

Chapter 24

Removing Barriers to BIM Adoption: Clients and Code Checking to Drive Changes

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ABSTRACT

Building information modelling (BIM) is not only an authoring tool for architects and engineers, but also for all stakeholders in the building programme procurement process. Analysis tools like code checking of building regulations and environmental simulations that can report on heating loads, daylighting and carbon use will push the adoption of intelligent modelling faster and further than previously thought. The benefits for clients should not be underestimated either and some are already reaping them where project certainty is to the fore. However, the professional language that architects and engineers espouse is a latent force that can run counter to fostering collaboration. An emerging professional, the Architectural Technologist, can bridge that divide and adopt the adjunct role of manager in the integrated project delivery.

1 INTRODUCTION

Building Information Modelling (BIM) has been around a number of years now but its unilateral adoption has been slow. There are a number of issues here and one is the entrenchment of the different professionals and their methodologies. While it is absolutely right for an architect to control aesthetics and space, nobody questions that it is equally

right for the engineer to control the structure and/or services. What is questionable is their mindset and language, if there is to be the real possibility of shared data, and genuine cross-discipline collaboration.

Sharing data and collaboration does not sit well with the disciplines' involved in the building industry. Cicmil and Marshall (2005) elaborate and elucidate a scenario of pseudo collaboration, where a two-stage tender is hopelessly inadequate due to

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the intransience of the quantity surveyor (QS) in their perceived role of advisor to the client. There is no mechanism in place to allow the QS to enter into a collaborative state with the main contractor and no desire to either. Cartlidge (2002) probably summed it up best with "...quantity surveyors must get inside the head of their clients".

There are many forces at work to discourage collaboration (Porter 2007) including the treat of new entrants, the buying power of both suppliers and buyers, rivalry among existing firms and the fear of substitutes. These strong entrenched attitudes (Walker 2002) in the design construction divide were addressed in the procurement of Heathrow's Terminal Five (T5), delivered on time and to budget (Haste 2002), where such an environment was nurtured and encouraged (Ferroussat 2005). It was based on the principles specified in the Constructing the Team (Latham, 1994) and Rethinking Construction (Egan, 1998). Had BAA followed a traditional approach T5 would have ended up opening 2 years late, costing 40% over budget with 6 fatalities (Riley, 2005); this was not an option for BAA (Potts 2002). Carefully defining responsibility, accountability and liability, the focus was on delivery. Remuneration was based on reimbursable costs plus profit with a reward package for successful completion. This incentive plan encouraged exceptional performance with the focus on the issues of value and time. Value performance occurred primarily in the design phases and was measured by the value of the reward fund for each Delivery Team and calculated as the sum of the relevant Delivery Team Budget less the total cost of the work of that Delivery Team.

The time reward applied only during the construction stages. Here, worthwhile reward payments were available to be earned for completing critical construction milestones early or on time. If the work is done on time, a third went to the contractor, a third went back to BAA and a third went into the project-wide pot that would only be paid at the end (Douglas, 2005). There was a no blame culture meaning that if work had to be

redone the fault was not apportioned to anybody but the rewards would either be reduced or not awarded at all. This had the effect of applying a kind of peer pressure where it was in the interest of all parties not to fail, which created a place where the vertical silos of expertise were traded for viaducts of collaborative techniques. BAA took out a single premium insurance policy for all suppliers, providing one insurance plan for the main risk. The policy covered construction and Professional Indemnity (Potts, 2002).

Sadly, while T5 was collaborative it was not a virtually modelled project and when the first satellite building was recently commissioned this method was abandoned for a traditional method of procurement. Questions must be asked as to how much sway the various disciplines and the entrenched methods had in this change of mind. Or was the management chain of command too onerous. The team structure had a hierarchy of several layers of management; the development team, the project management team, delivery teams and task teams. There was no common model to reference and the level of comfort of the construction manager may not have been too cosy. Construction managers have the lowest level of comfort, working with other professionals (under 20%), while owners, architects and engineers have nearly twice that level (Eckblad, Rubel and Bedrick, 2007), meaning that while the traditional demarcations have a good *bonhomie*, issues arise if the industry can afford this luxury anymore.

2. BACKGROUND

2.1 The Professional Architectural Technologist

Developments are underfoot to establish the technologist as a professional body with the ability to sign off work. The following is generally a synopsis and distillation of the relevant points in the new syllabi and proposals for content for

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