will soon encourage other regions to do the same within Sweden and beyond.

Solibri agrees with this viewpoint. These savings are as relevant from Australia to Iceland. SMC already has two Rulesets for Swedish area calculation. One for the Region Skåne and one for other regions that may export IFC files in a different way, where different properties and authoring tools are used. There is also the idea that you could only calculate certain areas - by using XML input and XML export reports - saving time and reducing file sizes. You can also offer a global footprint by easily developing Rulesets easily for other Local Governments around the world.

"This project was both demanding and rewarding for us. Solibri offered us what we needed and Wafa did a fantastic job of steering the project to be ready. I'm already looking forward to the next stage of our cooperation," said Per. ◉



SWEDEN

Population: 9.5 million
Swedish Counties: 21
Per Erlandsson of Region Skåne talks about making use of BIM in his job.



Wafa ALSAKINI

Wafa Alsakini is a Dr. Sc. (Tech). In her Solibri role, Wafa helps customers with usage issues and she has led the project development of the technology discussed in this article.

SIMPLIFY WITH BIMCOLLAB

In the lifecycle of any construction project, there are unexpected problems and questions that arise. In combination with expanding BIM's, processes are increasingly complex. This situation causes multiple issues during project, and makes managing them complicated and hard to track.

Using BCF helps solve part of the problem, but issues remain. How do you manage multiple BCF files and not lose control over what is communicated with which file?

Henning Habberstad, from Skanska Norway had identified such problems in the workflow. "Skanska is a huge organisation with multiple projects and teams. We need to create a workflow that allows us the best amount of control that is possible. We were already using Solibri Model Checker and various authoring tools. BIMcollab offers us another layer of successful project management. To Skanska, it is not a question of whether BIM and new technologies are needed to improve the construction workflow. It is a question of being the first to harness them in a profitable way."

ISSUE MANAGEMENT IN THE CLOUD

You can manage all your issues found with Solibri Model Checker in the cloud by a new product called BIMcollab from KUBUS BV. With the combination of SMC and BIMcollab, you have an effective and smooth issue management workflow. Link issues directly to objects in your BIM, including correct viewpoints for quick visualization. Also, lookup, create and solve issues within your BIM authoring tool, having all the information at hand. Use BIMcollab for all multidisciplinary cooperation's between companies working on construction projects.

BIMCOLLAB

BIMcollab is a tool for improving the real time usage of BIM in construction.

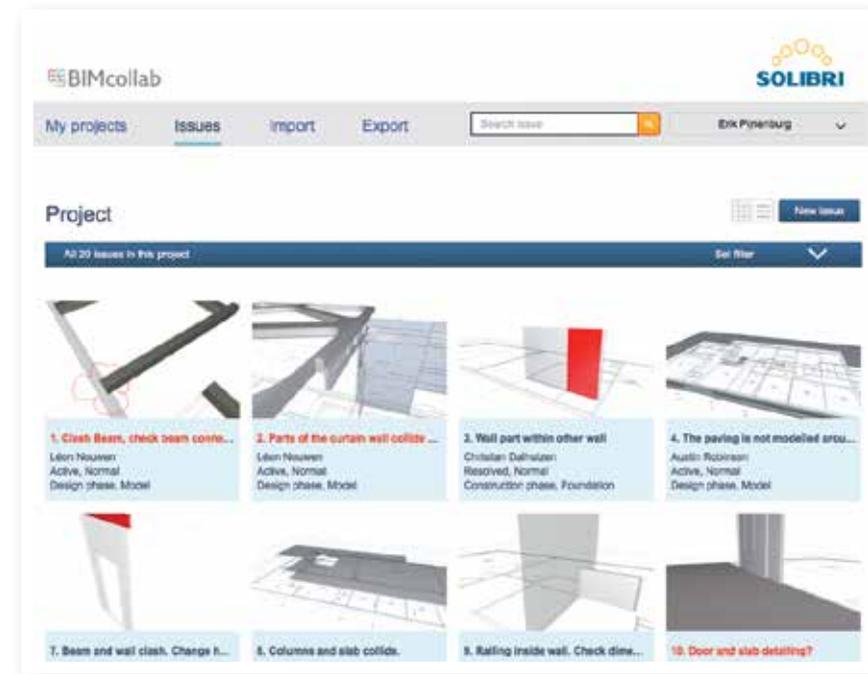
"BIMcollab is cloud based, so information can easily be accessed from anywhere at any time, and from any device. A real-time connection from your BIM authoring- or model-checking tool, directly into BIMcollab, ensures up-to-date data," says Erik Pijnenburg CEO of KUBUS.

GETTING STARTED

With BIMcollab you have your own 'cloud-workspace' where you can add or edit projects, users and (confidential) issues. Also add non-BIM issues, link documents, use hyperlinks or add photos taken on the construction site. Assign a specific role for every user, which defines their access rights and allowed actions.

As a BIM manager or project leader, you have access to some extra management tools to monitor performance and progress of your BIM project and team members. You can create heat-maps to visualize project-data, set up a timeline and define milestones and deadlines to control priorities. You can also use graphs that show team performance to get a better insight into the workload and productivity of team members along the way.

BIMcollab automatically tracks and manages all the changes made throughout the full project cycle. This complete audit trail can even be used as documentation for legal purposes.



FROM DESIGN TO CONSTRUCTION

BIMcollab is designed to manage issues during design and construction phases. Take a picture of the issues you encounter at the construction site, and directly assign them to a team member via BIMcollab. Faults can be fixed and the BIM can be changed accordingly to prevent further costs. This workflow speeds up the process immensely.

A FLEXIBLE AND COMPLETE PLATFORM

BIMcollab uses the Object-ID's in the IFC file to link issues into your model. The possibility to export and import separate off-line BCF files also supports applications that do not offer a direct link to BIMcollab, but who can read/write with BCF files. When importing separate BCF files the intelligent merging functions ensure that all changes, like comment-lists, are combined and merged in the correct historical order.

SOLIBRI MODEL CHECKER AND BIMCOLLAB INTEGRATED

Solibri Model Checker's issue management will have a new level with BIMcollab's cloud-based system operated via Solibri's BCF connector extension.

This enables more people to have easy access to the workflow. Project Managers can now see issues coming live from SMC. They see the design team making corrections in the authoring software and that all problems are solved.

Coordinating BIM projects will be easier for companies not having a dedicated workflow management system. You also have the option to chronologically see BCF emails and issues in one place.

"The BIMcollab solution helps support our belief in cloud adoption within the industry. We have already committed to a strategy that involves Solibri Model Checker being increasingly used in a live and cloud based environment. BIMcollab helps make that a working reality for our customers." Pasi Paasiala, Solibri CTO. ☺

ROSA VAN TOUR – KUBUS BV /
Solibri Gold Partner

FIND OUT MORE
ABOUT BIMCOLLAB AT
WWW.KUBUSINFO.COM

POPULAR SOLUTION

Seven out of the top ten Dutch construction companies use Solibri.



ERIK PIJNENBURG

As founder and CEO of KUBUS BV, Erik is a strong promoter of OpenBIM workflows. Since the early nineties he and his company are servicing and developing BIM solutions. With BIMcollab they bridge the gap between BIM applications.

Global Update

Market reports from areas enjoying a boom in BIM. Learn how BIM is changing the way we do business — from Australia to Sweden.



DACH FOCUS

Part One:

“We’ve reached the BIM Tipping Point” Hearing from all the key customers involved in bringing BIM to the marketplace.

In this article we wanted to share two things with the reader. Firstly, we wanted to share our thoughts on BIM in the DACH market. We also wanted to give you an overview of the real people involved in BIM. We hope this article will reflect how BIM is being used in the workflow. It will also share some of the key players and institutions involved in that process.

The term ‘Tipping Point’ indicates a point or moment at which a previously straight and clear development abruptly stops by certain feedback, or changes direction or is greatly accelerated.

In His Book - The Tipping Point - Malcolm Gladwell analyzes that magic moment when an idea, trend, social behavior or technology crosses a threshold, tips, and spreads like wild-fire. When talking about the adoption of new technologies, this tipping point seems not to have too much to do with the technology itself, or the processes it changes, but with the specific moment in which a certain critical mass of players understand what the real VALUE is for them.



DACH

DACH region
comprises on
Germany, Austria &
Switzerland

Combined population
area of 97.8 million
people



ANDRES GARCIA DAMJANOV

Born in Ecuador, Andres is of German-Spanish descent. He is an Architect who has worked both in design teams and construction companies and also as project manager (he holds a pmi-ppm certification). He currently holds responsibility for the German speaking Solibri markets.

It is not the tools themselves but the clear vision by users on the benefits of that tool. It is the vision of somebody who sees a new way of doing things and how it benefits their business model. A vision that shows direct benefits and offers transformation into a high value player. It is this precise moment, when not tipping into the new paradigm starts to seem completely unattractive.

When looking at the last 24 months, a tipping point has been definitely reached in the DACH area. Solibri has seen a doubling of sales for Q1 to Q3 when comparing to the whole 2013.

The value of BIM is being understood by the majority of players in the workflow. It is a reality because specific companies all over the value chain are envisioning the benefits to them. A benefit that has to do with the new possibilities of playing with the data in virtual models. Extracting this value out of BIM is only possible when the quality of data in the models is correct. This is a vision that is shared now by the entire workflow - developers, project managers, BIM consultants, architects, MEP engineers, structural engineers, construction companies and universities. It is the role of the BIM software industry to support this adoption in every way possible.

In this article, key Solibri customers explain the value of BIM for their business and why this 'new wave' cannot be ignored.

Since 2012, there has been one DACH project that has shone like a lighthouse - Jean Luc Perrin and the Felix Platter Hospital in Basel (Switzerland). The impact of this success has crossed borders all throughout DACH and has inspired similar lighthouse initiatives like BIMID (BIM projects that will be supported by the Government's Bundesministerium für Wirtschaft und Energie, and monitored by the Fraunhofer Institute (www.bimid.de).

THE DEVELOPER'S OPINION

Jean Luc Perrin combines many roles. He is the Project Manager, developer representative, building operator and future user. He has one

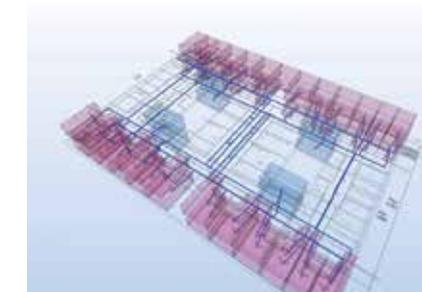
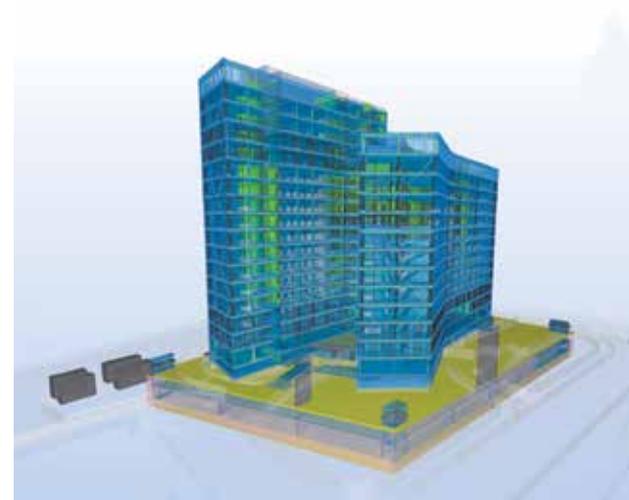
focus: That the new hospital has to be able to respond flexibly to the changing needs of patients. It has to be functional, operable and rentable from day one. To meet these requirements, the project and building costs should be optimized in terms of quantity and quality.

"From the beginning, I had the clear idea that we had to focus on operations after the building was finished. On the other hand, I knew that the standard design and building processes would not be enough to meet our desire to design, build and operate a successful and future oriented hospital.

I am an engineer and process manager. I also understand the potential of radiology and imaging (CT, MRT). When I discovered BIM in the 2012 FM Fair, I clearly saw this technology could be my X-ray machine to optimize building projects. I started to spread the message - looking for pioneers interested in developing a hospital project with BIM. Soon I was confronted with lots of different modeling tools by architects and engineers. Then I saw Solibri Model Checker (SMC) and immediately realized - This is my TOMOGRAPH for construction! This is it what I was looking for and what I needed as a developer!" Said Jean Luc.

"The possibility to check the consistency of data from the different design teams and the possibility to interrogate the model during the tendering phase would help me to compare the different designs and evaluate them. We actually use SMC to search for quality issues and structural design consistency. We then evaluate processes and circulations, calculate escape routes etc. Just the possibility to find and evaluate very basic information in the virtual building and to be able to compare the different propositions from different teams during tendering phase has allowed us to understand the quality of the delivered designs.

My hope is for a future with even better models from all disciplines. With enough information on potential building and operational costs through to FM documentation on demand. As a developer, I dream of a great future. Well...



dream...no. The needed tools are already on the market. Now it is time to connect them in an intelligent way - the faster, the better." Said Jean Luc.

THE ARCHITECT AND THEIR DESIGN VISION

The next player in our value chain is the architect, and we have asked BEHF Corporate Architects in Vienna how they are experimenting with the BIM Wave in Austria. This Architectural company with its 100 man team was founded in 1995 is one of the key players in the Austrian BIM scene. It has a clear vision of the value that BIM provides them. They started in 2013 with a structural change over of their design processes towards BIM. During this change over, every existing internal process was analyzed and optimized. The resulting structure was called BIM BEHF Dipl. Ing. (FH) Christoph C. Eichler, the BIM Operations Director, explains that one essential piece in BIM BEHF is an extensive Quality assurance of all projects with Solibri Model Checker. The results of checking are used both, immediately to fix issues and in the long run to spot and analyze recurring user errors. This allows us to make tailor-made trainings on those deficits.

In the early design phases, checks are primarily focused on documentation components (like rooms) and the geometry of basic components (walls, slabs, roofs), and while the project advances, the checking includes more elaborated features of components to enable data like cost simulation or energy simulation and to provide those with the correct quality of information.

The use of this software is being intensified, and the users are being trained in parallel with increasing use and requirements. In short we will switch to a BCF based form of communication to enhance our speed and precision of data exchange and change communication.

Mr. Eichler says, "One completely unexpected but very successful use for Solibri Model Checker has been using the tool for presentations and monitoring projects. Primarily project managers use it to get fast access to complex project information and to analyze the changes between design versions. The communication is run with BCF comments.

Trusting information in the models during the BIM process has been drastically enhanced. Only in this way were we able to make such an effective and fast change. We are now able to design complex objects with high

QUICK EXPANSION

Solibri has seen a doubling in sales since 2013. The BIM adoption wave is taking hold in the DACH region.

speed and quality in an effective manner. The architectural model is going to be the central information carrier over the entire lifecycle of a building. Being the architect is like being the screenplay writer and the director of the design and building process all in one." Says Mr. Eichler

CONSTRUCTION COMPANIES IN AUSTRIA

When it comes to building execution, we are really talking about saving time and money. PORR AG in Austria is a good example of one of the biggest construction companies with 11.000 employees. We talk with Clemens Neubauer - Director of the BIM-Management at Porr Design & Engineering, (the Technical Competence Center of PORR AG). He explains "We understand the term 'full service provider' as we cover the whole value chain, from design to building and operating. Under the principle 'shape the future in an innovative way', we have worked since 2010 on a model oriented BIM method, not only in separated moments but throughout the whole process. It is a corporative strategic decision and has allowed the company to be in a leading position in in BIM and DACH.

We focus on fulfilling high quality requirements by using BIM in the different phases. It is one of our highest priorities to work with tools that can assure a continuous comprehensive workflow of all stakeholders."

Neubauer continues, "Harvesting the added value of BIM, not only in the design phase, but in later moments during the execution and construction is only possible with effective quality control. That is exactly why where we use Solibri Model Checker as a tool that can deliver this requirement. The fantastic possibilities to check not only geometric aspects of a BIM model, but also the consistency is an important advantage for us."

"We do not only use Solibri Model Checker for checking models, but also as a communication, coordination and documentation tool. The outstanding integration of the communication file BCF (BIM collaboration format) allows us

to integrate easily other design teams into the process of our BIM projects, because it is compatible with other BIM authoring tools." Explains Neubauer.

For the future we see a high demand in quality checked BIM models that are able to squeeze the whole potential out of error reduction, assured communication with time and cost savings." Says Neubauer.

CONSTRUCTION COMPANIES IN GERMANY

On the other side of the border, in Stuttgart (Germany), we talked with Strabag AG. Since 2007 Ed. Zueblin AG / STRABAG SE, has been headed by Konstantinos Kessoudis. It has been developing methods and processes to support integrated, model-based workflows for all project participants across all phases and disciplines (5D Design).

The team including Xenia Gordienko (Project Manager 5D Design), and Dr. Frank Schley (Team Leader 5D Design) say, "In 2009 we introduced Solibri Model Viewer for viewing and analyzing 3D IFC 2x3 format files. Solibri Model Checker is used to check BIM data for compliance with client requirements and internal company standards as well as for the implementation and processing of COBie data. Working with SMC enables us to have a quick overview of the IFC-models, to set-up different model classifications, and to check models using rule-based methods. Furthermore, SMC has user-friendly and intuitive tools for model analysis.

The specific problems that Solibri Model Checker helped us to solve are the verification of the model structure as well as to evaluate whether parameters are complete and correct. If we had to share lessons learned with others, we would talk about rulesets for model checking and model classification, e.g.: model structuring according to materials from tender documents, room specification for FM or the allocation of quantities to construction phases in construction management. The incomplete or incorrect

"The fantastic possibilities to check not only geometric aspects of a BIM model, but also the consistency is an important advantage for us."

CLEMENS NEUBAUER

Director of the BIM-Management at
Porr Design & Engineering.

information is pinpointed and we are able to automatically correct it.

We can now see that in the future, the development of national standards and regulations, the demand for BIM services from clients is likely continue to increase."

Regardless of the required BIM Services, however, model-based collaboration and workflows will be intensified, Says Miss Gordienko.

And this is exactly the feeling the Solibri DACH team is experiencing. It is about the public sector going BIM and the DIN starting to move forwards a standardization and perhaps most importantly, it is about the all the stakeholders in the chain discovering their own benefit and deciding to harvest those advantages. When talking about the construction industry we can not forget, that one important player is the software and consultancy providing companies that enable the BIM implementation responding to a specific demand on the market. They also are a very strong indicator that the BIM wave is starting.

During the last 24 months the Solibri partner family has been growing steadily in the DACH area covering all three countries.

This is where we now finish our journey of the German speaking DACH countries. As discussed, the tipping point has been reached. The direct value of reliable information on demand is the key business issue for the whole value chain. All three countries are now focusing on the need for BIM. The transformation is

less about technology and more about change management and leadership, opportunities and vision. In this article we have seen that all the key value chain teams now believe in BIM. It is this belief that we in Solibri support and continue to encourage.

We believe BIM plays a key part in the solution for some of the biggest challenges we are facing as a planet. (e.g. energy, resources, water etc.). To solve these challenges, the real estate sector has to become more active and intelligent - something that will depend on the quality of information they will use. Something Solibri can help them with.

In future articles we will address the impact of BIM in the education system and hear from our partners involved in bringing BIM to the workflow. ☺

ANDRES GARCIA DAMJANOV – Solibri DACH



DAVID JELLINGS

David is Managing Director of Solibri UK – global leaders in BIM validation. He is also a visiting professor in the faculty of Technology, Engineering and the Environment, Birmingham City University.

In the UK, David supports government BIM strategy by working with various key committees. As founder of the OPEN BIM Network, now part of the buildingSMART User Group, David initiated and continues to lead, the pioneering IFC/COBie Trials, working with many of the larger Tier 1 contractors.

the adoption of collaborative working practices, effectively driven by adopting BIM process and technology.

The target was to achieve a level of process maturity defined as 'Level 2 BIM'. The target date for all government departments' projects to achieve this level of maturity on projects is 2016.

For most of the UK construction industry, this meant a radical re-think of their working practices. The onus for early implementation fell onto large Tier 1 contractors.

THE LEGACY

The work of the initial BIM Task Group (whose responsibility it has been to introduce Level 2 BIM) is almost complete – in fact the group will be disbanded during Q1 2015.

The legacy it leaves behind consists of a number of standards and guidelines, driven by the core standard BSI B/555. The legacy package is made up of the following:

BS1192 – (the methodology for managing the production, distribution and quality of construction information) and a series of addendum guidelines, namely:

1192-2 – capital expenditure of construction projects

1192-3 – operational expenditure of completed projects

1192-4 – COBie UK implementation

BIM Protocol – a supplementary legal agreement that is incorporated into professional services appointments and construction contracts

Soft Landings – a strategy to ensure smooth transition from construction to occupation.

WHAT THIS MEANS FOR UK INDUSTRY

The government is the single largest client body in the UK – estimates indicate around 40% of all UK construction and infrastructure is central/local government procured. Given that a very high proportion of constructors, consultants and their supply chains, are involved in government projects, (directly or indirectly); BIM strategy has begun to transform the industry.

At present the main changes are evident in larger companies, but for these businesses to successfully deploy BIM, they have to find ways to integrate their supply chains into the process. Consequently, the demand for BIM knowledge and solutions from the SME community is growing.

There have also been major changes in the way government departments procure construction projects. The need to supply accurate handover data, (COBie and Soft Landings), is of paramount importance.

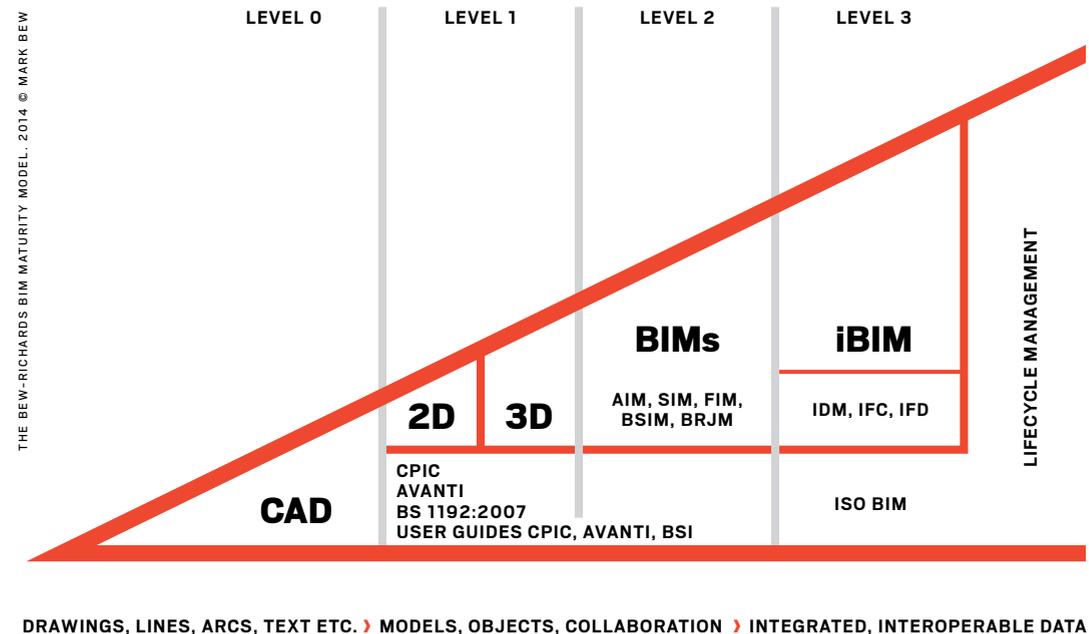
Significantly, there is a growing realization that whilst BIM has the potential to significantly increase efficiency over the entire construction life-cycle, this can only be achieved if the vastly increased amount of project data [that BIM provides] is of a high quality. If it isn't, then the BIM process can potentially create more problems than it solves. 'Validation' and 'Quality Assurance' are a necessity.

WHAT THIS MEANS FOR SOLIBRI

With the unique features of Solibri Model Checker, it is not surprising that the leading players are looking to Solibri to provide a solution. The credibility of Solibri is further enhanced by its involvement with and support of field trials, government committees and national bodies (such as buildingSMART, RIBA and Constructing Excellence).

Client bodies are beginning to understand that, if in addition to the generic SMC rulesets, rules are created for their specific construction needs, then 'Validation' and 'Quality Assurance' requirements can be met.

As a result, the UK is experiencing an unprecedented expansion in interest for SMC. This is reflected in a parallel growth of sales – SMEs, Nationals and Corporates. As more projects and users specify SMC or issue Solibri specific project rule sets, this growth is set to continue.



MOVING FORWARD

Other countries are now scrutinising the steps UK government has taken. The EU in particular has indicated that elements of the UK strategy will be adopted in its forward plans. It is clear that the influence and effect of the UK market on its European neighbours should not be underestimated. Wider international markets are also not immune.

The next major milestone in the UK is the creation and implementation of a Digital Plan of Works (DPoW). This encompasses the fully funded development of a 'free to use' digital tool to enable exploitation of the publically available Level 2 legacy documentation and strategies. The DPoW will be available in the UK by Q2 2015. Funding has been agreed, in principle, to expand the offering to the EU – and beyond.

Then of course there is Level 3 – full exploitation of the multi domain or federated model. This is now being defined in the UK and will be a major leap forward from Level 2 BIM process. It will happen - sample projects should appear during 2015. Needless to say, Solibri will be involved. ☺

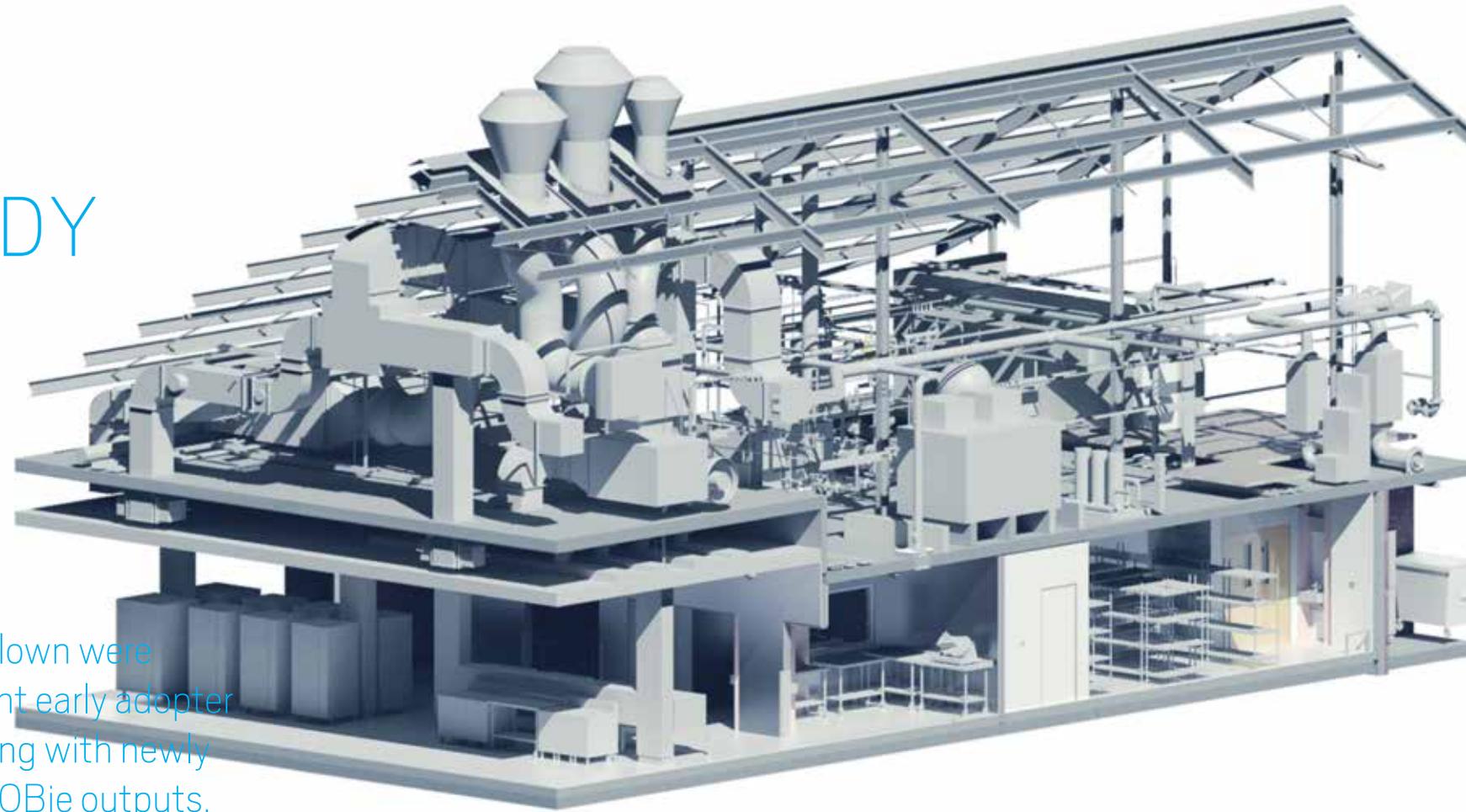
LEVEL 2 BIM

Level 2 BIM is a series of discipline specific models with the provision of a single environment – COBie – to store shared data and information

DAVID JELLINGS

– Managing Director Solibri UK Ltd

COBIE CASE STUDY



In 2012, architects Stride Treglown were appointed to deliver a UK Government early adopter BIM project. As 'pathfinders' working with newly defined processes and delivering COBie outputs, Stride Treglown faced a number of challenges. To find out how Stride Treglown successfully implemented the project, Solibri UK Managing Director David Jellings, chatted with Anthony Walsh, Senior Associate and Sector Lead for Public & Community Projects and Dean Hunt, BIM Co-ordinator for Stride Treglown.

HOW DID YOU FIRST BECOME AWARE OF THE GOVERNMENT BIM AND COBIE REQUIREMENTS?

'We had been working in a BIM environment for a number of years and as one of our key client groups is government, in particular justice and defence, we were aware of the new COBie requirement as a government directive from the outset. To help improve our knowledge, we've attended numerous conferences and seminars and disseminated the information internally to raise our overall company awareness. We knew this was going to be important and that it would involve developing new working practices, so we wanted to be properly informed.'

WHEN/HOW WERE YOU FIRST INVOLVED IN A COBIE PROJECT? WHAT WERE YOUR INDIVIDUAL ROLES IN THE PROJECT?

Anthony Walsh: 'I am a Senior Associate and Stride Treglown's Sector Lead for Public & Community, which incorporates this particular work stream.'

Dean Hunt: 'I am Stride Treglown's BIM Co-ordinator responsible for directing the project team in a collaborative BIM environment to ensure that the geometric coordination and data requirements were achieved and fully coordinated. I needed to develop new workflows and strategies to achieve the COBie data requirements for the project.'

COBIE
COBie stands for Construction Operations Building information exchange.

HOW DID THIS PROJECT CHANGE THE WAY YOU WORKED?

‘We were already familiar with current BIM processes, such as coordinating geometry and clash detection. However, the new process required us to output intelligent data in a format that could be easily accessible to all. This necessitated implementing new working practices and protocols to ensure that these outputs could be incorporated into the COBie schema. Technically, we had to invest in additional add-ins for authoring tools to enable a more efficient workflow. We also had to invest time working with other project partners to help them deliver the data requirements.’

WHAT WAS THE MAIN INITIAL CHALLENGE?

‘This was a new way of working, not just for us, but everyone from the client down. The biggest challenge at the start of the process was the initial lack of understanding by the

for everyone involved, including the mechanical & electrical engineers, civil & structural engineers, catering suppliers and key supply chain partners. All were very enthusiastic about working in a collaborative environment. We believe our lead role was instrumental in ensuring that all parties were fully integrated into the process.’

HOW DID SOLIBRI BECOME INVOLVED?

‘We were aware of the options available to output COBie data, including directly from the authoring software itself. Initially this seemed like the obvious and easiest option but unfortunately it did not satisfy the requirements. It was important to us that we found a way of automating what was essentially a very manual process, in order to develop a repeatable workflow for our future COBie requirements. We originally became aware of Solibri Model Checker from our attendance at the ICE BIM Conference in 2012 and it seemed to provide the solution to many of our problems.’

“It was important to us that we found a way of automating the process, creating a workflow that was repeatable. It was imperative to generate the data requirement via industry standard IFC format as COBie data is a subset of IFC. We strongly believe COBie data should reside in the authoring software which can then be federated, coordinated, validated, and checked by Solibri Model Checker”.

project team. The information requirements and formats were at first ambiguous, but after research into the requirements of COBie, the required levels of data became clearer and more understandable to us all.’

AND THE WIDER CHALLENGES?

‘The whole team were fully committed to delivering the project, but not having previously worked with COBie, it was a steep learning curve

HOW WAS SOLIBRI MODEL CHECKER (SMC) APPLIED IN THE PROJECT?

‘One of the main problems we faced was how to ensure that the model contained the complete and correct COBie data. It is very inefficient to spend time validating, and checking COBie outputs only to have to correct them further down the line. Using SMC rule sets, we were able to validate the completeness of the COBie output before exporting to the data sheets.



DEAN HUNT
BIM Co-ordinator
Stride Treglown



ANTHONY WALSH
Senior Associate
Stride Treglown

“Early engagement of the whole project team is essential to ensure productive output. The management and collaborative culture of the team is just as important as the technical manipulation of the data.”

STRIDE TREGLOWN

Stride Treglown is an international architectural practice with overseas offices in Dubai and Abu Dhabi and eight offices in the UK including London, Cardiff and Bristol, making them the 10th largest architectural practice in the UK. Sustainability influences the way Stride Treglown runs its practice and since 2009 they have reduced their carbon footprint by 40%. Their expertise covers most sectors and they apply commercial awareness to balance the sometimes conflicting aspects of time, cost and quality to achieve the best outcome for our clients. Stride Treglown have always invested in technology and are at the forefront of BIM implementation.

Using the classification tables to coordinate all consultant models is a particularly powerful feature of SMC, furthermore, SMCs infinitely configurable user interface makes coordinating data straight forward and particularly excels when using IFC models prepared by varying authoring software. Within SMC we were able to federate all discipline models using IFC, which is the industry standard exchange format and also a requirement of the COBie deliverable. At every stage, the Solibri UK team worked with us closely to optimise these solutions.’

HOW SUCCESSFUL WAS THE APPLICATION OF SMC?

‘We believe we successfully implemented the workflow that we initially set out to achieve. We strongly believe that COBie should be an output provided by data in the authoring software which is then federated, coordinated, validated, and checked by SMC, which then automates the export to the completed COBie sheets. By eliminating any manual data entry in the final COBie sheets we not only save a huge amount of time, but more importantly eliminate user error from the process. Large projects that require data output from many maintainable assets becomes almost impossible to achieve without using automation software such as SMC.’

HOW DO YOU SEE THE FUTURE FOR COBIE AND SOLBRI'S ROLE IN ITS IMPLEMENTATION?

‘Being championed by government, COBie will be business as usual from 2016 and we are already seeing elements of COBie being requested by some private clients. We feel ultimately that Excel as the output will gradually disappear; however, COBie data will remain and become the universal delivery method across all projects. Stride Treglown has now adopted SMC software to undertake internal coordination so that as a practice we can deliver fully co-ordinated buildings. We feel confident that SMCs communication method is far superior to its competitors and will be an essential component of future project deliveries.’

DAVID JELLINGS
– Managing Director Solibri UK Ltd

BIM USE CASE	METHODOLOGY	SOLIBRI MODEL CHECKER	METHODOLOGY
Owner Operations	COBie	Data Verification & Validation	Specific Rules to check accuracy, completeness and compliance
Code Compliance	AutoCodes, ADA	Compliance Verification & Validation	Rulesets to verify that intent of code is met, as well as content
Level of Development (LOD)	LOD Guidelines & Requirements	Visualization, Verification & Validation	Rulesets to identify current state vs. required state of model elements – can be associated with phases
Owner Space Audits	Owner Requirements	Verification & Visualization	Rulesets to determine occupancy (current v possible), usage and feasibility
Coordination	Clash Detection	Compliance, Validation, Visualization, Reporting, Workflow	Rules to measure compliance, related issue identification, review process & workflow
Government Requirements	BIM Guidelines & Requirements	Compliance	
Validation, Verification, Visualization	Rules to Measure compliance, verify accuracy,		
Risk Management	Project Requirements	Verification & Visualization	Rules to Measure compliance
BIM Validation	General Design Requirements	Compliance, Validation & Visualization	Rules to Measure multiple areas of compliance
Estimating	Established Processes	Collection, Filtering, Verification, Visualization, Reporting	Rules to filter, steps to verify, analyze, report

identified that BIM could be used for many purposes, and to accomplish this usage, there had to be some consensus on what information needed to accompany the model components. There are some great examples of these cases, such as Energy Analysis, Acoustic Analysis, Facilities Management, Level of Development, QA/QC, National BIM Standards, and many more. This has also resulted in some excellent initiatives to define and deliver a common data structure to address the needs of the different project owners.

As is often the case, this market need has been identified by the software technology developers, who then actively market their product (or tool) to the end-user for purchase consideration. The result is a 'toolbox' of many products that can be used for a specific purpose

(i.e. a hammer, a screwdriver, a wrench, etc.). Or the concept of buying 'a Box of BIM', with the idea that one size fits all.

Solibri is indeed different. Many firms talk about 'solutions' but are still primarily product focused. The Solibri Model Checker may well be a unique technology, as it truly is a solution for multiple BIM Use Cases, by design. Not by 'stretching' the technology to 'kind of' address a need, but by actually being an excellent solution for very real use cases.

The one thing that is very clear – now that there is more data present in models, there is a very real requirement to both manage that data, but also to verify and validate it, as well. What good is data if you don't know it's accuracy, completeness, or compliance with an established requirement? Bad data may actually



cause more harm than good, as decisions that are made from unchecked or unverified data WILL result in inaccuracies elsewhere, as the project progresses (estimating, procurement, delays, field changes, etc.).

Each BIM Use Case presents a range of different requirements. What they all have in common is the need to verify and validate the data, for that particular requirement. Across, there is a table of just some of the use cases that have been identified, so far. This is not an all-inclusive listing, nor does it mean that models are already being used for all of these, everywhere. But, they certainly could be.

Again, this is not an all-inclusive listing, but these are all legitimate BIM Use Cases that may, or may not even be known by the design team at the beginning of a project. The point is, Solibri Model Checker provides an extremely powerful and capable solution, TODAY, within its 'core capabilities'. To reflect this as an image, where you need a toolbox full of individual products, one for each identified Use Case, with the Solibri Model Checker, you have the Swiss Army knife, with one blade for each of the uses, to be used whenever YOU need.

There is nothing else to purchase and you have already made the best investment. The Solibri Model Checker is in a class by itself,

and if you already have licenses, it should be GREAT to know that you have made a terrific investment. This is not marketing 'speak' or hype, this is a FACT.

Solibri does the one thing that every model needs... it allows you to Measure the Quality of what has been modeled, and to Measure the Quality of the data that accompanies each model object. BIM is not able to deliver on its promise, if the data is of poor quality. It really is that simple. ☺

JONATHAN WIDNEY
– President of Solibri LLC.

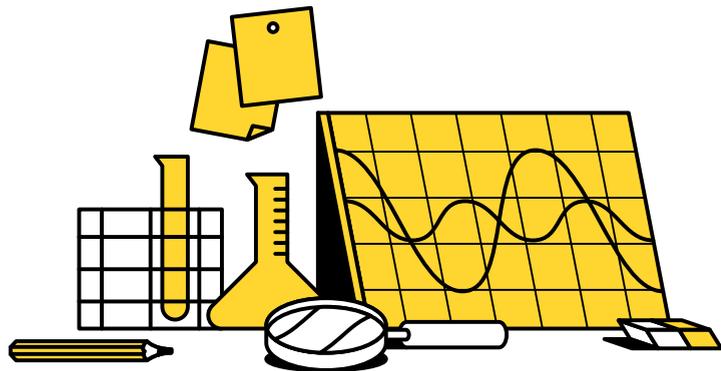


JONATHAN WIDNEY
Jonathan Widney is the President of Solibri LLC.

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CODE COMPLIANCE — AN AUTOCODES PROGRESS REPORT

The autocodes project continues to make significant progress and plans to introduce the first model matrix for bim-based code compliance



Solibri continues to play a leading and critical role in this multi-year, multi-faceted project. It is our plan to release a matrix (discussed below) to assist the design team when creating a Building Information Model (BIM), intended to be used for code compliance. While progress is definitely being made, this is not a glamorous or simple effort. For the most part, it is a very tedious and repetitive undertaking, but the Project Team remains totally committed to a successful outcome. The lessons being learned as we move building code statements into a comprehensive set of rules to enable the computer to execute a 'check', are numerous.

BIM USE CASE

[An Update from our Solibri US office in Scottsdale, Arizona.](#)

Please read further as we update each of the five (5) project goals for Phase II of the AutoCodes Project. Phase II is expected to be completed by January, 2015. But, don't worry; Phase III will follow immediately thereafter.

Goal 1 – Developing Protocols for Model Authoring – Previously, this goal was only focused on Retail and Healthcare. This has now evolved into a more broad-based deliverable, as the protocols that are being developed can be applied to any type of building project. The Baseline Modeling Matrix (BMM) that was first introduced in the previous Solibri Magazine has been evolving dramatically. This matrix

will eventually cover every code statement (in Chapters 10 & 11 of the 2009 International Building Code (IBC)) that can be represented in a computer-generated check. The BMM then provides a 'recipe' to the design team of all the requirements that need to accompany components that are included in the BIM. In early October the first iteration of the BMM will be released for internal use by design teams that are associated with the project. The intent is to find out if the design community can (and would) shift their modeling practices to incorporate the additional model-related information. The Project Team will assist the design teams, while at the same time continuing their efforts to add more content to the Matrix, for its actual public release (planned for January, 2015). The overall goal is that models that have been checked would be available for review by the ICC, in January 2015, using rulesets present in the Solibri Model Checker.

Goal 2 and 3 – Developing a Process Transformation Protocol to assist plan review organizations in their evolution from paper-based processes to 2D/BIM digital processes. Current Status – This protocol continues to evolve as we learn more from the professional sector. Change is challenging, making it necessary to demonstrate a very rapid benefit if we expect organizations to either acknowledge or to adopt new practices. This perspective has been included in the updated course we created for the International Code Council (ICC). The course has been refined and appropriately renamed Roadmap to Digital Adoption in a Hybrid (2D/BIM) Environment. The course consists of both a visual presentation and a participant's manual and has been approved by the ICC for Continuing Education Units (CEU's) in forty-two (42) states. The new course will be presented at the upcoming 2014 ICC Annual Business Meeting, scheduled for October in Fort Lauderdale, Florida.

Goal 4 – Continued Testing and Development of rulesets for Accessibility and Egress – As was noted in our last update, and confirmed in the opening paragraph above, the shift in strategy to encompass the entirety of Chapters 10 & 11 has had significant impact. As we are now expanding the scope to include all building occupancy types, we are also committed to shifting our support to the 2012 (rather than 2009) Building Codes. The ICC has been an

excellent partner in this work effort, providing personnel with extensive experience to guide the Solibri team as we review and analyze code statements. They are also the real authority when we are seeking verification that the Solibri Model Checker rulesets both execute the checks properly and meet the 'intent' of the code itself. Again, this is a tedious and time consuming process, but it is necessary if we want credibility for the use of SMC, for this purpose.

Goal 5 – Begin the testing and development of rulesets for Fire & Life Safety – We continue to explore this important area, from multiple angles starting with requirements embedded in Chapters 10 & 11 of the IBC. We also are looking at the use of BIM to comply with the Occupational Safety & Health Administration (OSHA) Parts 1910 and 1926, which focus on Construction Site Safety. We continue to hold discussions with the National Fire Protection Administration (NFPA), and hope to have some positive news in the near future.

The AutoCodes Project has held two (2) Workshops in 2014, the first in May in Portland Oregon, hosted by Kaiser-Permanente and most recently by Target Corporation at their Headquarters in Minneapolis, Minnesota. These were in addition to two (2) smaller Task Group meetings that were held (April and September). Each of these sessions yielded significant results. These workshops allow our task groups (currently 5) to make significant strides toward meeting the above-stated goals. As mentioned earlier, Phase II will come to a close in early 2015, to be immediately followed by Phase III. This is going to be a long process, but Solibri is uniquely qualified and positioned to lead this effort, and more importantly, we are excited about bringing about these industry improvements. ◯

JONATHAN WIDNEY
– President of Solibri LLC.

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AUTOCODES

[The Baseline Modeling Matrix \(BMM\)](#)
[BMM provides a 'recipe' to the design team of all the requirements that need to accompany components that are included in the BIM.](#)

BIM FOR PUBLIC ADMINISTRATION

For the first time in Italy, an office of the central Public Administration has decided to experiment the BIM method on a project in progress, in order to test the real advantages compared to the traditional method of the planning and management of building sites within a public tender.



BIM IN ITALY

An Italian first. The Government decides to use BIM in the Lombardy and Liguria region.

The Chief Engineer discusses how "BIM would lead to a significant decrease in the rationalization of the costs."

Solibri Partner - Harpaceas acts as the technology partner in the project.

The working group was made up by the Provveditorato Interregionale alle Opere Pubbliche of Lombardy and Liguria, the group of Professor Angelo Ciribini, one of the greatest Italian experts of Bim from the University of Brescia, and Harpaceas as a technological partner.

BIM was used for the project of a new apartment block inside the Carabinieri barracks "Lancieri di Montebello" in Milan. This barrack is a block of buildings extending for 53.450 square metre, located in the heart of the city of Milan, in a compact and high-density urban fabric, mostly residential. This block, whose origin dates back to the beginning of the 19th century, is located near the great urban and monumental system that from the Sforza Castle leads to Corso Sempione.

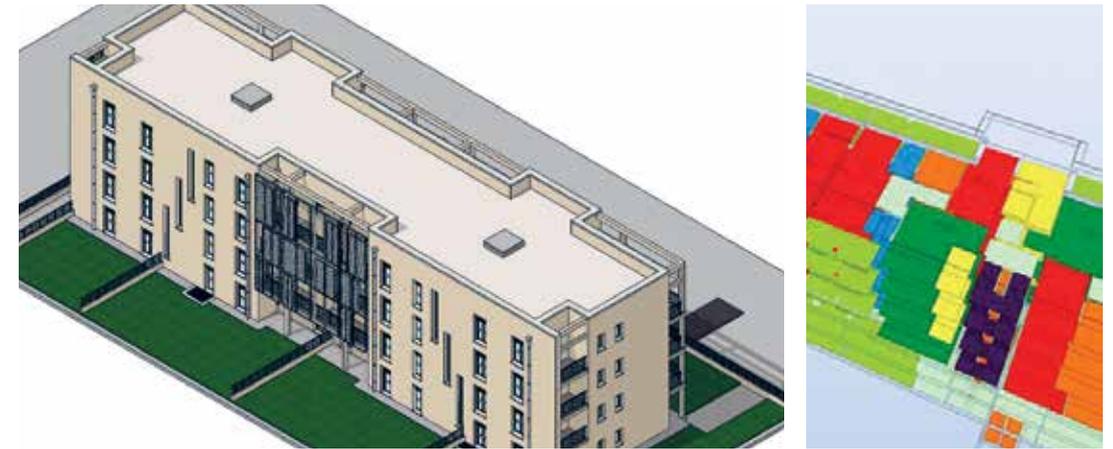
The Chief of Milan office, Eng. Pietro Baratono, declares: "I have decided to start the experimentation, with the approval of the Infrastructure and Transport Ministry, because I think that the BIM is for the Public Administration a long term investment that provides, on the one hand, a significant time decrease thanks to the improvement between the building process and the work management; on the other hand it guarantees a higher efficacy

on the control systems". Eng Baratono adds: "Moreover, BIM by provides a dematerialization of the processes aimed to the approval of the project. This grants a decrease in the administrative times. In conclusion, BIM would lead to a significant decrease in the rationalization of the costs."

Based on these shared certainties, the work group have put into practice the BIM method and they have made a unique 3D model of the apartment block, with the several parts of the project made with specific software and all in IFC format. They have created a real OPEN BIM planning process, by which you can communicate your project and all its details in every step of the planning and without qualitative loss. There is a specific software for every step.

The possibility to produce interoperable data by the designers is assured by the fact that every software can manage the IFC standard, an open and independent file format developed by the international association BuildingSmart to make the exchange of models and information possible among the software of the different producers.

You can therefore talk about a universal approach for the cooperation during the steps of



the planning, the making and the functioning of the buildings. This approach is based on a standard and open workflow.

Among the software used for this experimentation is Solibri Model Checker. With this software, many aspects of the project have been analyzed by using check rules belonging to the software, and also customised rules. The model has been analyzed by the "BIM validation" Ruleset which is inside Solibri in order to check its quality and coherence level. It is a check which grants the production of a high quality BIM model, from which you can extract reliable results for the following analysis steps, such as the Clash Detection, that is a base check offered by Solibri.

The "Clash Detection" Ruleset can be applied to the models of each subject (architectural, structural, and the one of plant design) and you can then observe the differences in the compound models (Merged BIM). In this way SMC can check if there are cooperation problems among the designers.

The strong point of SMC is the Code Checking that is the test of the model and project compliance to the reference legislation. With the creation of customized Rulesets several tests have been made, such as: the compliance to some laws of the hygienic rules of residential buildings, or the room space according to their function.

Another test made by a customized ruleset deals with the check and the prevention of the architectural barriers, in order to guarantee a complete accessibility of the

building, for example a complete turning of the wheelchair of a disabled person.

Another test deals with the fire prevention inside the underground garages, checking the smallest measures accepted by the laws and the correct compartment of the places, the sufficient ventilation determined by the law, the evacuation escape and the correct placing of the fire prevention implant.

The problems observed during the tests have been saved as slides with a caption reporting a comment and decisions that were taken.

A report of the problems observed has been created and it is used as a support for the team members, especially in order to provide information about mistakes or troubles to the building contractors.

The advantages offered by Solibri are obtained since the first steps of the experimentation, and from the unique parametric model you can get all the information you need to guarantee a quality planning and a building work with no mistakes, along with a look at the building costs. ◯

GIANNI GATTO – Eng. Ing. R.U.P.



GIANNI GATTO

Infrastructure and Transport Ministry
Provveditorato alle Opere Pubbliche of Lombardy and Liguria



LOOKING BEYOND MODEL CHECKING

The team at BPI in Australia are using Solibri alongside their Lean Construction policy, which is helping to maximise value and reduce waste even further.



Due to the size and multi-faceted nature of BPI, the company faces unique challenges compared to other construction companies. Their Lean Design and Construction Policy ensures the team maximise value and minimise waste on projects, and by adding convergent technologies like Solibri to the mix, BPI have been able to take the policy to a new level.

BPI started using Solibri in early 2014 to help manage the delivery of projects, specifically in the areas of communication management and quality control. Levi Naas, VDC Manager for 480 Hay Street, explains the company is now “...utilising Solibri in a couple of ways that have not been done to this level in our industry in Australia”.

For example, BPI uses Solibri to allow the relevant team to automate workflows and checks in their respective areas. Levi explains, “The BPI Lean Design and Construction delivery team provides a base set of rules for each discipline and trade to build upon. Each party enhances these and then submits their Solibri rulesets to BPI for approval. Once approved, BPI issues out an updated rule set for the parties to quality check and monitor the integrity of the design and model. This process occurs prior to it being placed in our automated cost engineering and production control environments.”

In addition, the entire project team utilise Solibri to quickly communicate and convey their ideas. They regularly run Solibri checks and meet weekly to assign issues to the relevant team for fixing. Although these weekly meetings were a regular occurrence prior to the implementation of Solibri, the software has provided them with a powerful communication tool to help not only capture any problems, but also communicate them (and their fixes) more easily.

BPI is also exploring additional ways for Solibri to enhance the project management and delivery process. Levi explains, “BPI is in the

early stages of researching and developing ways to improve productivity and reduce waste for 480 Hay Street in Perth. Our stance is to maintain leadership in our industry and provide feedback for a better way of doing business. As we enter the next phase of the project we will provide intimate industry knowledge back to key product developers, thus sharing innovative ideas and improve the industry.”

CURRENT PROJECT (PICTURED)

BPI are currently working as the D&C Head Contractor for the redevelopment of 480 Hay Street in Perth’s tree-lined heritage precinct. The \$500 million project will feature a 22-storey tower featuring A-grade offices, a range of retail and dining venues, and Perth’s most luxurious hotel. The development is designed to achieve a five-star Green Star Rating and five-star NABERS Energy Rating.

FAST FACTS FOR 480 HAY STREET, PERTH

- Site area: 7350 sqm
- Planning: 2013–2014
- Construction 2014–2017

For more information on the 480 Hay St development, visit www.480hay.com.au

ABOUT BPI

BGC POS International (BPI) is an incorporated company formed between BGC Australia (Australia’s largest privately owned construction company) and Posco E&C Australia. For more information on the company and it’s Lean Design and Construction Policy, visit www.bpienc.com

TESSA READ – CAD Image Group



USING SOLIBRI IN AUSTRALIA

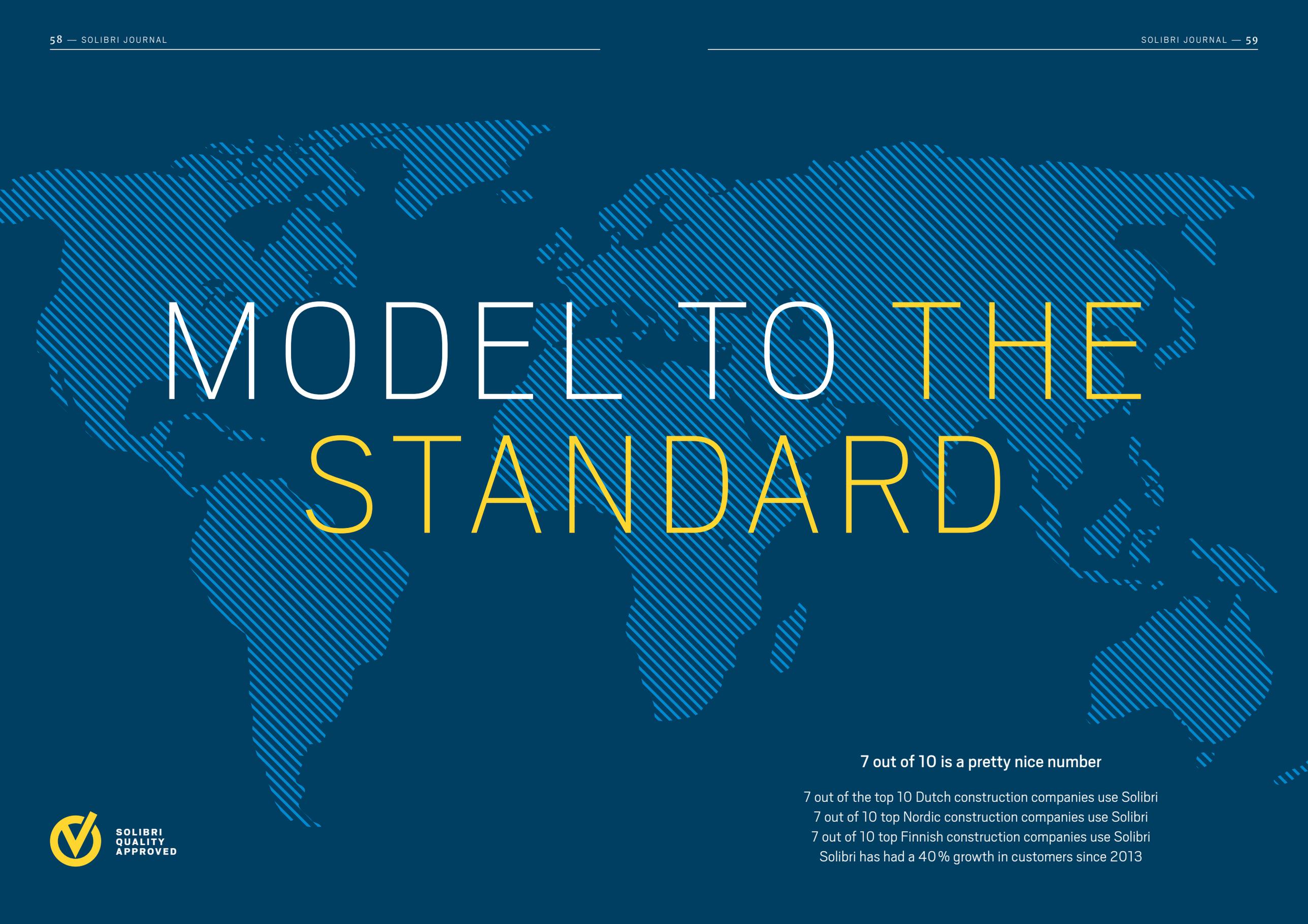
CAD Image Group – Located approximately 16,647 KMs from Solibri HQ, Finland.



TESSA READ

I love all things design related – whether it is architecture, fashion or graphic design. In the past I have studied all of these areas and now put the skills I learnt to good use at Cadimage Group. My role here is varied and ranges from graphic design to writing content for our website and even working on the coding of it!

SOLIBRI IS SOLD IN AUSTRALIA AND NEW ZEALAND BY CADIMAGE GROUP. FOR MORE INFORMATION VISIT WWW.SOLIBRI.COM.AU OR WWW.CADIMAGEGROUP.COM



MODEL TO THE STANDARD

7 out of 10 is a pretty nice number

7 out of the top 10 Dutch construction companies use Solibri

7 out of 10 top Nordic construction companies use Solibri

7 out of 10 top Finnish construction companies use Solibri

Solibri has had a 40% growth in customers since 2013



**RUSSELL
ANDERSON**

Editor in Chief/Solibri
Brand & Marketing
Director.



Editor in chief Russell Anderson calls time on this edition of the Solibri Journal

Firstly, congratulations on reaching the last page. If you've read the whole journal, you will have seen stories from one end of the world to the other. You will have heard real life examples of Solibri in action. You will have read stories of how BIM is gaining momentum and how the global construction scene will look very different in five years time. You will have seen that those leading this 'technological charge' are the future leaders and winners of the construction workflow.

My original intention was to simply gather customer stories for this edition. A chance to let our customers and partners share what they've been up to. In advertising, it's a long held belief that the best marketing is done by your

customers and not by yourselves. The completion of this journal has only served to reinforce this view. It would have been impossible for me to have described such changes in the industry, economy and the software scene. I have been humbled and enlightened by spending time interviewing many of the interesting characters in the previous 60+ pages. I would like to personally thank you all for taking time to meet, entertain and share several hours of your precious time. I, and the readers have a much clearer view of the current situation in construction and technology.

And on that note, I would like to leave you with the Solibri slogan. 'Imagine, Reliable Information on Demand'. As BIM continues to grow, we will endeavor to help you build the models you've designed. To support those pushing the boundaries of technology and the market place. It will also offer me a whole new host of great stories to share with you over the coming years.

If you'd like to be in touch with me, you can reach me at marketing@solibri.com

Yours,

RUSSELL ANDERSON – Solibri

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EXCELLENCE



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Customers discuss the value of Solibri

BIM BOOM!

Reports from DACH, UK and US
How BIM is transforming construction

CHANGE IS CONSTANT

What's new in technology and how it
helps you and your business