Computer Mediated Construction

Project Overview
by
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Project title:

"The use of mobile computing technology to enhance the construction management process"

Problem Description

* ## Gathering of project information
The gathering of information is usually a cumbersome one with those involved having to document progress of the works in paper based reports and then inputting this data into a computer programme such as Microsoft Project or Primavera for example. This process can be prone to errors or omissions which can ultimately lead to delays in the programme.

* ## Communication
Because of the complexity of most construction projects the need for good communication between all parties involved is essential. However, this communication is often lacking between designers and the actual people doing the work.

* ## Collaboration
Collaboration between the client, design team, contractor and subcontractor needs to be conducted in real time and not have to rely on requests for information, which can be a very slow process.

* ## Staff knowledge
With the constant changes in Building Regulations as well as the way buildings are constructed there is a need for staff to be adequately trained to deal with these changes. From my own experience it is clear that not only are contractors not up to speed on these changes but neither are a lot of professionals.

* ## Human factors
Probably the single biggest single issue within the AEC industry is the one of the culture that persists in term of resistance to change. The term, "haven't we always done it this way" comes to mind. Cultural change among professionals as well as contractors and trades needs to happen in order to gain the advantages that ICT can bring to the construction industry.

Objectives

- ## Consider the obstacles of implementation
  I intend to consider the obstacles to implementation of ICT into a construction company whether they are cost issues or general lack foresight on the part of the contractor.

- ## See what the technology can do
  I will look at the available technology and what it is capable of doing to enhance the construction management process.

- ## Understand the culture within the industry
  In order to address the issue of human culture within the AEC industry we must look at it from a historical as well as a modern point of view.

- ## Explore the benefits to all involved
  Explore the benefits for all involved in terms of a smoother work flow, safer working environment, reduction in waste while achieving a sustainably built environment.

- ## Can it work for small contractors?
  See if ICT can work for small contractors and sub contractors alike?

Proposed Solutions

- **Use widely available devices and technology**

There are currently various devices available such as smart phones and tablets which can aid in the sharing of information between the design team, contractor and trades. Software vendors are constantly developing applications for these devices and with the ever increasing availability of 3G and 4G connectivity, even remotely located sites can avail of the technology. With the ever advancing technology and subsequent reduction in costs of devices, even the smallest of contractors can make use of ICT to streamline their operations.

- **Make use of Cloud computing**

Design teams and contractors can make use of cloud computing for the exchange of information. For instance the BIM model would be stored on a remote server and the various parties would be able to extract the necessary information that they require at any time. For security and legal reasons, there would be a system in place whereby persons would only be granted access to the information relevant to them and no alterations to the model would be possible.

- **Train staff**

Staff training is a key issue when it comes to implementing new processes. For example if a contractor uses the same subcontractors for all his work, then it would be in his best interest to offer training in the best use of ICT required for the construction process to these subcontractors. This approach has been adopted by some contractors in the US to great effect in terms of productivity to the extent that the increase in profits more than covered the cost of the training.

- **Case studies**

Lastly I will look at some case studies that have been conducted in the area of implementation of ICT in the AEC industry.