

# LEGAL CHALLENGES & STRATEGIES IN E-PROCUREMENT IN CONSTRUCTION

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## SUMMARY

E-commerce is not wholly a technology phenomenon, though technology is utilized to facilitate the business processes. It changes the conventional workflow and practices. E-procurement in the Singapore construction industry is still in its infancy stage. Though Singapore construction companies should be encouraged to utilize informative technology (IT) systems, the potential legal challenges that surfaced while integrating these systems with the existing legal systems must be highlighted and understood to protect their corporate interests and assets. The perception of some Singapore construction players and application service providers (ASPs) on these issues related to lack of alignment in jurisdictions, legal liability, insecurity, confidentiality and service dependency risks were supported by the results compiled from the survey questionnaire conducted. The strategies namely legislation, self-regulation, technology and information security management to minimize the related risks and damages were recommended from a multidisciplinary approach. The mechanisms favored by the surveyors namely enactment of new law, interchange agreement, Public Key Infrastructure (PKI) and education were further discussed. By combining the strategies, the construction industry can better avoid these legal pitfalls while transforming with the advancement of technology and enjoying the benefits of adopting e-commerce.

## INTRODUCTION

There are many national research projects on Construction IT & related topics such as eLEGAL<sup>i</sup>(contracts for virtual enterprises), and COMMIT project<sup>ii</sup>(e-collaboration). CORENET<sup>iii</sup> (CONstruction and Real Estate NETwork) is a major IT initiative driven by the Building and Construction Authority of Singapore in collaboration with other public and private organizations. The increasing use of e-services has led to magnification of some already existing legal issues. This paper highlighted the potential legal issues arising from implementing e-procurement, specifically to the construction industry. It aimed to give the construction players (CPs) more confidence in conducting e-transactions by creating awareness and providing understanding of these legal challenges. In addition, strategies to mitigate and overcome these potential legal uncertainties were discussed and proposed. The terms and conditions used by some relevant application service providers (ASPs) were also examined and discussed. To make the research more meaningful and relevant with respect to the current situation, survey questionnaires conducted with CPs and ASPs were used to obtain quantifiable data.

## RESEARCH METHODOLOGY

The legal issues and strategies related to e-procurement were identified by doing a comprehensive literature review from journals, Internet and news. A combination of interviews and questionnaire were also employed in this research to obtain reliability in the database. The survey was targeted at both the relatively larger construction companies and construction-related ASPs. These independent sample groups were used so that different responses can be analyzed and interpreted. 30 and 9 responses (20% and 43% respectively of the surveys sent out) were received from the



CPs and the ASPs respectively. The ranking system ranged from 1 (most challenging) to 5 (least challenging) to gauge the significance of these legal issues.

## POTENTIAL LEGAL CHALLENGES IN E-PROCUREMENT

Legal issues relating to e-procurement in the construction industry could be categorized mainly into Global Trading, Contract Enforceability, Liability Risks, Security Breaches and Intellectual Properties Protection (IPR) (Figure 1). The list goes on but in this paper, only legal issues that were deemed to be more challenging, based on the authors' review and the responses received in the surveys and interviews were discussed. The legal challenges were lack of alignment in jurisdictions, confidentiality, legal liability, insecurity in e-transaction and service dependency risks.

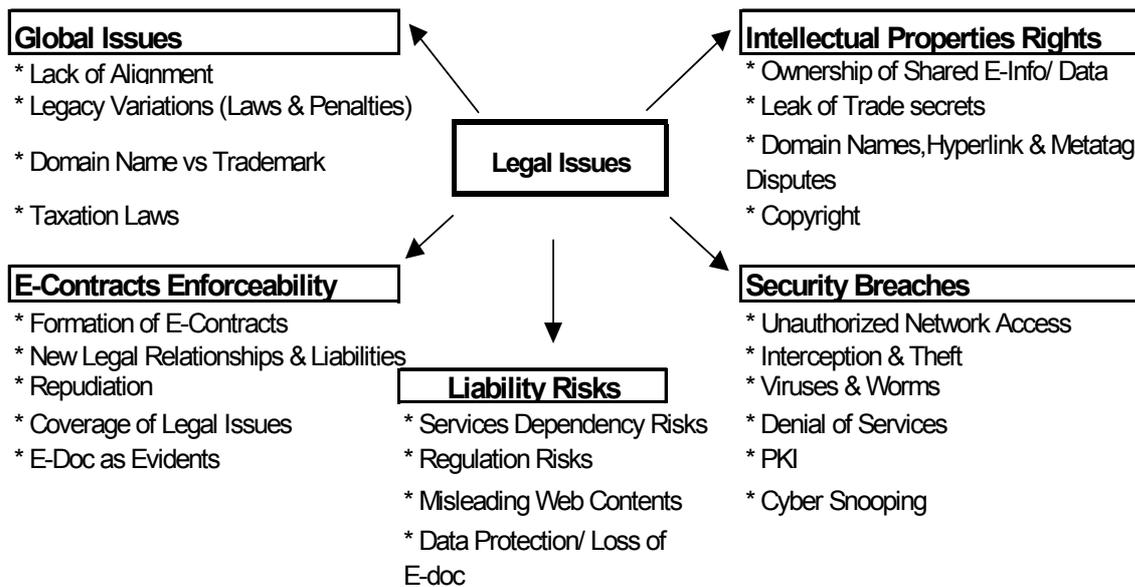


Figure 1 Potential Legal Issues of E-commerce in the Construction Industry

### Lack of Alignment in Jurisdiction

The ease of performing transactions regardless of geographical distances is enhanced with the use of e-commerce. However, one is subjected to unforeseen exposures when doing business electronically as different countries have different jurisdictions and variations in their legacy systems. Each country has taken different approaches in tackling e-commerce legal issues, and companies that are unfamiliar with foreign laws may face unexpected liabilities. Variations in the legacy systems of different countries could give different outcome in a dispute. Criminal penalties varied in different countries. Some have considered computer hacking as law breaking and offenders are fined or imprisoned while one cannot prosecute such acts. This lack of alignment in the legal system is deemed as the most pressing issues by both the surveyed sectors (mean: ASPs 2.14; CPs 2.42). The CPs also considered enforceability of contract internationally (mean 2.42) equally challenging because many of them lack experiences and understanding in carrying out overseas construction projects. Hence e-procurement has further aggravated the legal issues of transacting globally.

### Confidentiality

Confidentiality issues are magnified with the use of IT as leakage of digital information is easily done, for instance forwarding emails and copying e-documents. This may have serious impact such as mistrust and financial loss on a company. For instance, trade secret, contract negotiation and

other exchange of confidential information transmitted across the Internet are subjected to unauthorized access and disclosure, and other security issues.

Many CPs fostered the mentality that sharing information will expose them to risks. They ranked confidentiality of information as the top priority (with mean of 2.00) followed by ownership issues. This might be due to the ease of sharing and transferring data in the electronic medium. The new medium also facilitates meddling, theft or disclosure of confidentiality documents such as design drawings, bill of quantity and tender documents. On the other hand, domain names dispute was considered as having the least insignificance in the survey. This might be due to lack of precedence and hence led to the CPs lacking awareness of the issue.

## Legal Liability

Legal liability is the duty of care and responsibilities one owes to another. One may be sued or have to pay for damages if one does not perform that duty of care. In the survey conducted, the CPs were most concern over the legal relationships and liabilities issues (mean 2.21) while the ASP ranked it second (mean 2.50). The contractual terms and liabilities between parties such as the ASPs and CPs did not have any precedent. Thus the contract drawn may be biased or may have omitted certain clauses which are overlooked due to their inexperience in this new area. For instance, erroneous information provided by the ASP to a subscriber may lead to financial loss. However the former may avoid liability by using an 'exclusion clause' in the contract, stating it has no responsibility for errors or omissions. For instance, the Singapore's Housing Development Board (HDB), a service provider, protects itself by disclaiming any warranty and limiting its liabilities using the following clauses in its User Agreement:

***'HDB makes no warranty that the Services will meet the User's needs or requirements, or that the Services, software or information provided will be uninterrupted, timely, accurate, reliable, secure or error free.'***

Such one-sided clause may be unfair to the subscriber who paid the ASP for its services. However the validity of such clause varies in different countries. This poses a complex issue arising from a contract created via the Internet: Which country's legal jurisdiction should be enforced in the event of a dispute?

Another point to take note is that CPs had to protect their clients' e-documents to prevent being sued for negligence in safekeeping and maintaining the confidentiality of their clients or partners' confidential information.

## Insecurity in E-Transactions

Protecting a computer is relatively simple in the past, as one only has to prevent physical access. However, shared systems, shared network resources or web servers that are commonly used are subjected to theft, virus and worm attacks. Hence this has created difficulties in controlling access to a computer which contains confidential information and hence putting the integrity of the information at risk. These attacks can be either external (hackers) or internal (employees, partners and clients). However both the CPs and ASPs felt that unauthorized access by insiders would affect them most (mean: ASPs 2.44, CPs 2.50) among the other four security breaches. The CPs next feared the possibility of hacking (mean 2.61), whereas the ASPs were confident about their systems (mean 3.44).

However there are also cases where database of credit cards information is being hacked or unauthorized persons gained access to sensitive information from systems which proclaimed to be secure. Some Development Bank of Singapore (DBS) Internet banking customers had their account information compromised while the DBS system was secured and not hacked into. The alleged hacker may have used Trojan Horse program to transfer a few hundreds to thousands of Singapore Dollars from some customers' accounts to his.<sup>iv</sup>

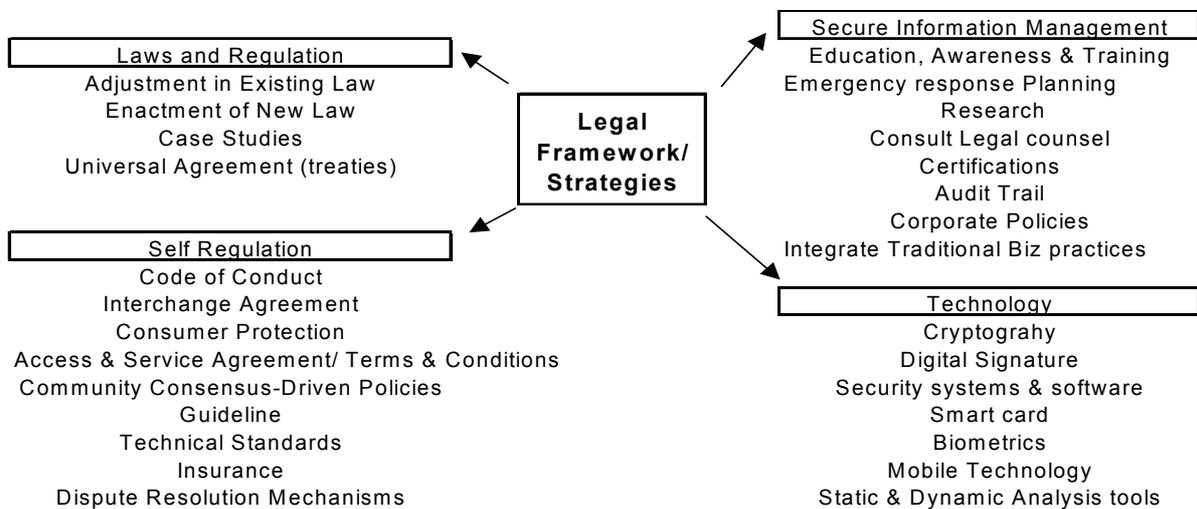
## Service Dependency Risks

The technology facilitates faceless transactions and reduces human intervention. CPs feared their clients would repudiate that their order is not authorized, or not performed by the person claimed to be (although CPs can sue them as in the conventional business transactions). There are many other circumstances arising from the new way of transacting that could expose the CPs to such risks. Hence they felt that service dependency risks were the most prominent (mean 2.71). This might be due to the CPs being not accustomed to transacting electronically as they were more comfortable with the conventional methods. Therefore they might not feel secure exchanging sensitive information online.

Different ASPs have different rules and practices in transacting. In the Terms and Conditions of HDB system for E-Bidding<sup>v</sup> stated that new bids submitted for within five minutes before the auction closing time will not be evaluated and accepted. Submitting the tender at the very last minute – a very common practice of the CPs, would not apply here.

## STRATEGIES FOR MITIGATING LEGAL UNCERTAINTIES

The legal issues related to the use of e-commerce can arise due to many factors such as uncertainties in yet to be tested legal system, immature or incompatible e-business practices, and fast advancing development of technology. Thus it is necessary for the e-commerce legal framework to cover the following aspects - legislation, self-regulation, technology, as well as security information management so as to prevent and minimize legal complexities. Figure 2 shows these four main strategies and their various mechanisms that support the legal framework for e-commerce. In this paper, four mechanisms – education, enactment of new law, interchange agreement and PKI were discussed.



**Figure 2** Strategies and their Instruments for E-Commerce Legal Framework

## Education

It is crucial for everyone involved with information to be aware of the potential legal issues. Understanding the importance of security, observing security measures and conforming to regulations are some issues to be addressed continuously in an awareness program. IT Construction Best Practice, which is a one-stop source of information and guidance on IT use for the construction industry of United Kingdom aims to raise awareness<sup>vi</sup>. Implementing policies is only winning half the battle. Employees must know and abide them. Both the ASPs and CPs regarded

education as the most effective instrument to resolve legal issues. However the former gives a very strong consensus of 1.00 for many found that the CPs lack such knowledge.

## **New Legislation**

Laws and regulations can act as deterrence to cyber crimes. Failure for law to keep up with technology could encourage Internet misuse. This may lead to a country, for example Indonesia, to be exploited as a useful base to run operations deemed illegal elsewhere<sup>vii</sup>. The alleged attackers would not be able to prosecuted Forming new laws for e-commerce activities was indicated as the best instrument for legislation by both sectors (mean CPs 2.07 ASPs 1.83).

## **Interchange Agreement**

Singapore construction industry has developed a legal framework and an Interchange Agreement (IA) to provide specific details on legal relationships of e-commerce users. IA specifies and defines the standards of discipline, rights and obligations of the parties involved in e-business, which are lacking in the generalized legal system of Singapore. Parties involved in a dispute over the enforceability of a contract can rely on the specific terms stated in the contract. The CPs highly regarded interchange agreement as the most effective (mean 2.71) instrument for self-regulation to resolve e-commerce legal issues. The ASPs also felt it importance by ranking it second (mean 2.67) after code of conduct (mean 1.80).

## **Public Key Infrastructure (PKI)**

PKI is a mature and ready solution that addresses all four key elements of security - authentication, non-repudiation, confidentiality and integrity. The ASPs felt that PKI was the strongest mechanisms (mean 2.00) while the CPs ranked it second, after security system (mean 2.18). The highly potential biometrics is not considered effective due to lacking of understanding. Also the inconvenience and the higher cost of installing a finger or iris reader to a computer might be the hampering factor.

## **Combination of Mechanisms**

Although none of these mechanisms is foolproof, they should be combined to give more effective solutions to reduce the legal uncertainties. The CPs should also stay attune to any new e-commerce related legislation, or self-regulation mechanisms such as Code of Conducts and Interchange Agreement. In addition, they should educate their employees, modify existing corporate policies, formulate new strategies, adopt updated security systems and software such as PKI, and incorporate security information management in their business cycle and goals. Communicating and enforcing these policies by all workers, especially the higher level management team, will further increase the effectiveness of these security measures.

## **CONCLUDING REMARKS**

Not only e-procurement acts as a new channel of interacting and communicating among the construction players but also changes the way an organization works and practices. Most of the potential legal issues namely liability risks, contract enforceability, security, global trading and IPR, arising from e-procurement are not new, rather these challenges are magnified when compared to performing these tasks via the traditional modes. However with proper training and strategic use of the technology, e-procedures can maintain higher security than conventional ones. It requires the users to overcome their human psychological barriers of staying in their comfort zone, and change their existing work practices.

To embrace the technology, the construction players should be aware of and understand the legal issues arising from implementing e-procurement. To tackle these legal issues more effectively, the various strategies – legislation, self-regulation, technology and information security management should be combined. Each strategy has its pros and cons; therefore organization has to analyze

and work out the most suitable and effective instruments to resolve these legal issues. E-procurement users should plan and strategize such that e-procurement can integrate smoothly in their work practices, culture, as well as that of their working partners. The construction domain must change its environment to suit and thrive in the new era without encountering these legal pitfalls.

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