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Abstract of Paper

It is important to make full use of information technology in the entire value chain of the construction industry. This effort needs to be properly organized and co-ordinated for all the stakeholders along the value chain.

Use of Information Technology in the Construction Industry

Overview

The construction industry is very slow in adopting the use of Information Technology (IT) in its processes. Some of the reasons are the construction industry has a long history and to a certain degree some conventional systems continue to be a legacy that is practiced. The construction industry is also a very big industry comprising a multitude of materials suppliers on one end and consultants and developers at the other end. This industry is also fragmented with different size of companies and type of operators. This applies to Singapore as well as to many other countries.

Future Trend - Increased use of Information Technology as an integrator

IT will be the key enabler for integration and innovation in the construction industry. The use of IT has become very pervasive in the other sectors in the economy, such as financial services and manufacturing. For construction, however, IT usage has been limited. There is scope to harness IT to improve the efficiency of construction. An example is the computer aided design (CAD) of projects. IT usage could be expanded to other areas such as project management where developers, designers and contractors are connected to the same network and monitor the progress of a project simultaneously.

Harnessing Information Technology

IT plays a pivotal role in raising the level of professionalism in the construction industry. The leverage on IT will also present an image of a more progressive industry. Furthermore, IT can help to integrate the various processes in the industry, thereby raising productivity and efficiency.

Currently, several architectural, engineering, construction firms and government authorities and agencies are already using IT to some extent. There are however others in the industry who have yet to embrace IT in a significant way. For example, some developers make use of IT for project management, but this often does not encompass the whole building process. Likewise, while the larger construction firms are quite advanced in IT usage, the same cannot be said for the majority of the smaller contractors. Another problem is the lack of a common platform for the IT systems used by different players. These systems are therefore unable to communicate or cannot be integrated. Thus, there is tremendous scope for improvement.

A Construction IT Committee (CITC) was set up in 1998, under the umbrella of the Singapore Productivity & Standards Board (PSB), the then Construction Industry Development Board (now Building & Construction Authority) and the then National Computer Board (NCB) to promote IT usage among the industry's professional institutions, trade associations and related government bodies. The long-term goal of the CITC is to integrate the different types of software used by industry players, and move from a two-dimensional to a three-dimensional platform. Such efforts include layering standards, file naming conventions standards, construction cost classification standards, construction electronic measurement standards, and construction resources classification standards.

The Construction and Real Estate Network (CORENET) is part of the IT 2000 master plan for leveraging IT to re-engineer and streamline the fragmented work processes in the construction industry to achieve improvements in turnaround time, quality and productivity. The CORENET is spearheaded by BCA.

The report of Construction 21 Committee (C21) supports these initiatives and recommends that BCA pushes ahead with the CORENET programmes in partnership with the CITC. Appropriate incentive schemes including capital grants for IT development, such as those available from the Industry Productivity Fund (IPF) fund, should be put in place to help the industry adopt IT.

SCAL is very much involved in the development of the C21 blue print and on-going initiatives of CITC and CORENET.

Construction and Real Estate Network (CORENET)

CORENET is a major IT initiative undertaken by the Ministry of National Development to re-engineer the business processes of the construction industry to achieve a quantum leap in turnaround time, productivity and quantity.

CORENET effort include the IT infrastructure and IT systems related to different stages of the construction processes and these are classified as follows:

a. IT Infrastructure

- Legal framework
- Secure Network
- Integrated Submission Systems
- National IT Standards
- Information Services.

b. Collaborative Design Systems

IT Systems to facilitate communication and workflow refinement among team members. An IT enhanced collaborative design environment will allow developers, consultants and key industry players in different locations to communicate and work together as though they are physically together.

c. Construction Systems

IT Systems to facilitate building processes and project management. This will help project managers, consultants and contractors to monitor and manage their projects effectively.

d. Procurement Systems

A business-to-business IT environment where developers, consultants, contractors, suppliers and key players of the construction industry can transact and procure products and services electronically. IT System will facilitate measurement, tender procurement and cost management.

e. Facilities Management Systems

IT Systems to facilitate assets management, building performance and property maintenance.

Construction IT Standards

An industry led committee was formed under the National IT Standards Committee (ITSC) to spearhead the development of the construction related IT standards. 8 major professional bodies (ACES, IES, REDAS, SCAL, SIA, SIBL, SISV & SPM) signed a MOU in September 1998 to jointly develop and adopt a set of IT Standards for the Construction Industry to enhance communication and data re-use over the entire project life-cycle. The Standards developed or at various stages of development are as follow:

- Construction computer-aided design (CAD) – Organization and naming of CAD layers
- Construction computer-aided design (CAD) – CAD Symbols
- Construction computer-aided design (CAD) – Organization and naming of CAD files
- Construction computer-aided design (CAD) – CAD Drafting conventions
- Construction computer-aided design (CAD) – Colour and linetype
- Standard for Construction Cost Information Classification System
- Construction Resources Classification Standards
- Construction Electronic Measurement Standards
- Interchange Agreement

Conclusion

The various IT initiatives for Construction Industry are progressing at a very fast pace with the assistance of the various government agencies and an on-going effort is undertaken to manage the changes. There are assistance schemes for the construction sector for players like contractor, consultant, supplier/manufacturer and developer to upgrade their operation.