Developing Land And Survey Information System (LASIS) - Sarawak Experience

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ABSTRACT:

Land and Survey Information System (LASIS) is an integrated land information solution that supports a full range of business processes on land matters. The key strengths of this solution lie in its consistent user interface, GIS-centric capabilities and modular architecture that allows wide flexibility in the implementation of its many component systems. The project was initiated in 1984 for the Land and Survey Department of Sarawak, Malaysia's largest state with a land size of 124,450 square kilometres. Presently, it is being extended to the Web and Mobile services to increase benefits to the public in terms of the immediacy of access to information, the decreased cost of acquisition and the availability, accessibility and inclusiveness of the information ubiquitously.

To the best of our knowledge, LASIS is the only land information system in Malaysia that includes land administration, land tenure, land surveying, cadastral mapping, land valuation, development planning, enforcement of land laws, aerial photography, land titles and instruments registration and land revenue collection all in one fully integrated system. It also has the capabilities of very comprehensive process automation, data and application integration and sharing, tracking and monitoring of application, processing, approval, performance analysis, reporting and auto-notification.

LASIS has been recognised with two international awards – the Geospatial World Excellence Award in Governance Category on Land Administration and Land Management, in Amsterdam, the Netherlands in 2012 and the ESRI Special Achievement in GIS Award for outstanding work with GIS technology in San Diego, California, USA in 2013.

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1. Introduction

Sarawak Land and Survey Department is a multi-functional organization under the State Ministry of Urban Development and Natural Resources. It has all the four main principal branches of land administration, surveying and mapping, valuation and town planning brought together within a single department. The services comprise town and country planning; land surveying, cadastral mapping and aerial photography; land administration, land registration and enforcement; land acquisition and property valuation; and land revenue collection.

Diagram 1 : Land and Survey Department Sarawak Setup

Land And Survey Information System (LASIS) is able to manage the land administration and land management complexity by re-engineering and process automation, online/web and mobile services making the Department appear as a single virtual office to our stakeholders and customers instead of 13 physical offices.

Land And Survey Information System (LASIS)

The LASIS project was initiated by the then Chief Minister of Sarawak, YAB Datuk Patinggi Abdul Taib Mahmud in 1984. It was developed and implemented in two main phases. Phase 1 application systems consist of survey computation, cadastral mapping, title registration and revenue collection. The focus of this phase was on capturing the core data for land administration. LASIS Phase 1 was implemented to the Land and Survey (L&S) Department's Divisional Offices and was completed in 2000.

Under LASIS Phase 2, additional functionalities were added, focus in this phase was to cover the entire business of the Department. These additional functionalities included land valuation, town and regional planning, land administration, aerial photogrammetry and land law enforcement. The focus of LASIS Phase 2 was to develop an integrated system to enhance the service delivery in land administration, taking advantage of the core data in LASIS Phase 1. LASIS Phase 2 was implemented to the Headquarters Office and all Divisional Offices and completed in 2010 and was launched by the then Chief Minister of Sarawak, YAB Pehin Sri Haji Abdul Taib bin Mahmud on 6 April 2010.

LASIS development enabled the Department to effectively enforce the vision of One Department, One System which includes both application and data integration. The One Department, One System vision has changed our thinking and helped the Department to rethink its processes to reduce duplication of work and redundancies. The processing of land applications are expedited through breaking down of physical barriers via online digital transmissions and borderless divisions. Land applications can now be processed and decisions conveyed online without physical documents. With LASIS being an enterprise-wide system and having a single seamless database, the staff can now accessed the same information concurrently.

With the One Department, One System as the guiding vision, the Department re-engineered its processes and through LASIS, was able to implement a single consistent System across all its offices. Everyone adhered to the same rules, everyone followed the same work-flows and processes and everyone was presented with consistent data. The level of efficiency increased because everyone was clear about the rules, the system took care of what is to be done next and who to route it to. As a shining example, with LASIS, registration of land transaction improved from 30-60 days to a single day.

LASIS development strategy is consistent user interface, GIS-centric capabilities and modular architecture that allows wide flexibility in the implementation of its many component systems over a period of time.

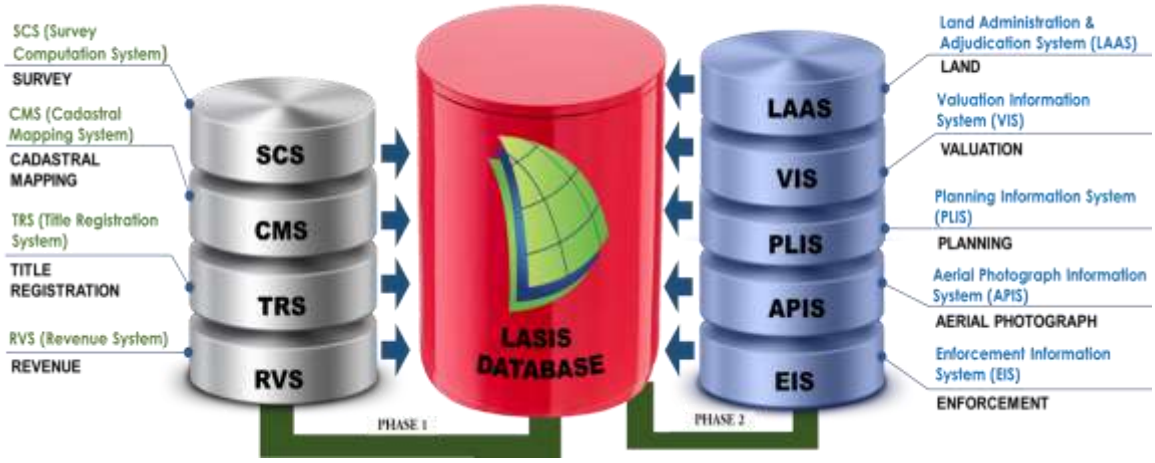

Diagram 2 : LASIS System Architecture

2.1 LASIS Phase 1 Application Systems

The application systems in LASIS Phase 1 are listed in the Table 1 below.

Table 1 : Application Systems in LASIS Phase 1

No.	Application System Name
1.	Survey Computation System (SCS)
2.	Cadastral Mapping System (CMS)
3.	Title Registration System (TRS)
4.	Revenue System (RVS)

2.1.1 Survey Computation System

The scope of Survey Computation System is as follows:

- Field–to-Finish Survey with Electronic Field Book System
- Online Submission and Automation Screening
- Updating cadastral maps

2.1.2 Cadastral Mapping System

The scope of Cadastral Mapping System is as follows:

- Maintain register of land parcels in the State (UPI)
- Form the cadastral basemap to facilitate checking and processing of land applications

2.1.3 Title Registration System

The scope of Title Registration System is as follows:

- Creation and registration of land/strata titles
- Registration of land instruments/transactions
- Creation and maintenance of rent and premium records

2.1.4 Revenue System

Revenue System is a fully automated system and its function is only to collect related revenue. Quit rent and land premium can also be paid through LASIS web and mobile services.

2.2 LASIS Phase 2 Application Systems

The application systems in LASIS Phase 2 are listed in the Table 2 below.

Table 2 : Application Systems in LASIS Phase 2

No.	Application System Name
1.	Land Administration & Adjudication System (LAAS)
2.	Valuation Information System (VIS)
3.	Planning Information System (PLIS)
4.	Enforcement Information System (EIS)
5.	Aerial Photograph Information System (APIS)

2.2.1 Land Administration & Adjudication System

The scope of Land Administration & Adjudication System is as follows:

- Processing and monitoring of land applications
- Application for state land
- Resettlement Schemes and Kampung Extensions
- Application for Renewal of Land Leases
- Application for Permission to Deal

2.2.2 Valuation Information System

The scope of Valuation Information System is as follows:

- Statutory notices and land acquisitions
- Land for Public purposes database
- Property market transactions database

2.2.3 Planning Information System

The scope of Planning Information System is as follows:

- Application for development / redevelopment of land
- Siting applications
- Urban Design

2.2.4 Enforcement Information System

The scope of Enforcement Information System is as follows:

- Licensing for rocks and minerals
- Breach of Title Conditions
- Squatters
- Mobile applications (facilitate patrolling)

2.2.5 Aerial Photograph Information System

The scope of Aerial Photograph Information System is as follows:

- Database of aerial photographs
- Database of orthophotos for superimposition onto cadastral maps to facilitate processing of land applications and siting projects

2.3 Web Services (eLASIS)

After realising benefits from the state-wide implementation of LASIS, our Department took advantage of the internet technology to extend the functions of LASIS to benefit the Public via eLASIS (Electronic LASIS). eLASIS provides facilities for the Public to purchase land and strata title information, map, plans and aerial photographs online. Land applications such as application for renewal of land leases and application for permission to deal can also be submit to the Department online. On-line facilities are also provided for the professionals such as private surveyors and lawyers to submit their survey jobs and land transactions to the Department. eLASIS services are available anytime and anywhere now. The website address for eLASIS is https://elasis.sarawak.gov.my. Implementation of web services commenced in 2014 and the list of web services are detailed in Table 3 below.

Table 3 : Web Services in eLASIS

No.	Service Name	Description
1.	eMap	Sales of Maps and Plans
2.	eRent	Enquiry of Outstanding Land Rent and Premium
3.	eSubmission	Submission of Survey Jobs by Private Surveyors
4.	eLodgement	Lodgement of Land Instruments by Law Firms
5.	eSearch	Sales of Land Title Information
6.	eRLL (Application for Renewal of Land Leases)	Application for Renewal of Land Leases Application for Re-Alienation with Extension of Term

7.	ePD (Application for Permission to Deal)	Online application for Permission to Deal (Transfer, Charge and Sublease) Online application for Extension of Building Condition Online application for Rescission of Express Conditions

2.4 LASIS Mobile Apps

Following the implementation of the Sarawak Digital Economy initiatives, Land and Survey Department initiated the LASIS Mobile Apps project in 2018 to improve its service delivery and benefits to more people especially the mobile device users. LASIS Mobile Apps was successfully implemented and launched on the 24 July 2018 by the Chief Minister of Sarawak, YAB Datuk Patinggi (Dr) Abang Haji Abdul Rahman Zohari bin Tun Datuk Abang Haji Openg. This was a major milestone as services such as payment of quit rent and land premium, application for renewal of land leases, purchasing of cadastral plans, purchasing land title information and others are now easily accessible via mobile devices (smart phones, tablets, etc.) ubiquitously. It is also the first time that cadastral land parcel with basic title information are shared to the Public free of charge. The location button provided in the Land Search service also enabled users to easily indentify the land parcel. The list of the LASIS mobile services implemented and is shown in the Diagram 3.

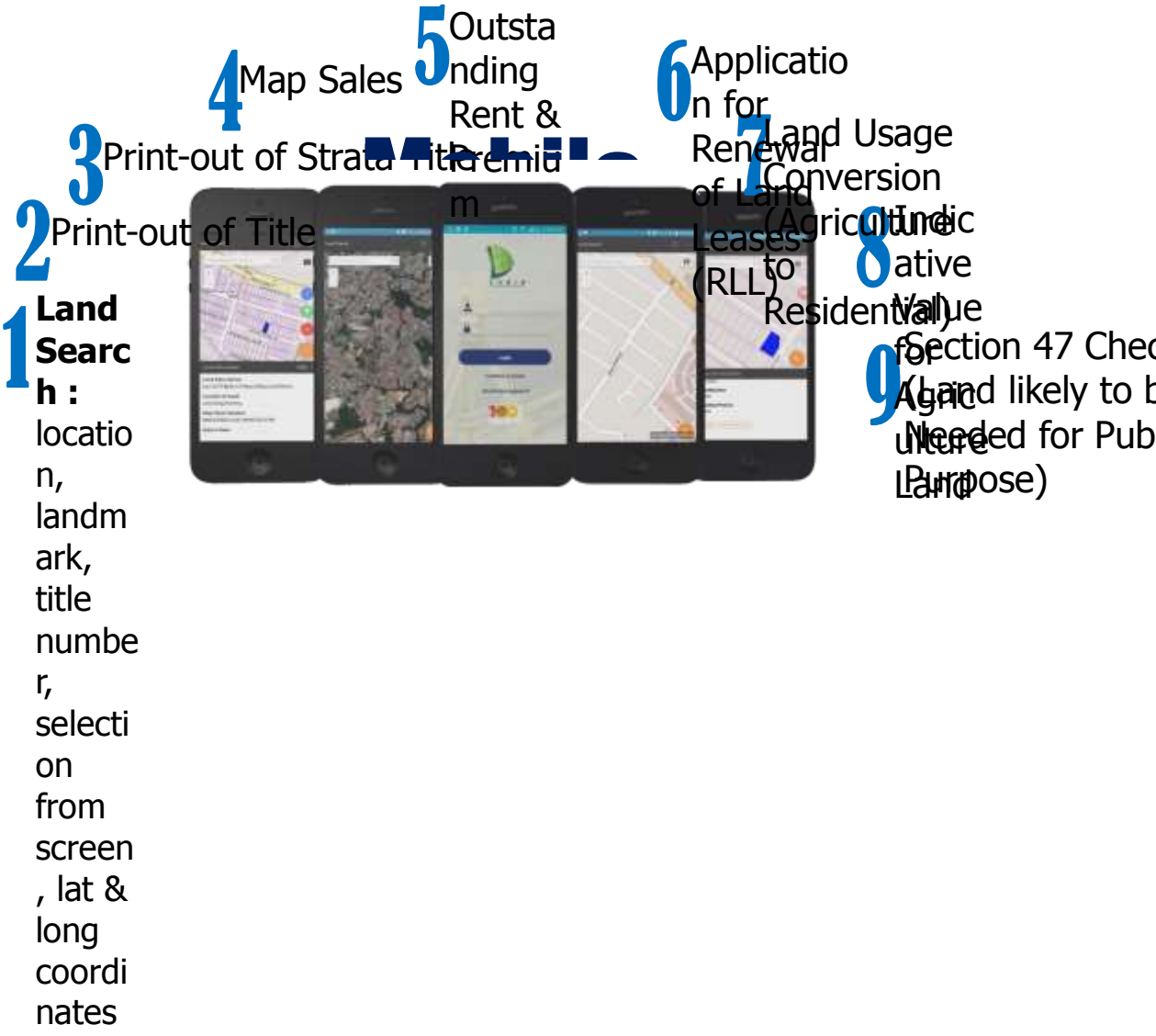

Diagram 3 : LASIS Mobile Services implemented in 2018

Upon successful implementation of LASIS mobile apps, our Department received a lot of positive feedbacks from both internal and external customers. This motivated us to explore and continued to develop more useful and friendly mobile services. The new mobile services targeted for implementation in 2019 are shown in the Diagram 4.

Diagram 4 : New LASIS Mobile Services

3. LASIS International Achievements

LASIS has received recognition outside Sarawak. Apart from presentations to an international audience in Australia (2010) and The Netherlands (2012), there were also two international awards.

- Geospatial World Excellence Award - 2012: Geospatial Excellence Award: Governance - Land Administration and Land Management, presented during the Geospatial World Forum 2012 in Amsterdam, The Netherlands from 23rd to the 27 April 2012.
- A Special Achievement in GIS (SAG) award at the 2013 ESRI International User Conference in San Diego, California, USA in 2013. This award is given to user sites around the world to recognize outstanding work with GIS technology.

4. Independent Assessments

LASIS has successfully achieved the concept of the Global Land Administrative Perspective Perspective in the book, Land Administration for Sustainable Development which stated the need to integrate the four global land principles of Land Administration, namely Land Tenure, Land Value, Land Use and Land Development for efficient land market and effective land use management. (Williamson Ian, Enemark Stig, Wallace Jude, and Rajabifard Abbas, 2010)

The success of this land information system that transforms Sarawak Land and Survey Department's service delivery and decision making in land administration and management is further substantiated through the testimony as follows:

- Princeton University on Innovations for Successful Societies quote, "By December 2009, the department has erased its backlog and achieved 98% – 100% single-day registration across its 11 divisional registries." (Deepa Iyer, 2011)
- Testimony of the Minister of Natural Resources & Environment, Malaysia. "Sarawak's ability to take just one day to process land applications will be studied and will then be implemented over in Peninsular Malaysia. The Federal Cabinet wants to reduce the length of time taken for land registrations." (Dato Sri Douglas Uggah, 13 March 2010).
- ESRI Malaysia published article, The State of Sarawak made headlines because of its Land and Survey Information System (LASIS), which managed to drastically shorten the state's property registration process from one month to a single day. (Clarice Africa, 2015) resulting in increased efficiency of land market and improve ease of doing business ranking for Malaysia.
- In 2012, LASIS won the Geospatial World Excellence Award for Governance in Land Administration and Land Management held in Amsterdam, The Netherlands.
- In 2013, LASIS was awarded with Special Achievement in GIS 2013 held in San Diego, California, USA.

5. Conclusion

LASIS represents and is an integral and essential strategic project for the Land and Survey Department of Sarawak. It has now become very much part of the Department's DNA and it is unimaginable today to consider the Department carrying out its business and functions without LASIS.

A lot of lessons have been learned from implementing the LASIS project. One of the key success elements is **top management commitment to the project**. So is **a strong clear strategic plan and a systematic development approach** to provide a constant for reference. Planning and setting milestones along the journey is essential so that everyone knows what need to be achieved and by when and that extra efforts are required if things are running behind schedule and resources reassigned if necessary. Another key success element is that the project must be **User-Driven**, giving the users the sense of ownership and motivation to ensure success of the project.

Strategic planning and systematic development approach and in the case of LASIS, the strategy is to implement the system in two phases with the same integration and data sharing design. Phase 1 starts with the systems which are creating core information for land administration as the base

for the other future systems. Therefore, LASIS Phase 1 consisted of Survey and Mapping System, Title Registration System and Revenue System.

Upon the completion and implementation of the base systems in LASIS Phase 1, the Department focus its attention to develop systems for application processing and enhancing service delivery in LASIS Phase 2 consisting of Valuation Information System, Land Administration & Adjudication System, Aerial Photograph Information System, Planning Information System and Enforcement Information System were initiated and implemented.

Leveraging on the emerging technologies and the strong framework of LASIS, our Department implemented the Web and Mobile services to increase benefits to the public in terms of the immediacy of access to information, the decreased cost of acquisition and the availability, accessibility and inclusiveness of the information ubiquitously. LASIS is now accessible via mobile devices (smart phones, tablets, etc).

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BIOGRAPHICAL NOTES

Zaidi bin Haji Mahdi is the Director of Land and Survey Department, Sarawak, Malaysia since 2017. He is presently Chairman of the Sarawak Surveyors Board which regulate the land surveying and practice of cadastral surveys in Sarawak and has held positions as Board member of the various statutory bodies and government linked companies in Sarawak. He is also a member of the Sarawak Planning Authority (SPA) which is a centralized planning authority in Sarawak.

Zaidi bin Haji Mahdi is a graduate with a Bachelor of Science, Honours in Property Valuation and Management from City University London and also Executive Master in Business Administration (MBA) from Universiti Teknologi Mara (UiTM).

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