Legal aspects of Building Information Modelling: a world view (Part II)

Building Information Modelling (BIM) is increasingly in the spotlight as its use starts to increase around the world. This article analyses legal aspects of BIM in six different jurisdictions: Brazil, Canada, Denmark, Ireland, the UK and the US. The content of this article was presented at the session on ‘Building information modelling (BIM): progress in adoption and the legal and contractual implications’ organised by the International Construction Projects Committee for the IBA Annual Conference held on 22 September 2016 in Washington, DC.

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This is the second part of an article based on a session entitled ‘Building Information Modelling (BIM): progress in adoption and the legal and contractual implications’, organised by the International Construction Projects Committee for the IBA Annual Conference held on 22 September 2016 in Washington, DC. Part I of this article was published in the December 2016 issue of Construction Law International. In Part II, the authors address the questions of contract structures, insurance, data and lessons learned.

What contract structure would ideally be used?

Across the jurisdictions herein considered, there is a consensus that while BIM can bring benefits under employer-led traditional design-bid-build procurement contracts (in so far as BIM is specified correctly), it offers greater benefits through early contractor engagement (ie, two-stage tendering) or
where there are collaborative contracts. It is therefore considered that the two-party model is not the optimum one for the full benefits of expanded social BIM to be realised. BIM in that form is a collaborative process. Ideally, the consultants and the contractor would be appointed on a common basis, working to deliver a set of building information models, but being contractually required to adopt common ways of working.

Early engagement of all involved parties, including the design team, contractor, key subcontractors and building end-user, with a view to total expenditure (totex) over the life of the building, not capital expenditure (capex) of construction of the building, would be preferred. This is on the basis that this leads to greater savings either in programme or cost, and to take account of benefits over the project life cycle.

The integrated project delivery (IPD) model may be more effective to promote collaboration among the parties. This model requires early involvement of all project team members and decision-making processes based on what is ‘best for project’, with a built-in incentive and risk allocation structure supporting that approach. However, the use of the IPD model has accompanying risks, for example, with regards to the allocation of liability, as it requires the participants to the project to develop a much more symbiotic mindset than under a two-way contract. Mutual waivers of claims and a robust dispute resolution mechanism may temper the risks of multiparty contracting. This may work best when backed by insurance.

While IPD is not required for BIM to be utilised, there is a widely held view that the benefits of BIM can only be fully realised where IPD is used. The entire purpose of BIM as an efficient and cost-saving technology depends on collaboration, which IPD is geared towards.

How is the insurance market responding to BIM?

**Brazil**

Given the early stage of the use of BIM in Brazil, there has not been any effective impact in the Brazilian insurance market so far. The current insurance market practice in Brazil is that, usually, the owner procures an all risk insurance policy for the project and imposes the contractual obligation for each party (designer, contractor and suppliers) to procure specific insurance policies (including, eg, professional liability/errors and omissions,
workers compensation, life insurance and commercial general liability).

With the development of BIM in Brazil, some complexity may derive from the operation of various parties’ insurance in relation to the parties’ work in BIM (ie, cross-liability and waiver of subrogation).

Given that the use of BIM will certainly increase in Brazil, the Brazilian insurance market will have to take into consideration the particularities of the use of BIM by possibly revising the insurance policies and perhaps offering special premiums for projects that imply such a use, because it could be argued that there would be a reduction of risks – and thus exposure of liability from insurance companies – as a result of the use of BIM.

Canada

The Insurance Bureau of Canada has not yet introduced any specific policy wording that is applicable to BIM. In the BIM context, an inherent risk is the blurring of risk allocation between the members of a BIM project. Ultimately, as with any insurance product, insurers will need to develop risk allocation policies specific to the use of BIM software and the risk allocation within the contracts.

Denmark

Currently, the Danish insurance market includes no coverage restrictions due to the use of BIM. Insurance companies do not (yet) see BIM as a special area; they consider BIM to be a tool among other tools. Consequently, the traditional insurance model is still used in Denmark, which means that the parties take out their own policies to cover their risks, and that no endorsement or policy modification is required.

United Kingdom and Ireland

The Construction Industry Council (CIC) has published a Best Practice Guide for Professional Indemnity Insurance when using building information models. In both the UK and Ireland, this guide contains the generally accepted advice.

In terms of the insurance market, the current position is that although parties operating in a BIM environment should disclose this to their broker or insurer because it is likely to be a material fact relevant to coverage, there are no coverage restrictions due to a project either applying Level 2 BIM or a BIM light model operating outside the CIC BIM Protocol. Insurers currently regard use of BIM as not making
any material change to the risk profile on a contract and indeed consider it to be a risk mitigation tool. This means that no endorsement or policy modification would be required. There are also minimal, and maybe no, premium implications.

Insurers are generally comfortable with the CIC BIM Protocol because it provides a clear liability picture. It is regarded as ‘best practice’. The advice, if either the CIC BIM Protocol is amended or other protocols are used, is to discuss this on a case-by-case basis with the insurance brokers authorised to write business in the relevant jurisdiction.

Insurers are keen to have clarity on roles and responsibilities of the professional design team consultants, contractors and key subcontractors regardless of the BIM Protocol adopted. For CIC Level 2 BIM, insurers are comfortable on the basis that lines of responsibility are clear and it is possible to identify which party is the author of any models passed to the information manager.

In the future, the market may move towards Integrated Project Insurance, where all parties are covered on a no-fault basis, with each party contributing a percentage of the premium. This is available through certain insurers in the UK and Irish insurance markets now, although on a limited basis and without the benefit of reinsurance coverage. In practice, such policies are expensive and limited in terms of the level of coverage available.

**United States**

As a general rule, a number of insurance products are employed for most significant construction projects. These primary policy types include: professional liability, general liability and builder’s risk. It is not uncommon for these primary coverages to be supplemented with additional coverages, including cyber liability, subguard, permanent property risks, and loss of use and delayed startup coverage.

Under the traditional design-bid-build model, the design professional typically carries professional liability coverage and is covered under it. Similarly, the general contractor and its subcontractors typically carry primary general liability policies applicable to the project, and the owner frequently purchases builder’s risk property policies.

The traditional design-bid-build model also relies on well-defined responsibilities. The design professionals are not responsible for construction means and methods, and the general contractor is not responsible for design production, deficiencies and errors.

The more evolved implementations of BIM provide the potential for all project participants to contribute to and modify the design. Many BIM implementations also provide significant opportunity for design professionals to willingly, or perhaps unwillingly, advise upon and influence the means and methods of construction. The result is a blurring of the traditional lines of responsibility.
This has the potential for leaving gaps in insurance coverage. By way of example, a general contractor who actively modifies a project’s design through the BIM model may be inserting design errors. Such errors are potentially not covered by the contractor’s general liability policy, and the contractor cannot be covered under the design professional’s professional liability policy. A potential coverage gap may be the unintended result.

Another shift in traditional risks relates to cyber liability. Under the traditional design-bid-build approach, the design professional prepares its design within its offices and stores it on its computer servers. The final design is provided to the general contractor as printed construction documents or as read-only electronic files. The general contractor is not allowed access to the source files or to the design professional’s computer servers. Under many BIM implementations, all project participants have access to the source documents and the common server on which they are secured. Such broad access increases the possibility of security breaches and cyber theft.

Many owners attempt to address these issues through the implementation of an owner controlled insurance programme (OCIP). Such programmes are also often referred to as 'wrap policies' or ‘wrap coverage’ to indicate the intent of wrapping all required policies into a single, project-specific programme. Depending on the coverage available, OCIPs can effectively insure the BIM-related issues. It is anticipated that, as the use of BIM evolves and becomes more relevant, more insurers will offer products specifically written to address BIM liabilities.

What issues may arise in relation to the use of data?

Brazil

In Brazil the employer usually owns and manages the model. However, as the BIM technology/process is based on the contributions of several parties involved in the same project, the intellectual property rights over such contributions are usually claimed by each contributor.

In cases where the contractual provisions in relation to BIM are inadequate or non-existent and BIM is used on a project, there are several risks associated, especially in relation to contributions and intellectual property rights. Adequate contractual provisions regarding the use of BIM could undermine such risk by addressing the parties’ access to and use of the contributions (granting licences or sublicences), joint authorship and confidentiality of the information shared.

As an example, if the contracts do not have specific clauses ensuring that all contributors:
(1) warrant that they hold the intellectual property rights over their contributions; and (2) provide an indemnity to all the other parties who may use such contributions in the event of a third-party intellectual property dispute, there might be a risk of all such parties being liable for an intellectual property rights infringement.

The same applies to other liability issues related to the use of BIM. It is important that the contracts are very clear and detailed on the liability of each of the parties involved for the model, data in the model, corruption of data, software defects and use of data provided. All these issues require addressal in the contracts between the parties involved in a project, stating who will bear the risks/costs of each situation and the limitations of liability that shall apply.

With regard to the mitigation of data corruption risk, it is suggested the contract provides for excluding liability for any use of a model for purposes other than those intended (including data corruption).

**Canada**

Intellectual property concerns include the protection of data and the propensity for data corruption. Under the AEC (CAN) BIM Protocol’s terms of usage from consultant to constructor, an acknowledgement is included that BIM project files may represent an imperfect data file with the potential to contain errors, omissions, conflicts, inconsistencies, improper use of modelling components and other inaccuracies. The terms of usage also include that all subcontractors will be bound to the same terms of usage and that neither the constructor nor any subcontractors working on the project will be permitted to transmit or share the information contained in BIM project files to any third party.

AEC (CAN) also recommends that proprietary information in the BIM project files can be protected by including a copyright notice on a drafting view which serves as the default when opening the model. An example of a copyright notice from the IBI Group is included in the protocol:

‘Any reproduction or distribution for any purpose other than authorised by IBI Group is forbidden. Written dimensions shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job and IBI Group shall be informed of any variations from the dimensions and conditions shown on the drawing. Shop drawings shall be submitted to IBI Group for approval before proceeding with fabrication’.

In Canada, the Institute for BIM contract documents also do not contain any warranty with respect to the integrity of electronic data.

**Denmark**

In Denmark, the information and communications technology performance specification normally includes obligations related to the format, exchange and authorship of data. The current position is that, when designing and making calculations with a BIM model, architects and engineers disclaim their liability for the model. They extract two-dimensional (2D) drawings from the model and are liable only for such drawings. They merely submit the three-dimensional model to the contractors as inspiration. This has resulted, for example, in a case in which the BIM-model included a wall as intended, but the 2D drawings did not. The architect was therefore liable for the error.

As architects and engineers are still contracting on the basis of 2D drawings, there has not yet been any change in relation to intellectual property rights defined in the contracts. There is a clause stating that the BIM model only serves as inspiration. In these cases, the contractors often make their own BIM model.

When the contractors contribute to the project, it makes no difference if they make the changes through a BIM-model or on 2D drawings. If the contractors make any changes, they risk becoming liable for any errors in their changes.

In relation to copyright regulation, there have been no changes. There is, however, no case law in this area yet.

**Ireland**

In Ireland there can be a misconception that there is a single BIM model for a project. In CIC BIM Level 2, which is the BIM model most commonly in use in Ireland, there are
separate professional discipline/contractor/subcontractor supplier models.

The project team members own and are responsible for their elements of design and information (their model). Models can be federated (brought together) to present a combined model but the underlying individual models are the legal design/construction ‘deliverable’.

A project team member’s intellectual property in Ireland is protected under law irrespective of whether that information is digital or paper-based. Nevertheless, there is some concern in the industry about the impact of BIM on intellectual property rights in construction design and information, particularly where the design is produced in a collaborative BIM environment.

The owner’s right to use construction design and information has always existed and is included within express intellectual property provisions in standard form contracts for both public and private sector projects. The right further allows the owner to share the design and information with other parties involved in the project.

In light of the concerns about the infringement of intellectual property rights that could arise from the implementation of a BIM form of working, the CIC BIM Protocol has laid down clear provisions about the management and licensing of those rights, which enable the respective models to be used by the project team, while at the same time safeguarding the intellectual property rights of the individual project team members. Liabilities for data corruption, security, software exchange and use of information for the purpose they were prepared or produced are covered in the CIC BIM Protocol.

Data issues should be dealt with in the Employer’s Information Requirements (EIR) and BIM Execution Plan (BEP) and, where these are not applicable, in the underlying consultant appointments and/or building contract. It remains to be seen in Ireland whether or not the infringement of intellectual property rights is no more or less likely to arise in a BIM project than in non-BIM projects.

UK

The CIC BIM Protocol contains provisions relating to data. It provides that project team members do not warrant, expressly or impliedly, the integrity of any electronic data delivered in accordance with the protocol.

Further, project team members have no liability to the employer in connection with any corruption or unintended amendment, modification or alteration of the electronic data in a specified model that occurs after it has been transmitted by the project team member, except where such amendment, modification or alteration has occurred as a result of the project team member’s failure to comply with the protocol.

The CIC BIM Protocol also makes provision in respect of use of models, including in respect of the material (defined broadly as meaning all information in any electronic medium prepared by or on behalf of the project team member and comprised in the models) and the models themselves. Rights (including copyright) in the material remain vested in the project team member. The employer is given a non-exclusive licence (and sublicence if required) to transmit, copy and use the material and any proprietary work contained in the material for the permitted purpose.

‘Permitted purpose’ is defined as meaning any purpose related to the project (or the construction, operation and maintenance of the project) which is consistent with the applicable level of detail of the relevant model and the purpose for which the relevant model was prepared.

The licence and sublicence granted may be suspended or revoked in the event of non-payment to the extent the licence provides for this.

Importantly, the licence does not include the right to amend or modify the material without the permission of the project team member, except where that amendment or modification is provided for in the information requirements or made for the permitted purpose following termination of the project team member’s employment under their contract. It also excludes the right to reproduce any proprietary work contained in the material for any extension of the project.

There are also provisions for grant by the
employer of licenses/sublicenses to project team members in respect of the work of other project team members on the same basis as above.

The CIC BIM Protocol provides that the project team member has no liability to the employer arising out of any modification or amendment to, or any transmission, copying or use of, the material, or any proprietary work contained within the material, other than in respect of permitted purposes. There is a reciprocal provision providing that the employer, similarly, is not liable to the project team member.

**US**

BIM models are subject to the same copyright laws as designs in traditional design-bid-build procurements. As a general rule, the author of the work holds the copyright. This general rule however, is easily changed through written agreement.

*In the US, BIM models are subject to the same copyright laws as designs in traditional design-bid-build procurements*

In traditional design-bid-build construction, it is not uncommon for the owner to require the design professional to assign all of its copyrights to the owner. This is especially prevalent on projects performed for the federal government and other public entities. That being said, it is also not uncommon for design professionals to retain the copyrights in their work product. This is often seen in privately financed construction projects.

On projects where the contract documents require a full assignment of all copyright and intellectual property rights to the owner, BIM adds very little to no additional complexity. Indeed, because the owner owns all rights in the work product of the parties, there is no intellectual property need to track authorship or contribution.

The issue becomes more complicated in projects where design professionals or general contractors retain the intellectual property and copyrights. In such instances the lines between which party authored the design and which party is a mere user may become blurred.

The American Institute of Architects (AIA) has published a form BIM Protocol exhibit to accompany its various form contracts. AIA document E202 is titled ‘Building Information Modeling Protocol Exhibit’, and is suggested for use on projects where BIM is utilised. The E202 relies on the intellectual property and copyright allocation of the applicable underlying agreement. In addition to relying on the intellectual property terms of the underlying agreement, the E202 also addresses ownership of the BIM model. It provides that the author does not convey any ownership right in the content provided or in the software used to generate the content. In addition, unless otherwise granted in a separate license, any subsequent party’s right to use, modify or further transmit the model is specifically limited to the design and construction of the project, and there is no right to use the model for another purpose.3

ConsensusDocs has also published an addendum to be used on projects utilising BIM. The document is known as the ConsensusDocs 301 and is titled ‘Building Information Modeling (BIM) Addendum’. Similar to the AIA E202, the ConsensusDocs 301 is intended as a supplement to the other ConsensusDocs forms. Article 6 of the ConsensusDocs 301 addresses intellectual property and copyright issues. This article provides for the grant of licenses to reproduce, distribute, display, make derivative works of and otherwise use for the purposes of the project: the contributor’s contributions, the contributions of other project participants who have granted that contributor an identical license, and any model relating to the project to which that contributor has intellectual property rights.3

Both the AIA and ConsensusDocs approaches are to primarily rely on the intellectual property and copyright provisions of the underlying agreements. This is indicative of the typical approach on privately financed projects. The approach may vary on publicly financed projects, where the owners typically insist upon obtaining all intellectual property rights.

**Conclusion: lessons learned**

Experiences from BIM projects in the jurisdictions contributing to this article brought out the following common themes:

- to gain best results, secure the early
commitment of all parties to the process and back that up with the early establishment of protocols to regulate how the process is to operate;
• better understanding of the project results from the early stage involvement of the various parties, and allows the development of cost-saving ideas and improved efficiency;
• improved coordination at the design stage can lead to benefits during construction, including improved design coordination, clash detection and early change management;
• the end-user benefits by being able to do a virtual ‘walk through’, allowing ‘in use’ issues to be identified and resolved at the design stage;
• consider what the employer/end-user requires from BIM in order to operate and manage the building – data is not required for every component;
• on a practical level, work from a dedicated server, which is backed up each night to avoid issues with loss of data and has robust measures in place for the security of data;
• collaboration needs to be more than just words in a contract – positive measures are required to secure all-party buy-in to it, for example, using a ‘Big Room’: one office from which all those involved operate, allowing regular and easy communication;
• do not make it more complicated than it needs to be, and be realistic with the goals to be achieved; and
• keep in mind that BIM is a tool to facilitate the construction process – it should not be the project’s master, and its implementation should be reasonable and flexible.

Notes
2 AIA E202, s 2.2 (2008).

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