



FIDIC International Infrastructure Conference

Stephen Jenkins

Chair FIDIC Risk and Quality Committee



Strategic Partner





FIDIC International Infrastructure Conference

Sources consulted

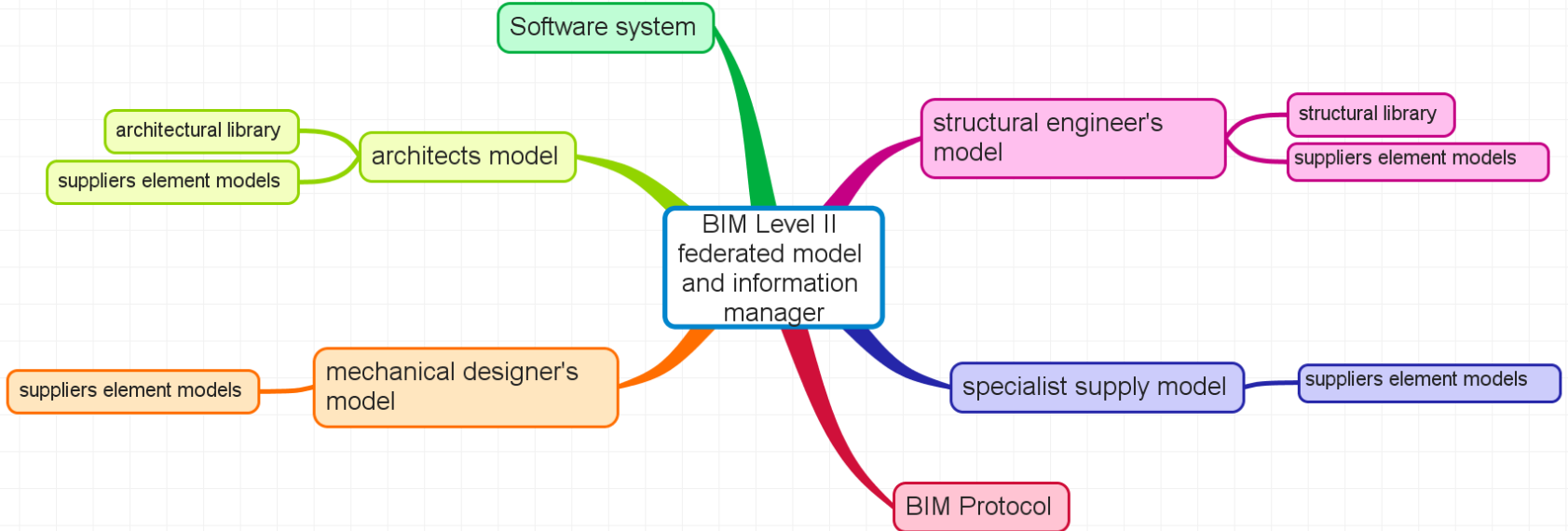
- Enabling BIM through Procurement and Contracts – A Research Report by the Centre For Construction Law And Dispute Resolution King’s College London 2016
- Building Information Modelling The Legal Frontier- Overcoming Legal and Contractual Obstacles May Winfield Society for Construction Law 2015
- PAS 1192 -2 2013
- Practical BIM Contract Requirements Steve Hutsell US Army Corps of Engineers 2014
- Claims, Disputes and Litigation Involving BIM Jason M Dougherty 2014





FIDIC International Infrastructure Conference

BIM Level II





FIDIC International Infrastructure Conference

BIM II Summary

- It can be contracted using standard forms with a commentary
- It can also can be contracted with bespoke contracts. (This is quite common)
- The procurement process may increase cost and programme from post-award negotiations to establish the system
- Requires a BIM execution plan which could become a contract milestone
- Clients can write a conventional brief and appoint a team through a bidding process





FIDIC International Infrastructure Conference

BIM II Summary

- Because liabilities are clear insurance can be obtained easily
- It allows analysis and clash detection within the 3-D model
- It provides an effective communication environment that enhances cooperation and efficient design and construction that may offset set-up delays
- It provides a positive framework for alliance style contracting and project delivery
- It provides a structure within which cross-fertilisation of ideas between engineering disciplines and between the constructors and the designers can be captured and implemented.





Cloud Storage

Risks associated with the storage include:

- Which legal jurisdiction applies to the data and who has access to it from a legal perspective.
- If an agreement is terminated (say for non-payment of licence fees) can you retrieve the data?
- What continuity plans are in place for recovering lost data and how long will it take?
- What level of resilience is provided within the service? What time of day relative to your time zone is it likely that maintenance to the cloud storage system will take place?





FIDIC International Infrastructure Conference

Dealing with hidden limitations

limitations of liability built into the software licences and which are likely to include words such as

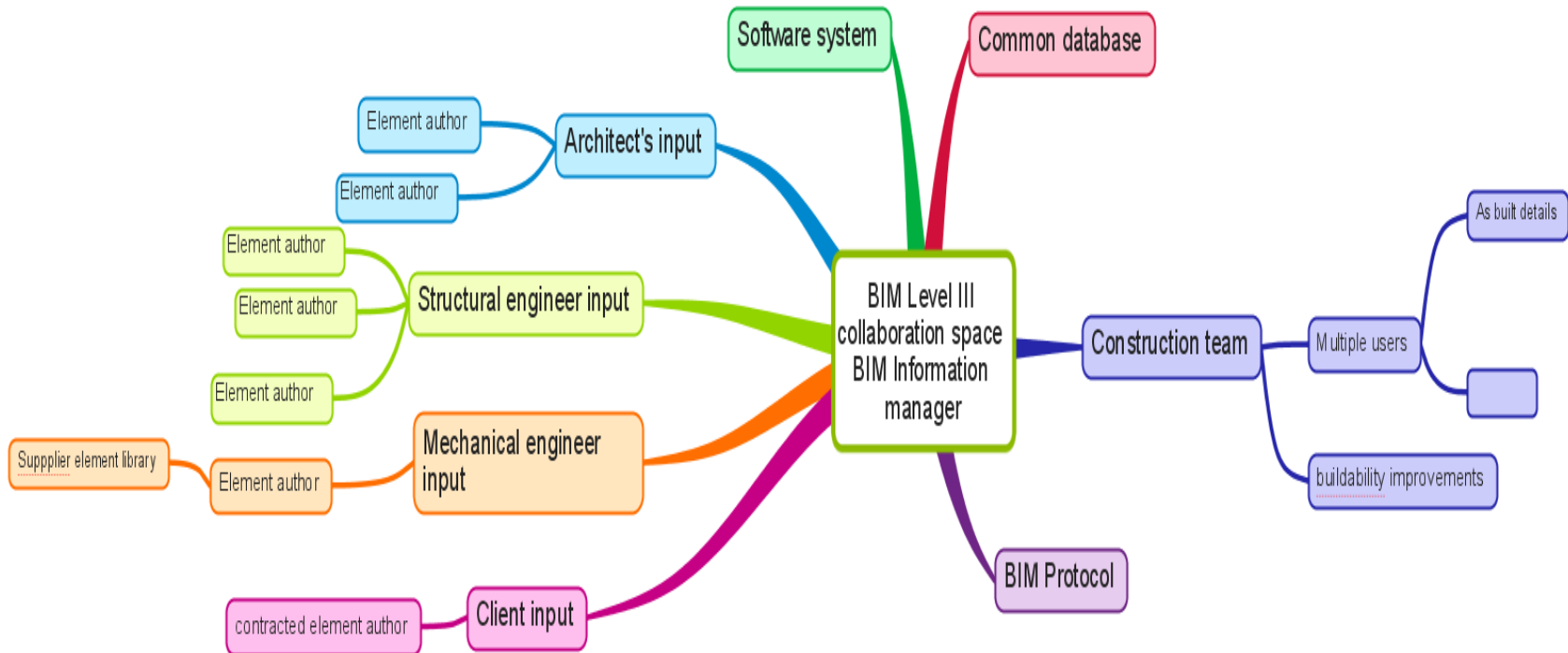
“the exclusion of any warranty that the operational output of the license materials will be uninterrupted, error-free, secure, accurate, reliable or complete”,

and will

“exclude liability for incidental, special, indirect, consequential or punitive damages, loss of profits, use, revenue or data; or for business interruption”.



BIM Level III





FIDIC International Infrastructure Conference

BIM III will need

New design approach with activity across all phases from the beginning

New procurement model

- Early appointment of key team members
- Qualification based selection
- Possible new barriers to market entry

New contract processes

- Two stage processes
- Single multi-party contracts

New insurance fully integrated insurance model





FIDIC International Infrastructure Conference

BIM III will need

Most of all BIM will need an educated industry and particularly educated clients who will need to understand that the benefits of the successful implementation of BIM three on the project will far exceed the benefits they will obtain from competitive bidding using conventional contractual arrangements.





FIDIC International Infrastructure Conference

For FIDIC and consultants

In terms of our contract suite, risk management, procurement processes, and business best practice we should be focusing firmly on BIM 3 and leaving BIM 2 to look after itself within existing processes and frameworks. What we need is a BIM compatible multiparty contract with early appointment provisions, strong emphasis on alliance and team processes and some recommendations around an appropriate procurement process.





FIDIC International Infrastructure Conference

So considering some BIM risks

- There has to be a common dimensional tolerance across all contributors. This may be too coarse for some disciplines and too fine for others.
- There must be a consistent level of detail at agreed stages of the project. Currently these level of design stages (LODs) are defined in terms of the old 2D system - sketch design, developed design, tender, construction and as-built. Will this continue to work?





FIDIC International Infrastructure Conference

So considering some BIM risks

- BIM implementation agreements and systems are often (possibly can only be) fully developed for a project once the design team is contracted so it may become an immediate cause of claims for time and scope extensions unless there is early contractor and other party involvement.
- All software systems must be interoperable, similar versions or upwards and downwards compatible. System upgrades probably need to be imposed, but who pays, and if there is a software based claim can the vendor escape by showing the latest release avoids the problem?





FIDIC International Infrastructure Conference

So considering some BIM risks

- How do you deal with an element (say an air handler unit) that has been a certain size and configuration for the first stages of the project and suddenly is reconfigured and no longer fits its spatial allocation requiring significant redesign of the services spaces? Who pays?
- What happens if construction sequencing planned during design is not followed and something does not fit? (As has happened and the drains all ended below ceiling level when installed to the design falls because they were put into the ceiling space at the wrong time.)





FIDIC International Infrastructure Conference

So considering some BIM risks

- What happens if a contractor fails and has to be replaced by a new contractor who has no knowledge of BIM, or alternatively wants the model redeveloped to suit his mode of working or software package?
- How do you handle a specialist subcontractor who must be used but has no skills or abilities in BIM (for example a specialist medical equipment supplier, a bespoke joinery manufacturer or a façade supplier)?





FIDIC International Infrastructure Conference

So considering some BIM risks

- The information manager must circulate digital data protocols for review and approval. Participants must presumably know enough to approve them. If they subsequently prove to be expensive beyond reason is there a claim?
- Does the BIM model process include rendering, animations, performance simulations, generation of virtual reality walk through, support for the QS or integrated programme data or sequencing?





FIDIC International Infrastructure Conference

So considering some BIM risks

- Who will be responsible for and pay for training: for owners, for contractors unfamiliar with the package used, for users of the digital data?
- Who is responsible for the cyber security and for the consequences of a breach for a security sensitive area, data ransom or loss of data?
- Are there areas in the federated or collaborative model that are not modelled and are these clearly identified?





FIDIC International Infrastructure Conference

Is it all bad?

We are in a situation where the technology is years ahead of our ability to manage the procurement and the contract issues that are part of this new opportunity.

We must take action as a profession and as a service delivery agent in a competitive market to make sure we meet the market needs and are not innovated out of existence.





FIDIC International Infrastructure Conference

Is it all bad?

I think we can take some comfort from the history of innovation in project management systems. When PERT was introduced as the answer to everything in the 1950's it was seen as complex, difficult and a resource consuming monster by the industry. Its successors, the humble Gantt Chart and Critical Path Programming, are well understood and widely accepted. If we work at it BIM III will end up in the same space, but we will have to work at it.

