Building Information Modeling (BIM) and Legal and Contractual Considerations

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Background

- **The United States**: Requirement that new buildings designed through GSA’s Public Buildings Service use BIM in the design stage effective fiscal year 2007.

- **The United Kingdom**: Requirement that all public projects adopt BIM Level 2 ("involves developing building information in a collaborative 3D environment with data attached, but created in separate discipline models") by 2016.

- **Denmark**: Requirement to use Information and Communication Technology in government projects in 2013.

- **China**: Requirement that government funded projects larger than 20,000 square meters utilize BIM both in design and construction by 2016.

- Government and industry organization initiatives in **Singapore, Finland, Australia, and Norway** to promote the use of BIM.
Problem Statement and the Purpose

• Legal and contractual issues may be acting as obstacles for BIM’s even wider adoption
  • Sun et al. (2017): One of the most frequently cited factors for limiting the application of BIM is the legal factors
  • Jin et al. (2017) identified “More use of contract language to support BIM and BIM-based collaboration” as the third most important factor (of fifteen) to enhance BIM applications

• Provide an overview of the legal and contractual issues associated with BIM
  • Silo (or Lonely) BIM vs. Collaborative (or Social) BIM
Roots of BIM’s Legal and Contractual Issues

1) BIM: A new work process and thus new risks

2) Current Laws $\rightarrow$ Individualistic HOWEVER BIM $\rightarrow$ Collectivistic
   - Legal systems define individual rights and responsibilities
   - Lack of laws to accommodate the collaboration needed in BIM
   - Could the lack of specific laws for a collaborative environment lead to exploitation by some parties?
3) Current standard contracts **allocate responsibilities and risks** among contracting parties for **design** and **construction**
   • BIM changes the relationships between parties and results in the **blending/blurring** of their roles and responsibilities

4) **Lack of precedents (case law)** → **Uncertainty**
Issues

• Ownership and Intellectual Property Issues
• Is the model a part of Contract Documents?
• Liability and Allocation of Risks
  • Insurance
  • Compensation
  • Standard of Care
• Reliance

Ownership and Intellectual Property Issues

• Traditional **copyright law** grants ownership to the **creator of the information**

• Complex issue in BIM:
  • A typical final model will have information contributed by **multiple parties** based on each other’s information
    • Layers of **Intellectual Property**
    • Who owns what?

• Owners want to treat the model as a deliverable to use it for **facilities management and renovation**
Ownership and Intellectual Property Issues

• Based on a recent study reporting on more than 200 projects using BIM (Pandey et al. 2016), the ownership distribution for the model is:
  • Owner 42 %, Architect 37%, Contractor 5 %, joint ownership 11%

• According to Chong et al. (2017), the statement that: “the owner of the model or the client can use, access, and reproduce the model if permission has been sought from the copyright owner” was one of the legal aspects highly agreed on by the survey respondents

• Findings from the interviews in a study done in New Zealand (Ryan et al. 2013):
  • Rigidly guarding IP and copyright somewhat conflicts with the ideals of BIM
  • “Construction creates unique products, they’re individual, and every project is different. So it’s ridiculous consultants trying to protect their IP”
Is the model a part of Contract Documents?

• Is the model a part of the ‘contract’ or is it a tool and deliverable required by the contract?

• Is the model for visualizing the design provided in the actual contract documents?

• Is the electronic format admissible as a valid construction contract document?
Is the model a part of Contract Documents?

• According to the Chong et al. (2017) study, the statement that BIM’s “digital data/information should be treated as a part of the contract documents” was one of the legal aspects highly agreed on by the survey respondents.

• According to the Pandey et al. (2016) study, in:
  • 47% of the projects, contracts included the model
  • 42% of the projects, contracts did not include the model
  • 11% of the projects, respondents were not sure
Liability and Allocation of Risks

• Increased **collaboration** among the team members → Traditional **apportioning of liabilities**?

• Contractor assuming design liability?

• Pinpointing **fault**?
  • With **inputs from multiple parties**, can the source of information or **error** be clearly attributed to a specific entity?
Liability and Allocation of Risks

• Laws require that each project design be under the responsible charge of a licensed design professionals to protect public health, safety, and welfare

• Shared Professional Design Responsibility?
  • Can the licensed design professionals be in charge when many unlicensed participants such as contractors, fabricators, and manufacturers may have access and provide input to a model?
• According to the Pandey et al. (2016) study:
  • **Majority** of the contracts was **not clear** about the **design responsibility** and **risk allocation**

• According to the Chong et al. (2017) study, the statement that “**Data providers (designers or contractors) should be responsible and liable for the inserted data in the model**” was one of the legal aspects **highly agreed on** by the survey respondents
Insurance

• Insurance → Clear separation of responsibility

• **Traditional insurance products** used for construction may **not work**
  • Uninsurable professional liability risk
  • Uninsurable general liability risk

• Increase or decrease in **premiums**?
  • A study by Nulton (2013) identified that insurance underwriters are **not** willing to provide **lower rates to companies for using BIM**
  • Small design errors having **significant consequences** if all parties are relying on a shared data set to also contribute to the model

• **Contractor Professional Liability** insurance? General **data loss, theft, or corruption insurance**?
Insurance

• According to the Pandey et al. (2016) study, of the projects:
  • 42% did not have additional nonstandard insurance provisions
  • 11% had additional provisions for insurance to cover the liability for modeling errors

• According to the Chong et al. (2017) study, the statement that: “Additional insurance coverages are required to insure all risks and liabilities involved in BIM models, software, and hardware” was undecided
Compensation

• The **traditional way of compensating** designers lacks financial incentives for them to implement BIM

• New scales of fees commensurate with BIM design responsibilities not yet in place

• Potentially **more risk with no reward**

• According to the Chong et al. (2017) study, the statement that: “**BIM’s cost should be charged according to a fixed percentage of the overall project cost**” was one of the legal aspects agreed on by the survey respondents
BIM in Contracts

• United States
  • **ConsensusDOCS 301 BIM Addendum** (2008 and revised in 2016)
    • Addendum that can be attached to regular two party contracts such as Owner-General Contractor, Owner-Designer, and General Contractor-Subcontractor agreements.

  • **AIA E203 BIM and Digital Data Exhibit** (2013)
    • To be incorporated into the agreement between the parties
    • Used in conjunction with AIA G201 Project Digital Data Protocol Form and AIA G202 Project BIM Protocol Form

• Canada
  • **IBC100-2014 BIM Contract Appendix** (2014)
    • Appendix to other prime contracts, to define and stipulate the roles and responsibilities of the parties in the use of BIM for their project.
    • Used in conjunction with IBC 201-2014 LOD, Authorized Uses and Model Element Table
BIM in Contracts

- United Kingdom
  - **CIC BIM Protocol** (2013 and revised in 2018)
    - To be incorporated into the contract between the parties
    - Supports BIM working at Level 2
    - Amendments and guidance on incorporating BIM into the contract
    - Provision is made for inclusion of a BIM Protocol

  - No BIM-specific terms but an “Advisory Note” for BIM
BIM in Contracts

• BIM Protocols (Addenda) vs. adding BIM-related provisions to existing standard forms of contracts vs. brand new contracts with BIM provisions

• According to Chong et al. (2017):
  • Lack of awareness of the BIM protocols
  • The use of the standardized BIM protocols remains low

• According to the Chong et al. (2017) study the statement
  • “Specific BIM standard form of contract is required to cover all scopes and project requirements” was the most agreed on legal aspect
  • “Addendum is sufficient to cover BIM’s scopes and requirements” was disagreed
Another Perspective

• BIM can actually have a **positive effect on claims and disputes**
  • Charehzehi et al. (2017): BIM can be used in **construction conflict management to prevent the disputes**

• Sun et al. (2017): **Reduction in RFIs and change orders** resulting in up to **40% elimination of unbudgeted change**

• Fanning et al. (2015): **Reduction in number of RFIs (ranging from 12%-87%)** and **reduction in change orders (ranging from 22%-89%)** when BIM was used for a bridge project

• In a recent survey (Winfield and Rock 2018), only **15% of the respondents** stated that they have been involved in a dispute involving BIM
Another Perspective

• Only two known lawsuits involving BIM to date:

• 2011, in the United States for a building on a university campus
  • The contractor sued the Owner, the Owner sued the Architect and the Architect’s insurer sued the MEP Engineer
  • Settled out of court

• 2017, in the United Kingdom, Mid Atlantic Power project in the Falkland Islands
  • Design consultant (appointed as the BIM coordinator) withdrew the engineer’s access to the model due to payment disputes
  • The judgment required that the engineer be granted access
Conclusions

• BIM will likely not reach its full potential without **changing existing legal and contractual frameworks**
  • The case study interviews in Ussing et al. (2016) show that when the **legal uncertainty** revolving around BIM gets too much, the parties **go back to traditional methods**

• Efforts by **governments and industry organizations** can promote laws and contract systems which fit BIM better
  • The **combined efforts of the government and the industry in the United Kingdom** for BIM implementation is promoting more **collaborative behaviors** (Winfield and Rock 2018)
• From a pure contractual point of view, multi-party contracts such as IPD and alliance contracting may align better with BIM.
• According to the Chong et al. (2017) study, the statement that: “Use of collaborative project delivery approach is needed in BIM-enabled projects, such as IPD” was one of the legal aspects agreed on by the survey respondents.

• According to the Pandey et al. (2016) study:
  • 53% of the projects used “Design-Bid-Build”
  • 15% used “Design-Build”
  • 23% used “Construction Management”
Recent and Relevant Resources

- **Industry**: “…the aim of this report is to consider the present understanding of BIM legal and contractual issues among the legal community and those who instruct them.”
  - 2018 Winfield-Rock Report: Overcoming the Legal and Contractual Barriers of BIM

- **Academic**: “… results identify 21 related contract provisions that could potentially be used in BIM contracts … and develop a contractual framework”

- **Status in Turkey**: “… Identify a range of contractual and legal issues concerning the implementation of BIM in Turkey”

- **Twitter**: Bim4legal: [https://twitter.com/bim4legal?lang=en](https://twitter.com/bim4legal?lang=en)
Quotable Quotes

• “It’s all out there about BIM Level 2 but there’s no-one out there that’s actually said in a really well put together document to say that how the BIM process should be put together legally” (Winfield and Rock 2018)

• “We need to break down the divide between the BIM “tech” people and the lawyers.” (Winfield and Rock 2018)

• “The better equipped the lawyers are with some technical experience then the more effective they are going to be“ (Winfield and Rock 2018)

• “When there is good economic conditions and pressure in the industry there is not the time to spend in developing BIM expertise, when there is a depressed economy there is not the money to invest in BIM” (Hooper and Widen 2015)

• “It is no longer an advantage to know how to do BIM it is a disadvantage to not know” (Winfield and Rock 2018)