

SOME LEGAL ASPECTS OF BIM IN ESTABLISHING A COLLABORATIVE RELATIONSHIP

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Abstract

Working with BIM will have legal consequences. In the Netherlands these consequences are feared by some and seen as an obstacle to wide spread use of BIM techniques. Unnecessarily so. In the paper it will be shown that according to Dutch law liability issues nor copyright issues nor issues of procurement law should be seen as an obstacle. What is needed however is a proper set of general conditions, which are broadly accepted by both employers and designers and contractors.

Keywords: Legal aspects. Construction contract law. Copyright law. Procurement law.

INTRODUCTION

Construction projects involve the work of many different parties. It is widely acknowledged that communication problems are an important source of budget and time excesses as well as errors in design activities and execution. One new exciting way of communication is working with a Building Information Modelling. Working with BIM has many different legal aspects: The contractual relationship between parties will need to be adjusted. The usual general conditions have not taken into account the aspects of working at the same time in one model by different parties. Nor can they. Therefore new contractual documents need to be developed which cover the relationship between the parties working the BIM team as well as between the parties and the owner. The aspect to be highlighted in this paper is the liability question. Then there are aspects concerning procurement law: is it possible to demand that tenderers work with BIM? What does this mean for tenderers who don't work with BIM? Can they be excluded? In this paper these aspects will be dealt with from a Dutch point of view. There are more legal issues to be dealt with for example on the validity of the electronic signature, the obligations to retain information electronically etc.

In this paper BIM is understood as: 'digital technology to establish a computable representation of all the physical and functional characteristics of a facility and its related project/life-cycle information, [that] is intended to be a repository of information for the facility owner/operator to use and maintain throughout the life-cycle of the facility'. This definition comes from US National Institute of Building Sciences (NIBS) and seems to be widely acceptable, in any case by lawyers given the fact it is used in the paper published in 2008 by the UK Society for Construction Law Contract issues in the use of construction building information modelling (the paper is written by Kimberly A. Hurtado and Patrick J O'Connor Jr, and can be obtained from the website from the UKSCL, and was published in 2008 in the International Construction Law Review, p. 262-272). This definition contains two important characteristics of BIM: the computable representation of a facility and the life-cycle approach. What is lacking in the definition is the fact that BIM makes it possible that several people can work at the same time in the computable representation. It is this aspect that basically causes most legal questions. I deliberately use the word questions and not problems, because there are legal questions to be faced, but, as will be shown in this paper, these answers can more or less be given easily.

THE NEED FOR NEW GENERAL CONDITIONS

Introduction

The relationship between the employer and the designers and contractors is governed in most countries by general conditions. In the Netherlands the most used general conditions are: The New Rules 2005

Legal relationship client–architect, engineer and consultant DNR 2005, the Uniform Administrative Conditions 1989 (it is expected that in 2011 a new version of these conditions will be published, an English translation is available at www.ibr.nl.) concerning the relationship between employer and contractor in the traditional model and the Uniform Administrative Conditions for Integrated Contracts 2005 for the design and build model (available in English via www.bna.nl and www.nlingenieurs.nl). None of these conditions have any specific clauses on working with BIM. Earlier research has shown that the content of these general conditions forms no obstacle to working with BIM. From a contractual point of view the main issues are the ownership of the intellectual property rights to the design, the liability for mistakes made in the BIM design and the matter of organizing the actual working in BIM by several people. How to deal with these matters?

Intellectual property

In the non Dutch literature the question concerning who owns the intellectual property rights during and after working in BIM does not seem to cause many legal concerns (H.W. Ashcraft, Building Information Modelling: A Framework for Collaboration, in *The Construction Lawyer*, 2008, nr 3). That is not the case in the Netherlands. Architects especially have made clear that they are reluctant to work with BIM, because they see their intellectual rights threatened by it. Since the intellectual property rights of architects, notwithstanding their mandatory legal protection as well as protection in the general conditions, are often violated (there is a considerable amount of case law proving this point), this fear is well understandable. But it must be remembered that this violation is due to the behavior of powerful employers and not due to the legal system. The working with BIM does not make it easier to violate the property rights of the architects, but does raise question on ownership caused partly by matters of the law of evidence.

Who is the owner of the design that came into being in a cooperation facilitated by BIM? The starting point according to the Dutch law on intellectual property is that the maker of a design is the owner of it. It should be noted that the terminology (maker of the design) is neutrally formulated and is not limited to only architects. Anybody can have an idea that is worthy of the protection of the Law on Copyright. So it is mistaken to say, that architects who are attached to their legal protection should not be part of a BIM team, because the protection is relevant for all members of the BIM team, which is clear when looking at the Dutch copyright law article 6. But who owns the copyright if there is teamwork? The law does not answer this question just like that. According to Dutch law one has to distinguish between a ‘communal work’ (*gemeenschappelijk werk*) and a ‘combination of works’. An example of a communal work is the work of an opera writer and the writer of the libretto if both writers worked together on a specific opera. The idea is that the contributions cannot be subject of an independent judgment. If an independent judgment is possible, like with an illustrated book and indeed in many cases of music and words than the Dutch law determines these works to be a combination of works. The determinant factor is: can the contributions be identified and separated. The distinction is of importance because of the legal consequences attached to it. In

case of a communal work the right to exploit the work accrue to all the authors jointly and acts of exploitation need the consent of all the authors as well (art. 26 Auteurswet and article 3:166 Civil Code). In case the work is not deemed to be communal every author can independently of the other ones exploit his rights. It needs to be mentioned however that the law in this case is not mandatory, so other agreements can be made. And a second point is that reasonableness and fairness can be of influence on particular acts. Reasonableness and fairness are also applicable in case of a communal right, art. 26 Auteurswet. One question that is not dealt with in Dutch (case) law is if it is of importance what the size is of the share of one author. It is feasible to argue that if one author had a share of 70% in a design this might influence the way he exercises his rights.

So how are we to qualify the design activities when working in BIM? The answer to this question is dependant upon the way the architect, the consulting engineer and the contractor worked together. Is their working to be compared to the opera writer who writes in close cooperation with the libretto writer, than the Dutch law will qualify the result of this cooperation as a 'communal work'. However this way of closely operating together will not often take place. More often it will be so that the architect makes the general design, after which the consulting engineers and the contractor appear to make the 'technical and execution' designs adding their design parts in the BIM model independently of the architect and independent from each other. Architect, engineer and contractor all use the same technique and work in the same virtual surroundings but the results of their activities can be identified from one another and separated intellectually. The fear of many architects that someone else will illegally use and claim their design is this way of working less realistic than in the traditional way of working, because electronically every 'entry' is registered with time and name. The Dutch copy right law considers the result of this way of working as a combination of works provided of course that these works are eligible for being qualified as a work to be protected by the copyright law (only original works are to be protected, see article 10 of the Auteurswet). The fact that certain works are not protected by the copyright law because they lack a certain originality does not mean the law does not offer other ways of protection. Possibly the law of tort offers protection against violation of certain ideas being used in this way of working.

In conclusion: in principle there is no legal difference when parties work in the traditional way or when they work in BIM. The difference is formed only by the 'more primitive' means used to design with in the traditional way not by new legal consequences of working with this new technology.

What is important is that the persons working together in a BIM surroundings make clear arrangements concerning the qualification of their work and the legal consequences. The law allows parties to make their own agreements and since they know best what suits their particular work they should formulate these legal consequences themselves before starting their activities in BIM.

Liability

Since a few years the English speaking world has become acquainted with the model of Early Contractor Involvement. It came into use because of the underlying assumption that if use was made of the execution knowledge of the contractor in the design phase the execution could take place faster. Because of the shortage of houses after the war, caused by the baby boom, speed was of the utmost importance. A special feature of this model (called in Holland: the building team) is the allocation of the liability for design errors. Liability lies not with the

party who suggested a certain idea leading to damages, but with the party in whose specific field of professional knowledge the idea lies and who has accepted this idea. Thus if the contractor suggests something lying in the field of the consulting engineer and the consulting engineer accepts this idea 'as if it was his' and it turns out to be a wrong suggestion leading to damages, according to the general conditions governing this model, it is the consulting engineer who is liable and not the contractor. This is the model in which the contractor joins the designers before the execution of the design. In the Netherlands this model has been known since the Second World War (Van den Berg, 2007, p. 323).

The question that needs answering looking at the way persons work in a BIM setting is, can their relationship be qualified as a 'building team' in the specific legal meaning of the words in the Dutch general conditions on this model (this is the VGBouw Model Bouwteam-Overeenkomst 1992, published in 1992 by the organization of contractors Vereniging Grootbedrijf Bouwnijverheid)? The answer is to be denied. The reasoning is that although contracts in Dutch law have in general no set form and the formation of a contract can take place in any form, the construing of a building team from the sole fact that parties work at the same time in a BIM needs too much to be assumed that this consequence is actually wanted by the parties. More information on the intentions of the parties is needed to draw the legal consequence, that although a specific agreement establishing a building team in the legal sense of the general conditions is lacking, nevertheless such an agreement can be assumed on the basis of the way parties behave. So that means that while working in a BIM team the contractor suggests a modification in the work of the consulting engineer, it all depends on whether or not the agreement of the consulting engineer with this suggestion can be seen as he wanting to take over the liability for the suggestion of the contractor. In other words the sole working in BIM creates no new or different law of liability.

So how is the liability allocated in the case of a mistake made in a BIM team not being a building team?

Once again a distinction has to be made, somewhat comparable to the distinction between the communal work and the combination of works in the copyright law. How is the BIM team to be qualified? Is the BIM team to be qualified as a form of coordinated design activity or as a form of an integrated design activity?

In the Dutch legal literature (Van den Berg, 2007, p. 329) the coordinated design activity is described as a form of cooperation by designers individually contracted by the employer. These designers have their own obligations arising from their contracts with the employer, they consult one another on a regular basis in order to make the design parts fit. Cooperation is not the main theme of this 'team'. It fits with this way of working, that each party is liable for his own work. This is not the whole story however, because according to most contracts (and if this obligation cannot be based on the contracts it will follow from the law) between employer and designer there will be a duty to warn against mistakes made by the other members of the 'team'. If that duty was breached liability might shift partly or completely to the person who should have warned. In any case the liability will be joint and several and leave the sorting out of the exact parts to the designers and not to the employer.

It is to be understood that this theoretical model might not be realised in practice. The temptation will be great when working like this, to cooperate more closely than the model allows for. If that is the case, the other model, the integrated team, comes into view.

In the integrated team the cooperation is far closer: two or more parties have accepted an assignment to be fulfilled collectively. The participants in this model will constantly look at

the work from the other members of the team, comment on that, alter it, correct it etc. If this happens it might be argued because it is impossible to distinguish who has made which suggestion, that the result of their activity is one work and with this qualification goes collective liability. This is argued by Van den Berg (Van den Berg, 2007, p. 330). But is this situation the situation of the BIM designers? Van den Berg did not take into consideration one of the typical features of working with BIM: the additions made to the model, the changes and corrections etc. are exactly traceable. So an essential part of his reasoning leading to collective liability seems to be not applicable in the BIM situation. But that is not quite correct: because in a BIM model we know exactly who added something to the model, but we do not know whose idea this was. So the argument for collective liability still stands. But is this liability to be preferred? And what about the division of the liability between the parties of the team?

My suggestion would be the following: in the relationship BIM team and employer collective liability is indeed to be preferred. In the relationship between the members of the team the liability should ideally be allocated according to the Dutch general conditions for the building team.

I would therefore like to argue as follows by starting from the viewpoint: what fits with the idea of working in BIM. To use BIM optimally cooperation between all workers in the BIM team is to be stimulated to the utmost. Allocation of liability to the person to whom a mistake can be traced will per definition lead to discussions between the team members being held liable and the employer that party A who was held liable is not liable but that party B was liable or that party C should have warned against the mistake, so he is liable as well, which party C will of course deny. This kind of arguments are not attractive for the employer. BIM is supposed to make his life easier, by using a technique that is superior to the present techniques, but faced with this allocation of risks, the employer might want to stick to other techniques. So the allocation of the risk must be attractive to the employer and not be more of a burden than necessary. This brings me to the idea of collective liability as suggested by Van den Berg for the integrated building team, because this fits with the nature of the way one works in BIM, or should work in BIM: as a real team.

Being liable to the employer collectively does not mean however that at the end of the day all members have to bear a part of the financial burden of a mistake of one of them. It only means that the employer can choose any one from the team members for the total amount of the damages. But after having paid these damages, the paying member of the team turns around and asks the other members to contribute. How much each member has to contribute, is dependent upon the agreement the team made: possibly only the member who is responsible for the mistake has to pay for the mistake (perhaps together with the member of the team who should have warned against this mistake); possibly all members bear the costs of the mistake in equal amounts or in an amount in accordance with their share of the work in the team. This is an issue the parties of the BIM team have to decide upon in advance.

My suggestion concerning the division of the obligation to contribute at the end of the day (so among the members of the team) would be to follow the allocation of liability according to the Dutch general conditions for the building team: liability should be borne by the party in whose specific field of professional expertise the suggestion lies and who has accepted that idea. This way we stimulate legally what might be a very good side effect of the BIM way of working: to stimulate all parties of the team to come with creative ideas from; but because not every idea is per se a good idea the party most suited to do so, should be obliged to check this

idea and 'put his money where his mouth is' by accepting legal responsibility for it. This way we combine creativity with guarding the soundness of ideas. Thus the contractor suggests something in the field of the construction engineer; the consulting engineer looks at the idea and accepts it as a sound idea and adds it to 'his part' of the BIM model assuming that the members of the team have designated who takes care of what and who is authorised to add what to the model. This is something parties working in the BIM have to agree upon explicitly and clearly in advance as well. Assuming that the consulting engineer is the only one who can add the idea (because it is in his field and that is the way parties agreed upon in advance), we can assume that the act of adding the idea to the BIM model is proof of his accepting the liability for the idea. BIM makes problems of proof less of a problem. There is hardly any case law on building teams notwithstanding its broad use in the Netherlands. The problem of proving that a party made an idea his own in the building team has never been in a problem in case law as far as I know. All in all the questions on liability in the BIM team are not leading us to a very different approach in comparison to existing ways of working. This conclusion is somewhat similar to what is to be read in Consensusdocs 301, Building Information Modeling (BIM) Protocol Addendum ,1.1. General Principles: 'This Protocol Addendum does not effectuate or require a restructuring of contractual relationships or shifting of risks between nor among the Project Participants other than as specifically required per the Protocol Addendum and its Attachments.' We can use existing examples and apply them to working in BIM.

In conclusion it might be hoped due to the fact that mistakes become visible in an earlier and virtual phase, that damages will decrease.

What does the owner get?

Another question to be answered regarding working with BIM is: what rights does the employer get when the model is handed over to him? The owner wants at least the right to realise the design like with any other design he contracted for. But does he also get the right to alter the design? And if he has that right: does that mean he is entitled to work in the BIM model to design the alterations before executing them or does he have to ask the original designers to change the model such that execution can take place safely? In a recent discussion I heard someone draw the comparison between the rights of the builder of a website and the rights of the employer for whose organisation the website was built. It is possible to make the website in such a way that the employer can change anything, but it is also possible to limit the rights to do so and make the owner only licensed to a 'limited use of the website'. These are also issues that need a legal strategy before rights are turned over.

Organisation of the BIM team

In the Dutch general conditions for both the relationship employer and contractor and the relationship employer and designer the question of coordination in case the contractor or the designer is faced with other parties working at the same project is dealt with. In the first relationship the obligation to coordinate the works lies with the supervisor on the side of the employer (clause 31 Uniform Administrative Conditions). In the relationship employer and designer the general conditions (The New Rules 2005, clause 6.2)) the employer is obliged to point out a party who will be responsible for 'the tuning in of the activities of the different consultants and which participant is responsible for steering the process of the activities of the different consultants'.

If an employer wants a design to be made in a BIM team which forms, he will be obliged to take care the leadership of this team or the coordination in this team is properly organised. Failing to do so will give the members of the team claims for loss of time and or claims for damages. Basically the situation in a BIM team is not different from the situation in which in the traditional models parties have to work together. In the Dutch general conditions for the building team it is the employer as well who has to deal with the coordination of the team. Of course he can delegate this task to another member of the team, or he can let the work be done by a third party. Obviously that last choice will not change the liability of the employer to the members of the team.

ASPECTS OF PROCUREMENT LAW

One of the issues raised in the Netherlands is if procuring agencies can demand the use of BIM technology by tenderers knowing that this technology is not widespread yet and actually only used by a very few tenderers. Would this not favour these companies in a way unacceptable from the viewpoint of equality and guarding against favouritism?

I would like to argue as follows. In the Consideration on Directive 2004/18 one can read:

‘(29) The technical specifications drawn up by public purchasers need to allow public procurement to be opened up to competition. To this end, it must be possible to submit tenders which reflect the diversity of technical solutions. Accordingly, it must be possible to draw up the technical specifications in terms of functional performance and requirements, and, where reference is made to the European standard or, in the absence thereof, to the national standard, tenders based on equivalent arrangements must be considered by contracting authorities. To demonstrate equivalence, tenderers should be permitted to use any form of evidence. Contracting authorities must be able to provide a reason for any decision that equivalence does not exist in a given case. Contracting authorities that wish to define environmental requirements for the technical specifications of a given contract may lay down the environmental characteristics, such as a given production method, and/or specific environmental effects of product groups or services. They can use, but are not obliged to use appropriate specifications that are defined in eco-labels, such as the European Eco-label, (multi-)national eco-labels or any other eco-label providing the requirements for the label are drawn up and adopted on the basis of scientific information using a procedure in which stakeholders, such as government bodies, consumers, manufacturers, distributors and environmental organisations can participate, and providing the label is accessible and available to all interested parties. Contracting authorities should, whenever possible, lay down technical specifications so as to take into account accessibility criteria for people with disabilities or design for all users. The technical specifications should be clearly indicated, so that all tenderers know what the requirements established by the contracting authority cover.’

In the Annex VI, belonging to this Directive the definition of certain technical specifications is described as:

‘For the purposes of this Directive:

1. (a) "technical specification", in the case of public works contracts, means the totality of the technical prescriptions contained in particular in the tender documents, defining the characteristics required of a material, product or supply, which permits a material, a product or a supply to be described in a manner such that it fulfils the use for which it is intended by the contracting authority. These characteristics shall include levels of environmental

performance, design for all requirements (including accessibility for disabled persons) and conformity assessment, performance, safety or dimensions, including the procedures concerning quality assurance, terminology, symbols, testing and test methods, packaging, marking and labelling and production processes and methods. They shall also include rules relating to design and costing, the test, inspection and acceptance conditions for works and methods or techniques of construction and all other technical conditions which the contracting authority is in a position to prescribe, under general or specific regulations, in relation to the finished works and to the materials or parts which they involve;

(b) "technical specification", in the case of public supply or service contracts, means a specification in a document defining the required characteristics of a product or a service, such as quality levels, environmental performance levels, design for all requirements (including accessibility for disabled persons) and conformity assessment, performance, use of the product, safety or dimensions, including requirements relevant to the product as regards the name under which the product is sold, terminology, symbols, testing and test methods, packaging, marking and labelling, user instructions, production processes and methods and conformity assessment procedures;’.

From these citations one can conclude that specifications not only are important for the result of the activities of the tenderer but possibly also for the way this result is reached, in our case while working with BIM. If the contracting agency wants the tenderers to work with BIM the agency must be prepared to answer the question calling into doubt that an equivalent of this way of working does not exist. If it can answer this question proving that that this way of working is new and unique and no other way of working can reach an equivalent than the law of procurement does not seem to be an obstacle for requiring the tenderers to work with BIM.

For Holland the relevant legislation, article 23.2 BAO forbids the contracting agency to use unjustified obstacles. Meaning: obstacles as such are not forbidden, which makes sense, because the superior capacity of one party over another in for example technical ability will always be an obstacle for the other party, and it is not forbidden to prefer the tenderer with the highest level of ability as long as assuming the criteria are proportionate and aimed at favouring one particular party (the text of this article in Dutch: De technische specificaties bieden de inschrijvers gelijke toegang en leiden niet tot ongerechtvaardigde belemmeringen in de mededinging voor de openstelling van overheidsopdrachten). Important are also clauses 23.11 en 23.12 BAO (the text in Dutch: BAO art. 23.11. Een aanbestedende dienst maakt in de technische specificaties geen melding van een bepaald fabrikaat, een bepaalde herkomst of een bijzondere werkwijze, noch van een verwijzing naar een merk, een octrooi of een type, een bepaalde oorsprong of een bepaalde productie, waardoor bepaalde ondernemingen of bepaalde producten worden bevoordeeld of geëlimineerd, tenzij dit door het voorwerp van de overheidsopdracht gerechtvaardigd wordt. Art 23.12. Een aanbestedende dienst mag de melding of verwijzing, bedoeld in het elfde lid, opnemen in de technische specificatie wanneer: a. een voldoende nauwkeurige en begrijpelijke beschrijving van het voorwerp van de overheidsopdracht niet mogelijk is door toepassing van het derde en vijfde lid, en b. deze melding of verwijzing vergezeld gaat van de woorden «of gelijkwaardig»). These clauses forbid among other things the contracting agency to point to specific ways of working except when this is justified by the subject of the contract. Arguments to be used to show that there is a justification to demand that the work is done with BIM are that this way of working is a modern way of working which is comparable to working with a computer, so this might well be the normal way of working in the near future, that mistakes will be avoided, that it will lead to better relationships between all concerned, that the government by stimulating this use will make use of it more wide spread which is beneficial for the whole sector (including the

private market) etc. It seems to me arguments can be used very easily to justify this new and promising technique.

So in answer to the question on procurement: an optimistic viewpoint can be taken here as well: once again the law is no obstacle for the use of BIM.

CONCLUDING REMARKS

Liability, copyright and procurement law are legal issues are often called upon as standing in the way of widespread use of the BIM. I hope I have shown in this article that this is non issue. Certainly these issues have to be dealt with, and preferably in general conditions acceptable to all parties concerned. But they can easily dealt with. An example might be taken from the models used in the USA: ConsensusDOCS ,an Electronic Communications Protocol Protocol Addendum 200.2 and from the AIA: Building Information Modeling Protocol Exhibit, Document E202-2008. More information can be found by using the term IPD (integrated project delivery). It is important however to do this soon, because BIM is becoming fast the way to design.

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