Abstract—This paper illustrates the scenario of ICT application in land administration in Malaysia in support for effective and efficient administrative processes and development of land in the country. Land administration system, being heavily regulated through the provision of law, is seen as complicated and requires thorough analysis from both the ICT and legal perspectives, if the government were to move towards effective e-government services. A research is, therefore, proposed to investigate the legal provisions and the existing ICT applications in land administration nationwide in order to provide solutions for the government to be better prepared for the future integrated electronic environment.

Keywords- Electronic Land Administration System, Land administration, electronic land tenure, E-government

I. INTRODUCTION

Land is a fundamental resource for human activities such as agricultural production that is directly linked to food security and livelihood of many people, manufacturing, shelter and commercial activities. Land is also a primary source of security or collateral for securing credit from banking and financial institutions and other informal loan providers. Security of tenure provides a foundation for economic development of a nation as security is an important aspect for investors. Land taxes are a significant source of state government revenue. Much effort has been devoted worldwide to developing systems to administer land rights through effective land administration systems and effective application of information and communication technology (ICT) (Palmer & McLaughlin, 1997; Steudler & Williamson, 2001; Williamson & Ting, 2001, Bennet et.al., 2008).

An efficient land administration system ought to include processes to manage public land, record and register private interests in land, assess land value and determine tax, define land use, and support the process of development application and approval. Numerous projects to improve land administration systems have been undertaken over the past half century or so, primarily to provide formal recognition of rights in land and to facilitate the trading of these rights (FIG, 1999). It is important for a nation to constantly strive towards improving and strengthening land administration systems through good policies, legal, institutional frameworks and electronic applications using ICT (Williamson & Ting, 2001). All these are done with an attempt to develop a more efficient and effective land administration services to meet the changing needs of the national and global environment. In Malaysia, several attempts were made to apply the technology such as Computerized Land Registration System (SPTB), Computerized Land Revenue System (SHTB), e-Tanah System which originally known as Land Office Modernization System (SPPT), e-Consent, etc.

This paper discusses the issues and problems within the existing ICT applications and legislative framework in land administration system in Malaysia, which needs to be reformed and improved to accommodate the highly challenging need of the information and communication technology environment. Such discussions take into consideration of the need for improvement in the near future through the possible revision of the existing systems such as e-
Tanah and SPTB, legal framework and work processes, and the understanding of the current issues and problems concerning the information technology application through a system legally called Electronic Land Administration System (ELAS). This paper also discusses a proposed study that seeks to address some of the issues and problems identified. The study will involve the review of the existing structure of land administration system in all states in Malaysia, involving both state and district levels.

II. PROBLEM AND OBJECTIVES

The research is proposed based on the following gaps:

- The need arises for greater efficiencies in legal transactions, reduction in legal costs; desire to maintain security of title and prevention of fraud.
- Although the opportunity for improvement in effectiveness and efficiencies through the use of ICT was recognised by the Federal government, the move to electronic administration system has been quite slow, with lack of support financially and legally, and lack of land information infrastructures that supports data, standards and access.
- Land administration at all levels (i.e. federal, state or district levels), are found to be inconsistent and disparities always exist on how the core land administration functions (i.e. land tenure, land development, land use, land valuation) that lead to data replications, discontinuity, and delays.
- Besides issues relating to insufficiency of resources, such as trained manpower, poor financial support, lack of good management, and insufficient security systems and measures, incompatible legal framework has been one of the significant factors that contributed to the successful implementation of a fully integrated electronic land administration system.
- According to Bennet et.al. (2005), “While much has been achieved, the vision of complete integration is still largely unrealized: the vast improvements in data, standards and access regimes that comprise land information infrastructures have not produced substantial integration between Land Administration functions. Furthermore, disparities between the four core land administration functions and their information is only one part of a much bigger integration problem. Administering the large amounts of new land related legislation and information that has emerged over the last 50 years is a much greater challenge.”

The objectives of the proposed research are developed based on the following guiding principles for land administration system:

- Efficient delivery of land registry / office services: to improve and expedite the processing of land administration services.
- Simpler and user friendly administration system: To improve the existing system to make it simple and user friendly for public
- Use of latest Technology: To reform the existing legal and administrative frameworks to suit the latest technological requirements
- Reliable and secure system: To create a reliable, accurate, secured and transparent system to assure accountability, integrity, to boost confidence of investors on the land administration system.
- Cost Effective system: not to burden the user or customers seeking to deal with land unnecessarily.
- Flexible and Adaptable: able to evolve to meet the changing circumstances and time

Thus the objectives and scope of the proposed research have been derived as follows:

a. To investigate the practicality of the existing forms prescribed in the NLC 1965 to be used for land administration, registration of land titles, dealings, entry of non-dealings within the electronic environment.

b. To Identify problems caused by technical issues such as single land title, one day delivery of title, automatic renewal of leasehold and alienation by special circumstances, and suggest ways of overcoming the problems

c. To identify issues relating to current application of electronic land administration system in areas such as security, effectiveness, efficiency, data and information quality, and service quality delivery, and propose an integrated conceptual and operational framework with combination of legal, procedures in land administrations and ICT application components
d. To developed benchmarking and best practices based on experiences of different states and districts in Malaysia.

III. BACKGROUND

The milestones achieved by the Malaysian land administration system are regarded as commendable. However, globalization, technological development and the proliferation of the Internet have caught many land administrators off guard. The Internet technology offers new ways of conducting commercial transactions. Changes in the way commerce is undertaken nationally and internationally, has placed greater reliance on the technology and increased the use of the Internet as an interactive medium for more effective and efficient services. Economic growth and development in per capita income, globalization property market and rapid development in the information communication technology (ICT) sectors are among the major impetus for changes to land administration law and procedures. In this regard, computerization of land administration systems in Malaysia has become inevitable. Although the opportunity for improvement in effectiveness and efficiencies through the use of ICT was recognized quite early, such movement into ICT environment was considered non adaptive to the legislative provision of work processes in land administration.

The nature of the Internet as a global medium of communication through networks of computers, on the other hand, has also created issues in land administration such as security and protection of ownership rights, if the electronic land administration system is to be fully in place. Therefore, the push for greater effectiveness and efficiencies in legal transactions, a reduction in legal costs and a desire to maintain security of title and prevent fraud has called for the adoption of a good electronic land administration and information system applications.

In Malaysia, the need has been identified for the reform and review of policies and regulation in support for various e-government projects (Wong, 2004; Ahmad, 2007). In matters pertaining to land administration and its computerization, the National Land Code 1965 (Act 56 of 1965), as well as land administration system has undergone continuous reform in order to better accommodate the Internet enabled e-government environment. To date, there have been 40 reforms being made to the NLC 1965 to accommodate the current needs in land administration. However, most of the reforms only took place to accommodate the current issues and problems within land administration system. Such reform, however, seem to overlook the future needs in the application of the technology and future land administration system (Bennet et.al., 2005; 2008). This is reflected through changes made in the Fourteenth Schedule (Computerized Land Registration System) and the Sixteenth Schedule (Electronic Land Administration System) respectively to accommodate current computerization process in the land administration.

The scenario of ICT application in land administration is considered partial due to the coexistence of both manual as well as electronic applications. The ICT solutions have been introduced in “piece meal”, in an attempt to basically support the daily operation of the land offices. These have, however, also resulted in the “piece meal” amendment of legislative provisions to accommodate changes in the administrative processes from manual to electronic environment, or a combination of both. Such “piece meal” solution may also impede the successful integration of all processes in land administration, and efforts to improve the system in the future for a fully secured and integrated electronic land administration system.

The vision of the government of Malaysia has been to move towards effective and efficient application of ICT through integrated and interoperable information infrastructure. In moving into such direction, a series of investigation are needed in understanding the core issues and problems within the existing land legislative provisions, administrative processes and governance, and ICT applications; and in identifying ways of overcoming such problems. Hence, the first phase of this research has as its main objective, to identify the changes necessary (within the specified scopes) to facilitate the smooth move from manual based land administration to fully integrated and interoperable electronic land administration system, with improved and enhanced service delivery.

IV. METHODOLOGY

The proposed research is conducted using the mixed method case study approach using multiple data collection techniques in achieving the research objectives. Data collections include, the review of all relevant documents to establish preliminary understanding of the current scenario of legal provisions, administrative processes and flow, and
ICT applications at the conceptual level; observations through field visits at several selected states and districts’ land offices, and interviews and focus groups with all land administrators (executive levels) at the land offices visited.

The first stage of the investigation involves the analysis of literature to establish a preliminary conceptual understanding of the issues and problems in land administration and the application of electronic land administration system. Such understanding is demonstrated through the report provided in the next section.

In the next stage, preliminary field visits was conducted. In Malaysia, land administration is distributed through several levels. These levels are divided into federal level, which is located at the Putrajaya office, the state level, with office located at the state capital, and district level, where boundary are established by the State. In this second stage of the research, three states were selected, with visits made to the state land offices in Penang, Perak, and Kelantan, and each district land office from each state visited.

Based on these visits, data were gathered using all the techniques described earlier, with some preliminary reports and analyses provided in the next section.

V. FINDINGS

Analysis of available literature and documents has lead to findings that explains the scenario of ICT applications in land administration. The scenario of the application can be established through first, e-government flagships and followed by independent "piece-meal" applications within the land administration functions and offices such as the computerized land registration system (SPTB) and the computerized land revenue system (SHTB).

Malaysia e-Government Flagship

Since early 70s the use of computerized information systems has been recognized to provide effective and efficient land Information system to assist in planning and development of land resources in Malaysia. The government had come up with visions and plans in this direction through a framework called NaLIS in the late nineties (Nik Yusof, 1997) and e-Government projects in the early 21st century. Evolution of land administrations system from the ICT perspective can be observed through Figure 1. The evolution of the framework was adapted from Williamsons (2005) to provide the vision for land administration system environment in the future for Malaysia. Based on the figure, the anticipation for changes in land administration system is anticipated to be highly interoperable and spatially enabled between the government, private sectors, and the public.

In the current scenario, as observed and established through the site visits, the land administration system needs careful planning to ensure effective interoperability through integration of all core land administrative functions. While the e-government vision of a fully integrated information system for land administration initiated through the e-Tanah project, such successful integration need efficient integration of IT infrastructure and human manpower perspectives. More analysis on the system is provided provided in the e-Tanah section below.

Computerised Land Registration System (CLRS)and other Independent systems

The Computerized Land Registration System (CLRS or SPTB) was introduced in early 1995, in stages, to land offices at all states and districts in Malaysia. The system was developed by the Department Director General of Land and Mines (DGLM) in a mission to automate the procedures of land registration systems in order to benefit from both manual and computerized work processes. The objective of the system was to provide a cost effective and secure land registration system through the computerization of procedures and dealings within the scope of land registration functions. Several versions of the system was updated with the current version is SPTB version 3. Improvement to the systems was continuously done to enhance the security features, which, at the early stage was highly vulnerable to frauds. Using Oracle as a platform, the system provides eight service areas or modules to the users. Such modules are registration (dealing or non-dealing), title registration, search, registration notes, application, payment, and utility features.

CLRS (SPTB) was introduced as an effort by the DGLM to automate the registration functions of the administration. In addition to CLRS, other isolated and independent systems were also developed to support
separate functions within land administration. These systems include, but not limited to, e-Consent, which was developed to support the flow of applications and consents from various authority level, and Computerize Land Revenue System (CLRS or SHTB), which was developed to support in the collection of revenue in the form of land taxes. These set of systems are called “piece-meal” systems, which may not support for future integration. In addition, other important land administrative functions such as land development and use, registration of strata, and enforcement are still using manual it their operations.

Observations from the site visits indicate that all the three systems (SPTB, SHTB, and e-Consent) were in use at all the three states visited. Except for some minor technical issues, little complains were given in the use of such systems from the technical perspective. The only major issue brought to the surface was the lack of integration between all of these systems. While most of the core functions in land administration (i.e. land registration, land revenue, land development and use, land alienation, enforcement, etc.) are highly interrelated, the existing land registration system (SPTB) and the revenue systems (SHTB) developed were not able to communicate and share common information needed for various interrelated work processes. Technically, this has resulted in replication of data through the maintenances of many databases, the need for additional work to update and match both databases for data accuracy and reliability, and the addition of cost in purchasing and maintaining storage capacity.

The challenges in the existing automated “piece-meal” system may call for a good integration in future development. The strengths in these systems are such that, they are highly stable, and cases involving security breach are considered minimal. These systems are highly cost effective with small amount of budget needed for improvement, redevelopment and integration using latest technology. The oracle platform, may allow for integration to be made more smoothly and flexibility, as well as the possibility web based environment. Addition to other systems for the rest of other functions can be made in a similar manner and later integrated into a networked of databases and servers using a proper database management system (DBMS)

e-Tanah Pilot Project

e-Tanah was introduced as part of the Malaysian e-Government flagship to fully benefit from the widespread use of the Internet. The system was envisioned to be highly integrated and interoperable (see Figure 2). Based on the e-Tanah project, the system is expected to support all the eight functional areas of land administration (www.etanah.gov.my).

Figure 2.
Overview of the investigation at the pilot site indicates that users at the Penang PTG are happy with still putting faith to the success of e-Tanah. The system could be further improved with identification of issues and problems at the operational level, good response to user feedback by the developer or vendor, enhancing infrastructure, organization culture and most importantly leadership with the right attitude. In this regards, user assessments also need to be made for better input in the design of the system for usefulness and ease of use, and for the effectiveness and efficiency through ease of use and speed of the work process. Most users believe that vendor needs to play more important roles in accommodating the comments and requests made by the users. Improvement is such system also requires more expertise in the subject matter for which the system is expected to support.

VI. CONCLUSIONS

The focus of this paper has been to provide partial preliminary results of a research on the electronic land administration system and the need to review the National Land Code 1965 for purposes of providing an enabling legal environment to regulated the electronic land administration system. The information in this paper provides the preliminary report on the analysis made through data gathered from literature review and site observations. Based on the analysis of literature collected and interviews conducted, a report was produced in reviewing the existing application of ICT in land administration. Based on these analyses, several recommendations are produced for the Ministry to identify the best practicable methods to be developed towards enhancing and delivering a more efficient electronic land administration system. Current systems are found to be lacking in the integration capacity. Therefore, there is room for to further improved or designed in a more cost effective manner.

The next stage of the research will review and further investigate in greater detail various ICT applications, strategies, potentials and legal regulations to support the administration of the ICT based system. Such findings should lead to recommendations that the Government can adopt and improve in designing and developing of a highly successful land information infrastructure in the future to meet the changing needs of the Malaysian land administration system.

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