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Corporate Focus



Advancing your Business with our ICT Solutions

SARAWAK INFORMATION SYSTEMS ●

Advancing your Business with our *ICT Solutions*

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Sarawak Information Systems Sdn Bhd
Level 3, Wisma Bapa Malaysia, Petra Jaya
93502 Kuching, Sarawak, MALAYSIA
Tel: (60) 82-444199 Fax: (60) 82-444211
Email: service@sains.com.my

Call Centre:
Tel: (60) 82-236633 Fax: (60) 82-235522
For Business Enquiries:
Tel: (60) 82-426733 Fax: (60) 82-423533
Direct Line: (60) 82-422472

www.sains.com.my

sains Overview

SARAWAK INFORMATION SYSTEMS SDN BHD (SAINS) began operation in 1992 and has strategically developed a presence in Malaysia as a leading ICT Systems Integrator and Solutions Provider. **SAINS** has effectively pioneered the utilisation of ICT in the State of Sarawak: forging alliances with international corporations, IT hardware manufacturers and technology owners. Over the years, we have built strong customer base and reputation with government and statutory agencies together with multinational corporations in Sarawak, providing creative solutions and consultancy and sharing experiences with other government agencies.

Expanding geographically, **SAINS** now has branches in major towns in the State and also in the Peninsular Malaysia to provide the most comprehensive and value-added IT solutions and services to the business sector of Government, Local Councils, Utilities & Energy, Manufacturing, Engineering & Construction, Education and Health Care. With a staff strength of over 400, consisting of mainly IT professionals, we are recognised as one of the more reliable and consistency ICT service provider in the country.

Today's business communities are constantly being bombarded by the ever increasing volleys of information that are more often than not, redundant. Our creative and forward thinking information technologists with their innovative solutions and professional approach can help you cope in the fast paced and competitive business environment. Our people, the "brains" behind these creativity and professionalism, are our competitive advantage that determines our success stories and customer satisfaction. At the end of the day, the real reward comes from the knowledge and reputation that we have forged a healthy and profitable business relationship with our customers that will grow even stronger.



Board of Directors

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Y.B. Tan Sri Datuk Amar Dr. George Chan Hong Nam
Chairman, SAINS



Y.B. Datuk Amar Haji Abdul Aziz Dato Haji Husain
Deputy Chairman, SAINS



Y.Bhg. Datu Ahmad Tarmizi Haji Sulaiman
Director, SAINS



Mr Teo Tien Hiong
Managing Director / CEO of SAINS



Mr Thien Joon Hiong
Company Secretary, SAINS



Message from CEO

This SAINS Yearbook covers the period 2003 – 2004. When we celebrated our 10th Anniversary back in 2002, it was observed that SAINS had over the previous decade assisted the Sarawak Government to propel itself from being among the least ICT enabled civil service in Malaysia to being among the most advanced. In doing so it had provided comprehensive ICT training to all levels of civil servants, implemented over 100 ICT applications and over 300 hundred ICT projects. Complementary to that, it had also created the necessary infrastructure to enable units of the State Government down to the district level to perform group computing using their individual local area networks, operate collaboratively with the rest of the State public sector in a secured Intranet, and operate more effectively and efficiently beyond the SarawakNet through the Internet.

It was also observed that apart from continuing to enhance the maturity, stability, effectiveness and efficiency of ICT utilisation within the State civil service, the next major challenge in moving forward was to reach out and promote e-community and e-business in the State. Looking back, the immediate past two years have been significant and exciting in the progressive achievement of the ICT vision of the Sarawak Government and the corporate mission of the Company in a number of areas.

In the area of enhancing State public sector computing, it is noted that with the maturing of internal e-Government (G2G) solutions on the SarawakNet, the State Government has shifted its emphasis towards extending and providing e-Government solutions to the private sector (G2C) on the Internet. In line with this new direction, almost all the new solutions developed by SAINS since 2003 for the State Government have included an objective of providing public access to government services on the Internet. Apart from that, existing systems and applications are continuously being redeveloped to meet the same objective. These online e-Government and e-business applications are consolidated on "MyOneStopSarawak" – the Internet Portal hosted by SAINS for the Sarawak State Government services user community.

When SAINS was established in 1991, it initially faced considerable difficulty in recruiting specific ICT skills locally. The main reason was that there was insufficient critical mass of ICT business in the State to support a local pool of ICT professionals. The ICT projects, including those for the State Government, tend to be fragmented and relatively small. Contracts were thus generally awarded in small parcels and, by extension, local ICT players by and large lacked experience and only had generic skills.

Specialist skills were practically all located outside the State. Today, with a staff of over 400 people, SAINS has built up a full range of local specialist ICT skills. This pool of specialist skills together with the spare capacity of equipment and technology already invested by SAINS can be deployed to assist the growth of local creative ICT talents in support of the State objective of promoting Technology as an engine of its economic development.

Message from CEO

It is noted that as part of this larger strategic objective, SAINS has over the past two years set up a small Incubation Centre in one of its offices. The Sarawak Government has created SAINS with a secondary corporate mission of promoting the growth of ICT industry in the State. It is realized that the Incubation Centre initiative mentioned is a contributing step in that direction.

Another similar initiative is the creation of new ICT jobs through attracting strategic ICT investments to the State. In this regard, SAINS has been authorized to invest directly in selected foreign ICT companies with cutting edge technologies with the view of attracting related high-skill software development work to the State through strategic alliances. As of current, a small start has been made in this direction.

SAINS has committed a strategic investment in an Australian based, world class, Intelligent Visual Security Surveillance system development company with the view of bringing high value software work to Sarawak as well as making SAINS a regional product representative and technology support centre.



TEO TIEN HIONG

ICT Solutions for eGovernment





Integrated Land Information and Management Systems

With Integrated Land Management System (ILMS), governments now have a comprehensive and highly integrated platform for data creation, real-time information sharing, single point of record maintenance, and speedy dissemination of land records data.

Land. A small word yet its impact upon our affairs can be immense and pervasive. Throughout history, men have killed for it and died protecting it. We live on it and literally live off it. On a personal level, it is something we desire. On a national level, land is what makes it, for without land, there is no country.

For a nation, the administration of land is perhaps, next to its populace, the biggest and most important of all tasks. Boundaries have to be clearly delineated, land has to be surveyed and maps have to be drawn and updated. Badly managed, disputes over land can lead to ruin and bloodshed. Properly managed, land can lead to fortune and peace.

The basic requirement for the administration of land is information. This sounds like a cliché no doubt, but nonetheless it is very much a truism where land is concerned. A ruling government requires knowledge on how the land lies, how the land is used, or if lying dormant, how it can be otherwise put to better and more economic use. What are the minerals that lie beneath and where are the water resources?

Acquisition of Land Information

In the past, the acquisition of land information was largely done through surveyors who went out into the field, measured and recorded the information and cartographers who charted the information in the form of maps. As you can imagine, it was a laborious task, fraught with dangers and difficulties in no small way. Surveyors had to go wherever they needed to take a measurement. Which may be a point in the middle of a stream or a lake or a ravine. The process was slow and as a consequence of the difficulty in getting measurements, one had to be very selective in deciding what to measure and what to leave out.

Today, the availability of modern instruments like handheld GPS, satellite remote sensing and aerial photogrammetry has made the job of gathering informa-

tion very much easier, faster and more accurate. Maps can be created from digital photographs taken from an airplane flying over an area that is being surveyed. These maps show the topography, the rivers, the water catchments, lakes and other geographical features of the land. Because the process is faster today, ground measurements taken are for cross-checks thus resulting in more accurate and more detailed maps.

Spatial Data Infrastructure

However, the use of maps as the primary source of land information has undergone wide-ranging and profound changes over the past two decades, and especially so in the last decade. Some ground-shifts have happened and the landscape is forever changed, so to speak. In addition, the widespread use of information technology has been the instrument of these changes. Information on land has, like so many other things, moved from being hand-drawn and inked onto maps to being digitally collated and digitally stored into computer as spatial data infrastructures, that is, digital databases structured in ways that allow for easy analysis, retrieval and graphical presentations. Such digital databases are now the main source of land information. Maps have become in effect, just one of the many possible forms of presentation of that information.

The significance of this is profound. For example, if you want to know the number of parcels of land in a selected area that are cultivated with rubber trees, and you only have a paper map showing rubber plantations, you would have to count it. Compare this to when the information is stored in a computer database. All you have to do is to query. The computer will do a parse through the appropriate data files and calculate. The result can be presented graphically onto a map of the area, even colouring the matched parcels to highlight them for you. Or say, the government is considering building a road from point A to point B. On a paper map, you would be hard put to find out what would be the optimal route, taking into consideration the terrain,

Geographical Information Solution

the cost of land acquisition for the affected lots, and of course the distance. On the other hand, if your computer database has these information, you can run an application software and the route can be computed and drawn for you onto a map - while you prepare your favourite cup of coffee.

In addition to catering for work-centric functions and processes like land administration and adjudication, valuation and planning, spatial data and map-based representations of these spatial data are becoming an essential data resource for decision-making processes. Cadastral maps, aerial photogrammetry and map production show how quickly systems dealing with the administration of land have moved from systems with data mostly stored in text-based databases towards graphical representation of data (maps) that store textual data within it as spatially referenced attributes of the land.

Integrated Land Management System

An Integrated Land Management System (ILMS) provides a comprehensive solution for efficient and accurate mapping, fair and accurate assessment of all real property and timely access to ownership.

Governments at all levels need to rely on accurate and current land records to determine the location and extent of landholdings, establishing the ownership of rights in real property, and determining the value of those rights. This information provides the basis for revenue generation, land use planning, environmental management, public safety, public works and utility supply, housing development, crop cultivation, roads and town planning and public utility supply.

Up to date and comprehensive land records containing legally recognized registers of ownership, value, and property location and extent are necessary for the efficient and legal transfer of real estate and is the basis for a fair, equitable, and open land tax system.

Land records agencies have traditionally required an assortment of software programs that work on multiple

operating systems. Typically, survey data resides in file-based systems, maps on a geographic information system and/or CAD system, and ownership and appraisal data in relational databases. Often these data were virtually inaccessible to departments other than those that were maintaining them. While many land records agencies have integrated maps and computer-assisted mass appraisal (CAMA), full integration of all types of land records have not been widespread.

With ILMS, governments now have a comprehensive and highly integrated platform for data creation, real-time information sharing, single point of record maintenance, and speedy dissemination of land records data.

Contributing to Economic Health

Assessment and taxation systems based on land records are key contributors to economic well being because they allow real property to be used to raise capital that can be used to build infrastructure, purchase additional property, start businesses, and other capital-intensive activities. ILMS enables parcel information and maps to be made readily available to the public, businesses, and other agencies. By linking maps and legal descriptions to landownership records, ILMS provides an efficient method for identifying fraudulent claims or errors in land recording. An integrated workflow that uses the topology tools helps eliminate errors resulting from overlapping boundaries, incomplete parcel descriptions, and other discrepancies in land records.

Multiuse Cadastre Environment

The creation and maintenance of digital maps is much more efficient and secure than paper-based mapping systems. ILMS can integrate data, such as aerial and satellite imagery, which is a good source of current related information; for example on crop extent, new construction, and flood hazards, etc. Accurate and up-to-date land records are also the basis for homeland security and other public safety activities that identify and protect potentially vulnerable assets. In the event of a disaster, this information can be used to assess damage and prioritize and route relief efforts. The same

records that help national governments protect citizens from natural and man-made threats would also be able to help manage public lands in a manner that sustains natural resources and protects endangered species.

Enhancing Work Flow

Federal, state, and local governments are actively involved in the process of creating and maintaining land records. However, this process, usually spread across many agencies and departments, has historically suffered from much duplication of effort and attendant problems with data currency.

ILMS provides the framework for an integrated workflow for creating and updating the parcel fabric that can be easily shared both within and between organizations. The ILMS family of applications works together to handle the entire workflow from data creation to information distribution in an environment that supports information technology (IT) standards and interoperability with existing systems. Enterprise ILMS, with the geodatabase, data models, and an array of modules, is revolutionizing land management. ILMS provides the most comprehensive strategy for land management. Users would have a robust and highly customizable suite of tools for creating and maintaining land records.

Streamline Work Flows

Using ILMS for creating and maintaining cadastral data streamlines workflow. Maintaining local land records in ILMS saves money by automating map maintenance, speeding the enrolment of new parcels, and reducing valuation challenges. ILMS improves data management by reducing data duplication and promotes data distribution.

A Vertically Integrated System

State and provincial governments are the crucial link between national and local land records agencies. Support for common data formats and IT standards

means that ILMS helps state agencies integrate information from many sources. These agencies must also ensure that the boundaries of adjacent counties align. Topology and spatial editing tools speed parcel edits and safeguard the integrity of the parcel fabric.

Focusing on Valuation

State agencies monitor the land records and valuation activities of local governments. In some cases, state agencies may perform valuations. In either case, the goal is to identify and investigate anomalies in value. ILMS supplies spatial analysis tools that generate value surfaces to expedite these types of monitoring tasks.

Benefits for an Enterprise Cadastral System

ILMS supports all major cadastral applications and supplies a comprehensive solution for converting, editing, mapping, managing, analyzing, and disseminating land records data. The geodatabase design allows for the development of common data models that not only model data more realistically but also provide a standardized method for developing and exchanging data. This flexible and object-based model accommodates a range of applications and parcel definitions.

Acquiring and Integrating Data

ILMS offers the ability to incorporate a wealth of data sources from inside and outside your organization. Data is available from federal and state agencies, state clearinghouses, councils of government, and local government agencies. Much of this data can be obtained at low or no cost or through data sharing agreements with other jurisdictions. Another often-overlooked information source is the legacy data created by an organization over the years. These existing data sets can be joined with others for use outside the specific department in which they were created. For example, by combining parcel data from planning with business license records from the finance department, revenue auditing can be more effectively conducted.

Geographical Information Solution

Toward More Accurate Land Records

Although most national cadastres are survey based, land records for local government frequently have not been based on highly accurate locational data. This has often meant that these records, while sufficiently accurate for assessment work, were not suitable for reuse by other departments. The integration of survey data in ILMS has made it possible for local governments to incrementally improve the accuracy of existing as well as new spatial data. More reliable data can enhance public safety applications and promote economic development.

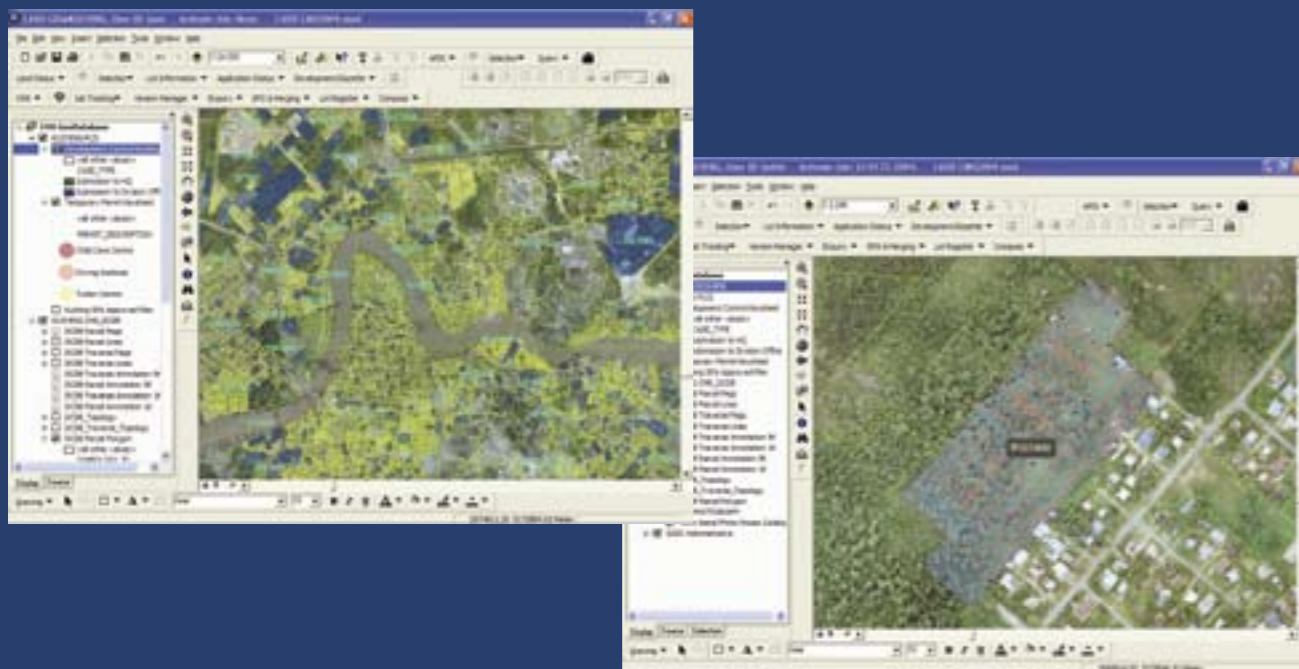
ILMS Delivers E-Government

E-Government is using the Internet to create more effective government. Typically, land records information is the most requested type of government information. The combination of readily available Internet access and maps lets governments provide a new level of service, particularly access to parcel information, to both businesses and the public.

E-Government is making collaboration between government agencies possible in new and powerful ways. The strong data integration abilities of ILMS let governments truly capitalize on data existing in legacy systems.

Web sites can provide land-related services such as permit application submission that were not previously available. Three categories of E-Government applications can be developed—government to business, government to citizens, and government to government.

- Government to business applications typically relate to economic development, land development, licensing, or permitting.
- Government to citizen applications provide information on government services, such as trash pickup, or streamline the public's interaction with government agencies by allowing online payment of fees or providing feedback to officials.
- Government to government applications improve the amount, quality, and speed of information exchange between various levels of government and/or agencies and departments within governments.



Judicial Management System



Bringing new meaning to **Court System**

The judicial functions and processes in our society today are deemed as one of the most intricate and elaborate. In addition, picture the volume of paper work that the judiciary and lawyers go through each year for court administration and correspondence; large volume of evidence submitted from the plaintiff and defendants, lawyers' statement, court judgment and other related records kept in card folders or paper file and stored in huge racks and cabinets.

The problem magnifies when we add in the process of communicating between hundreds of courts in different parts of the country. For example, a criminal case across jurisdiction borders which requires cooperation from law organisations from both sides. To maintain the communication among the courts, they have to go through tedious procedures, including tonnes of administrative work.

Bringing information technology and its latest innovation into the judicial world would be the most practical thing to do.

Introducing the intelligent Judicial Management System

SAINS has fully built and deployed an intelligent judicial management system to improve the management of court cases nationwide and linking the courts with other legal and enforcement organisations such as the Police, Legal Affairs Department, Immigration Department, religious courts, law firms and the public.

Objectives of the Judicial Management System

The judiciary management system is built with the objective of improving the overall efficiency and decision-making process of the court. Ultimately, the system promotes collaboration and sharing of vital information that speeds up processing and tracking of court cases.

The objectives of the Judicial Management System are:

- To improve the quality of services of courts management through the usage of ICT

- To improve the effectiveness of centralised law body under the government in coordinating and supervising related agencies under its jurisdiction
- To incorporate an efficient way to manage court cases
- To have a centralised function linking one court with the other nationwide

Since its conception, the Judicial Management System has brought about positive outcomes to its users.

Benefiting the Court Administrators

The system is linked with other relevant government agencies to allow resource and information sharing. With a consolidated database of clients collected from district courts across the country, administrators can easily perform information search or access to details related to a case and its proceedings. The resources and data available can easily speed up decision-making.

Once registered in the system, the case data can be directed to the judge instantly.

The system reporting capabilities enable court administrators to analyse the workload of their courts. Workload assessments of judges, support staff, courtrooms, etc, is pertinent to assignment and scheduling of court cases.

Benefiting the Judges

Judges are extremely important decision makers in courts and the balance of courts and cases lie within their hands. With all these sensitive law issues and numerous cases they oversee in trials everyday, judges have little time for much of anything else. The Judicial Management System is equipped with productivity tools like calendaring and scheduling, thus enabling judges to process their cases swiftly. Cross-references to on-line data and reference material like law databases in law libraries also greatly improve their access to resources and enable them to make quality decisions. Communication tools such as emails allow judges to connect with each other and even with the court administrators and lawyers for a more efficient case management.

Benefiting the Lawyers

Judicial Management system also benefits the lawyers who deal with court regularly for case filing, trials, status checking, etc. The system integrates the processes seamlessly and delivers more efficient services to the lawyers. For example, the lawyer registration module enables lawyers to pre-register themselves with the court over the Internet thus cutting time-spent in the process tremendously. Through a centralised database function on court cases and its proceedings, a lawyer is able to find out which judge is on duty or assign to a case, or track on which date a trial has been moved to. Through it, lawyers can dispense with tedious manual tasks and reduce miscommunication.

Benefiting the Clients

Ultimately, the Judicial Management System benefits the clients like the plaintiffs and defendants who will gradually see shorter queues outside of courtrooms and at counters across the nation. In addition, they too, can conduct some of their 'duelling' with the court over the Internet from anywhere, even right from their living rooms. But most importantly, they will benefit from better case dispositions which can impact their lives directly.

Judicial Management System Future Enhancement

SAINS is continually improving the system to provide a better service for the Government. Future enhancement of the system will include the following:

• File tracking system

This will incorporate Radio Frequency Identification (RFID) technology to facilitate a more efficient tracking of the physical files in court. The file tracking system will be integrated into the court case system to help court administrators to locate or record files that are being used. This new system will greatly assist in mitigating the frequent tedious search for files located in many places, not to mention in which cabinet. Users would be able to check from the system where the file is located and if it is available.

• Forensic Evidence Tracking System

The Forensic Evidence Tracking system tracks and records forensic evidence for use in courts proceeding. All forensic evidence will be kept, analysed, and recorded following court case proceedings. Evidence gathered from the scene of a crime will be recorded and scanned into the system.

Fig.1 below shows how the future enhancement will be for Forensic evidence tracking.

• Video Conferencing System

The Video Conferencing System in the Judicial Management System will enable a court session to be carried out anytime anywhere, as long as there is a judge. For example, a court session can be happening in another state but the witness is somewhere else in the country. Through video-conferencing, a virtual meeting can also be held between the judges.

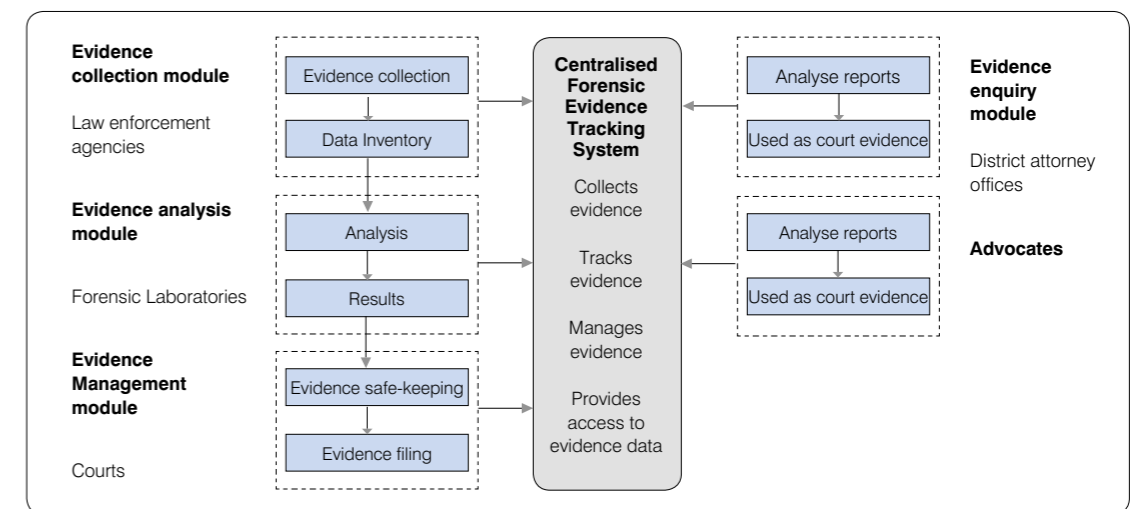


Fig 1: Forensic Evidence Tracking system

Case Study:

Revolutionising Islamic Religious Court in Malaysia through E-Syariah

An application developed by SAINS, the E-Syariah project was launched in 2003 with the aim to revolutionize and bring effective changes to the operations of the Syariah Courts (Islamic courts) in Malaysia.

This move was planned as the seventh project under the Electronic Government (EG) flagship application of the Multimedia Super Corridor (MSC). E-Syariah enhances the effectiveness of the Islamic Justice Department in improving the efficiency of the Syariah courts.

At the core of the system is a court case management module that assures timely and just dispositions for all cases. In addition, the system is link to relevant agencies, namely, Department of Islamic Development Malaysia (JAKIM), Royal Malaysia Police Department (PDRM), Immigration Department Malaysia, Legal Affairs Division in the Prime Minister's Office and National Registration Department (JPN). Other sub-systems are the legal library management system; lawyer registration system and the E-Syariah portal.

Library Management System

A web-based library management system that links up all the legal libraries belonging to the Islamic Justice Department which are located at various parts of the country. It allows the users of Islamic Justice Department to conduct online searches and bookings of library materials available at the Department main Library and the State Syariah Libraries.

The library collection is catalogued according to the Ziauddin Sardar Islamic Cataloging System and is available in Arabic language.

Syarie Lawyer Registration System

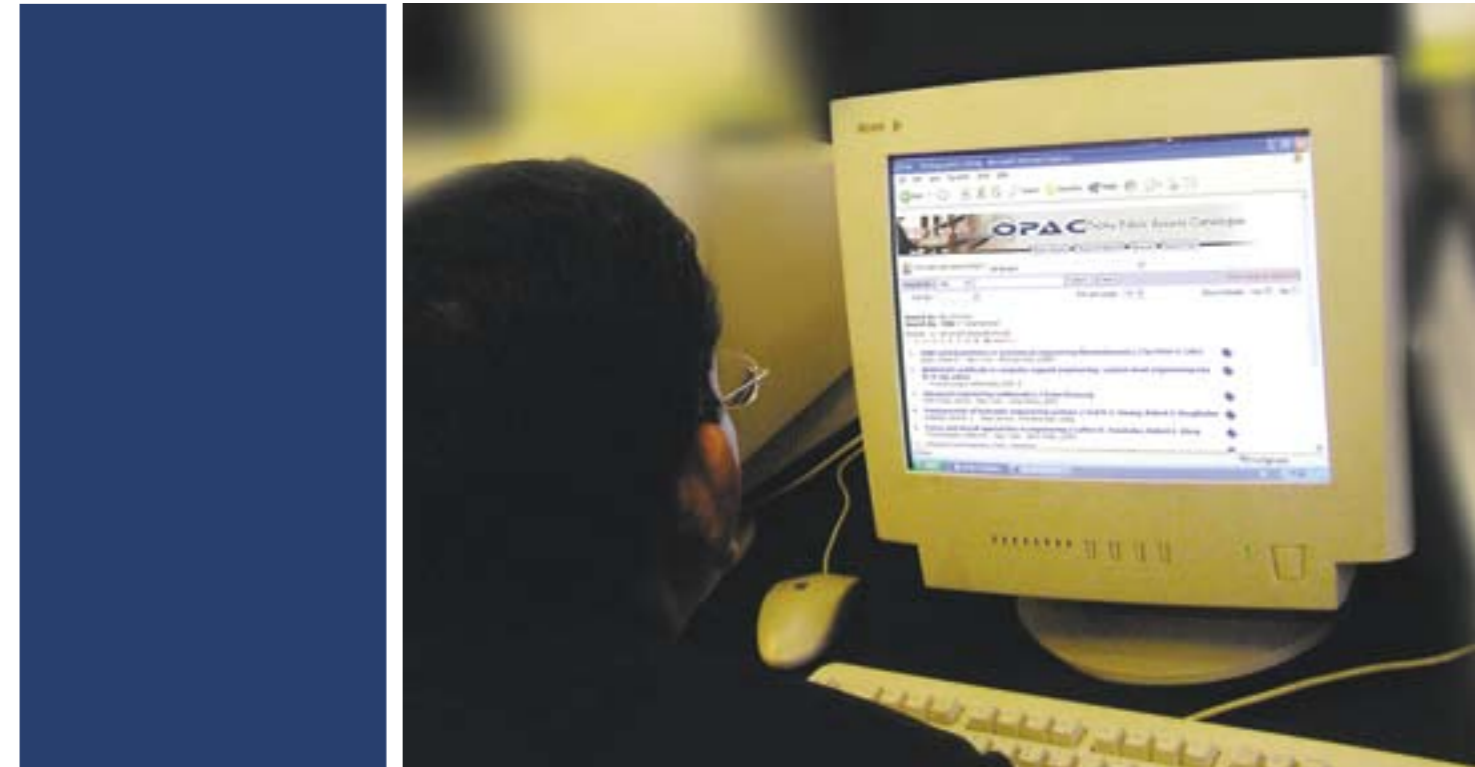
This system provides facilities for the registration of new and renewal of practicing certificates for Syarie lawyers. A central database contains details of registered practicing Syarie lawyers to facilitate monitoring and coordination by the authorities.

E-Syariah Portal

In E-Syariah portal, the public can obtain information on how to register a case in court and what documents they need for this process. Those involved in registered court cases can check on the progress or check on the schedule of their cases.

By the end of 2005, all 106 Syariah Courts at 102 locations throughout Malaysia will be linked up and will be using the system. The consolidated database containing records of all cases filed with the courts will be accessible for the purpose of references and checking to avoid duplication of cases in other states.

Library Management Solution



Single Access to Multiple Libraries

Resource sharing greatly benefits libraries and public by offering convenience of time and space, cost-effective measures, and a comprehensive knowledge exchange.

We all can identify one thing in common when speaking of the word 'library' – books. Books, magazines, maps, tapes, and cassettes – these have been the fundamentals of information recorded and presented into a physical item. Libraries continue to exist today because people from all walks of life realise its importance to our society.

However, libraries have evolved from a mere information resource centres. They are the hub of communication and learning as well. Steadily and progressively, library services have evolved with the assistance of emerging digital technology and the Internet.

Libraries in the Information Age

The Information Age opens doors into the vast world of information and offers flexibility on how we want to disseminate knowledge, when, where and to whom. The Information Age's greatest conception – the Internet - creates dawn for millions of businesses around the world and impacted many areas of human life.

The library, playing an integral part in knowledge management, is one that was impacted with positive results. The Internet enables libraries to shift from being confined to conventional physical buildings into web-based infinities. As repositories of information and ideas, digital libraries enable the sharing of knowledge and facilitate lifelong learning - a critical component for success in this ever-changing world.

Managing Knowledge Centres

The revolution of information technology and the Internet changed the world in a sense that everything becomes mobile by means of access convenience – anytime, anywhere as long as you have the facility. This undoubtedly gives new meaning to the word 'library' and unfolds new direction in library operations.

Managing collections of library items, circulation, cataloguing and requisition of materials are labour-intensive operations for library staff. Not only that, they also need to manage their library members' subscription and personal particulars, as well such as foreseeing membership renewal and monitoring their library usage. With a technologically robust library management solution libraries can be automated and become connected knowledge centres.

Breaking Library Walls and Beyond Hours

A dynamic Library Management Solution equipped with online multimedia capabilities allows a library to operate beyond the boundaries of library walls and into the wee hours. Library users such as students and researchers benefit greatly from this enhanced feature.

This feature apparently solves one of the many issues of library management i.e. libraries providing their services and be accessible to users outside the library walls and unconfined by operating hours. No more hurrying down to the library before closing hours to read, research, borrow, or return a book. Users can simply connect and do their research online - of course only after they have subscribed as members to the online library services.

Knowledge Exchange and Resource Sharing

Web-based technology enables the sharing of library collection among libraries. A centralised network portal provides users with a one-stop search engine across multiple libraries collections. For example, a major town library can open and shares its resources over the network with a smaller library in another location. When a user of the smaller library performs a search function, he can select to browse through the collections of the major library as well. When a particular book is required, inter-library loan can be arranged.

Sharing and circulating of library resources among community libraries reduces cost of purchasing multiple items of the same content, thus reduces tremendous Government funding under community service sectors

Union Catalogue – the Centralised Database

The portal can also house the central database which is accessible by all libraries connected to it. The central database is known as Union Catalogue (UC), which is a database of bibliographic records that are created,

maintained and utilised by a group of Libraries.

With the existence of UC, bibliographic records created by a particular library can be shared to all participating libraries. This saves the time and effort in creating bibliographic record for the same collection. With UC, the holdings information for all participating libraries is also available for public query through the portal. Undoubtedly, this is more efficient and faster compared to searching individual libraries' websites.

Case Study:

Libraries Taking Flight with ANGKASA Library Solution

ANGKASA is a web-based library management system that is designed and developed by a group of software engineers from SAINS in collaboration with the State Government of Sarawak. ANGKASA means 'outer space' in the Malay language. It was initially called UNCASA, which stands for Union Catalogue of Sarawak.

First launched in year 2000, ANGKASA has helped the state's first multimedia library, Pustaka Negeri Sarawak also known as the Sarawak State Library, in managing their resources and created a total new revolution in providing state-of-the-art web-based library management system.

The system can be configured for different types of libraries such as the public libraries, special libraries (corporate and legal libraries) and also academic libraries using academic extension to the ANGKASA system.

ANGKASA was built with the Union Catalogue concept in mind to enable the sharing of multiple library resources from one central database. For library operations, the implementation of Union Catalogue eliminates duplication, promotes and ensures standardization of cataloguing and best practices for librarians.

According to Rashidah Haji Bolhassan, CEO of Sarawak State Library, the implementation of ANGKASA will facilitate library staff to follow standards. "Sarawak has network of about 200 public libraries spread through a very wide geographical area. The Union Catalogue will assist in information resource-sharing and raising Standards of Information Resource Discovery, in terms of Cataloguing materials. We are now on the web, we have to follow and meet International Standards."

Resource sharing and online transaction have significantly eased access by offering flexibility and convenience. "For Library users in the University, the students are very independent. The Library System feature that we find very important is the online renewal and online reservation. A lot of times students need to do research and learning programmes in the University, they do not have the time to walk around the library. They would very much love to do it at their desk, in their campus or at home. ANGKASA has provided us with these abilities and we really love it." Dayang Zarina Abang Ismail, Information Resources Manager of Swinburne University of Technology (Sarawak Campus).

Library Management Solution

ANGKASA is highly robust and scalable. The database is securely hosted in SAINS Data Centre which is integrated with a 24-hour call centre operation. This means ZERO server hardware maintenance and technical support costs for individual libraries.

The member management system of ANGKASA comes with a Prepaid Account feature. Libraries can choose to activate the top-up (prepaid) function for their registered members.

Members can authorise deduction from their prepaid accounts for payment of membership fee, fines, Internet and printing charges. This results in shorter queues at payment counters. Prepaid accounts also mean better control and less handling of cash. Integration of ANGKASA with online electronic payment gateway such as www.paybillsmalaysia.com allows members to top-up their prepaid account online in a secured manner.

Other self-service functions available are online reservation and renewal, querying on due dates of books, account history transactions, balance in prepaid account and expiry date of membership.

Since its deployment 4 years ago, ANGKASA has undergone improvement and enhancement bringing more features that are innovative and user-centric.

Special Feature - Multilingual Capability

There are practical reasons why multilingual feature is needed in a dynamic Library Management System; the existence of users who speak different languages and the existence of many published items available in different languages.

ANGKASA was built with the Union Catalogue concept in mind to enable the sharing of multiple library resources from one central database. For library operations, the implementation of Union Catalogue eliminates duplication, promotes and ensures standardization of cataloguing and best practices for librarians.

ANGKASA is built with Unicode compliant allowing cataloguing and searching in both roman and non-roman scripts. It has translation and language capability allowing libraries to offer multilingual features to suit their community. The languages supported are English, Malay, Chinese, and Arabic.

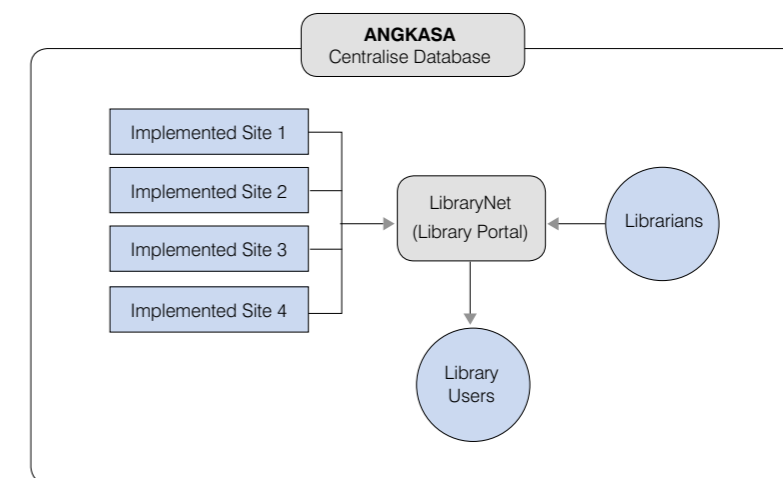
Connecting libraries via LibraryNet

Accompanying ANGKASA Library solution is the LibraryNet portal – a platform for knowledge sharing and learning among librarians and the communities. All subscribers to ANGKASA automatically become members of the LibraryNet Community. This is where libraries share resources, publish events and information that are educational and cultural in nature, exchange opinions, and interact with other librarians members as well as researchers. This portal becomes a “one-stop” information site for libraries and members.

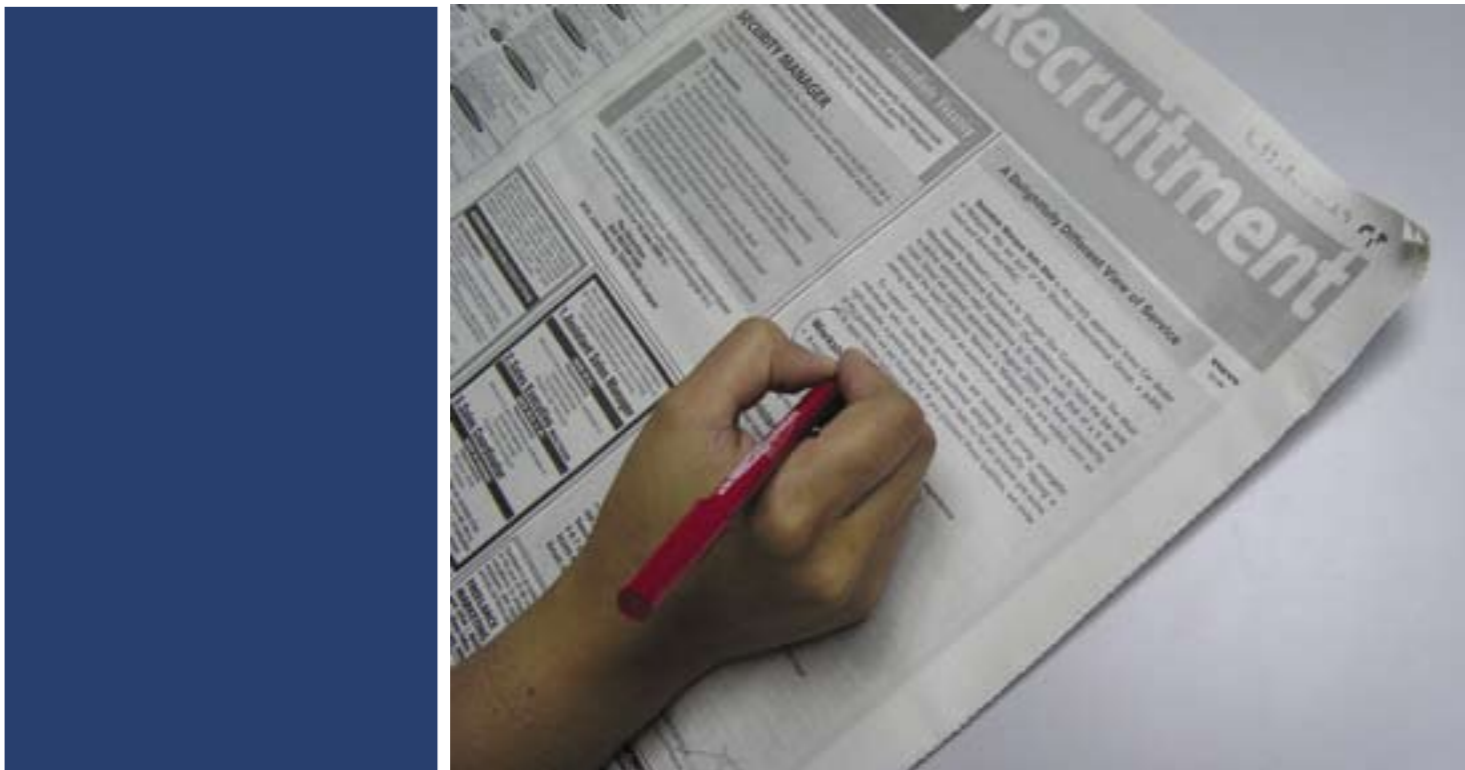
LibraryNet is also designed as a platform for Librarians to share and follow common practice and standards.

- access and contribute to the Union Catalogue, which is verified by a group of trained cataloguers
- share knowledge in library management policies, cataloguing and library management skills
- learn about specific knowledge and experiences from libraries in other areas

As of 2005, 14 public and academic libraries have implemented ANGKASA in Sarawak, all either deploying the full system modules or customised modules. Another major user community is the Judicial Department of Malaysia, whose main centre in the capital of Malaysia is linked with their legal library collections in other states of Malaysia.



Architecture of LibraryNet that enables the sharing of multiple library resources from one central database



Recruiting Tool Made Easy

Integrated psychometric profiling capability being the key advancement in online recruitment. This simply means getting to know the candidate without actually meeting them

HR and the bottom line

The Human Resource, somewhat unfairly, is often required to be the steady campaigner for its role in an organisation's livelihood and performance. The division responsible for managing an organisation's biggest asset is often the first to face cost-cutting at budget time, and challenged to tighten operating expenditure year upon year.

More HR professionals are looking to technology to make a positive impact on the more transactional aspects of their division's workload. Visionary managers are seeking new ways of returning savings to the business so that they can get on with implementing more strategic HR practices.

The recruitment function has been one of the most recent transaction-based components to undergo a review, in what appears to be a complete turnaround from an inclination in the past decade of outsourcing to agencies.

Some companies have already chosen a hybrid approach in their recruitment process, electing to farm out separate components of the process, such as advertising and reference checking, and managing the bulk of the administrative effort and interviewing in-house.

In the continuous quest for new and cost-effective ways, the recruitment function can add more value to the bottom line. The current focus is to go online. It's no longer just the early technology adopters who are taking the leap with recruitment software. It seems that the typical gap between innovators and mainstream buyers is narrowing, as many organisations begin to reap significant rewards from a new, more efficient recruiting model.

How does an online solution work?

Companies can either become their own recruitment agency via their websites, or subscribe to a

hosting recruitment body to handle their recruitment procedures. Prospective employees therefore can either apply directly to available jobs opened via a certain company's website, or simply register themselves with a hosting recruitment agency.

More and more companies have effectively become their own recruiting agencies, inviting 'passive' job seekers into a database for future consideration when positions become available. Companies with high-turnover divisions have been first to recognise the cost benefits of having a pool of available, pre-screened talent at their disposal. Company career sites usually provide a facility for job seekers to create a personal account with an email address and password, which they can revisit and update.

Much like the individual companies, recruitment agencies also request that job seekers sign up a personal account with them. Job seekers provide information about themselves via an online application form, and are able to view a list of job openings. Targeted questions related to job roles are replacing standard 'attach your CV' functionality, to capture exactly the required information, and allow for quicker and unbiased comparisons by employers.

Who are going online?

The traditional model of recruiting professionals into the government sectors would be through print advertising and paper-based applications. This tradition has slowly but successfully evolved through the usage of Internet that prompted the availability of online resources.

Finding a job in government agencies is now deemed easier and more convenient, as long as you are online. For the employer, providing a job or opening a job vacant for the public is not only cheaper and more manageable with online recruitment, but it also provides talent warehousing for future employment reconsideration.

What is the benefit of Online recruitment?

Like any information technology project, an online recruitment solution must deliver a return on investment (ROI) within a realistic payback period.

Based on a statistic by Human Capital Management Solutions (June 2003), organisations that have introduced e-recruitment systems supported by a dedicated recruitment centre have reduced the reliance and cost of recruitment agencies and print advertising significantly, in some cases by over 60%. Meanwhile earlier on, Talent Zone Asia Pacific (September 2002) stated that the past 12 months reveals a dramatic rise of 300% in the overall use of Internet recruitment tools across sectors. These figures show that the majorities are going online to manage their resources.

Online recruitment is now seen as a cheaper and more systematic approach towards human resource employment.

Some of the benefits that you can reap:

- creates a central hub for all recruitment process
- cut down printing cost and paper management
- ease of application submission created by the Internet job boards and online forms
- talent warehousing through a kept central database
- automated filtering of candidates and flexibility in criteria setting
- improves candidate care and self service through a secure personal account

In essence, when you get all these benefits and more, you are actually reducing your costs and time in candidate searching and thus allowing effective utilization of resources for the more important stage of employment such as interviewing and orientation. You save cost, your ROI is warranted.

How do job seekers find the process?

An increasing number of job seekers are moving to the Internet after having realised how resourceful the web could be. This clearly gives employers the go-ahead to target them via this channel.

The benefits to job seekers of using the Internet are significant. Surfing is less expensive than purchasing print media and additional information are easier to come across. Job seekers find at least four times as many jobs advertised online than in print, and with greater detailed descriptions. Searching online is a lot more focused and faster than sifting through newspapers. The print media still played their roles and functions, no doubt, but clearly in the near future, the technology of recruitment is rapidly shifting.

Job seeker responses have been unanimously positive. Random research found that candidates who have used some form of online recruitment system said that the process was the most fun, easy and enjoyable way of applying for a job. What appealed most was the fact that candidates knew that they were providing the company with exactly the information they needed, rather than posting a CV and crossing their fingers hoping to get lucky. Most reassuring of all, job seekers will not have problems with missed deadlines or interviews due to late arrival of letters of notifications. These are benefits reaped from enhanced features provided such as email and short messaging system (sms) notifications.

Measuring more than just skills

A key advancement in the online recruitment model has been the introduction of integrated psychometric profiling capability, in other words, getting to know the candidate without actually meeting them. Psychometric profiling is defined as a branch of psychology that deals with the design, administration, and interpretation of quantitative tests for the measurement of psychological variables such as intelligence, aptitude, and personality traits. It has become a necessary partner of skills-based assessment, in order to effectively filter increased numbers of applicants from the Internet.

Psychometric profiling adds a valuable extra 'lens' after initial targeted screening that allows for one-to-one comparisons to benchmarked employees who are considered 'star performers'. This can even be used to measure candidate job suitability, in other words, how well a candidate is matched to a given role type with its key job goals.

Case Study:

eRecruitment with Public Service Commission, Sarawak

The Human Resource Management (HRM) Unit and Public Service Commission (PSC) under the Chief Minister's Department are the agencies responsible for recruitment and selection services for the Sarawak State Civil Service.

In March 2003, with the collaboration from both the HRM and PSC, SAINS developed the e-Recruitment System (<http://www.e-recruitment.gov.my>).

One of the proposed enhancements to this system is to integrate it with ePost (eJawatan) is a system built by SAINS for the purpose of consolidating all post or job positions within all the various government agencies and to track posts that are either filled, vacant, inactive or transferred from one department to another.

The ePost can be linked with the HRSuite, a comprehensive Human Resource and Payroll Management System built and designed to manage the overall aspects of HR such as personnel records, payroll, leave, and claims. The relationship between the two systems is straightforward – the ePost keeps track and manages all posts under the government agencies and for each post that is filled, corresponding personnel information, related salary scheme, entitlement and benefits are recorded in HRSuite. All these records are kept and managed by the HR department.

Also integrated with ePost and HRSuite is the ePrestasi or ePerformance. The ePerformance is an online staff performance appraisal system and is used to review for possible promotions or salary increment/adjustment.

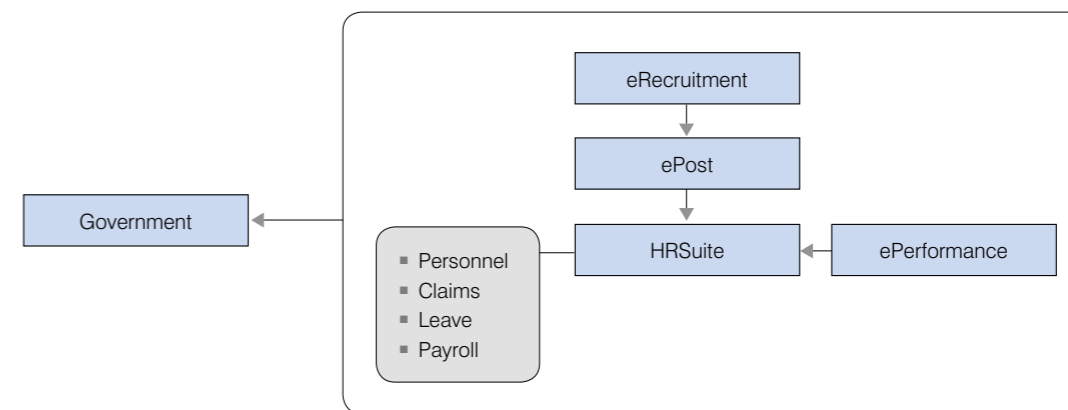


Fig1: Integrated systems for improved management of civil servants



Incorporating **Standard** and **Best Practices** Among Local Councils

Establishing A Common Ground Among Local Councils

ICT will improve services and standardisation of practices Local Councils and their urban counterparts. It will also open doors to development opportunities in other fields such as public infrastructures, educational sites growth and so on.

From a macro level, having an integrated local councils software could only mean one thing: ability to deploy standardized and best practices of management to improve overall administration of local councils.

In Sarawak alone, there are 26 local authorities and municipalities, divided among the many divisions and districts in the State. Its capital city, Kuching, has two – Kuching North City Hall and Kuching South City Council. Each local council may or may not offer the same services to the public within its jurisdiction, depending on the availability of the services and how they are rendered. Thus comes the complication and confusion when trying to establish a common ground to incorporate the best practices of these local councils under one governance.

Essentially, local council is a body carrying out the vision, objectives and policies of the government to serve the local community under their jurisdiction. A good government and local council should readily recognizes its role as the most important service providers to the public.

As the digital age takes over and the Internet becomes a consistent communication and resources channel, there is a need to enable local councils to offer their services electronically and online to the public. There is also a need for them to provide a consolidated and standardized service to the public through a single point of access.

Bringing ICT to Local Councils

Local Councils are expected to keep up with the swift changes in ICT and implement changes from traditional methods to new ways of thinking and doing things. The introduction of ICT in the workplace has brought a different landscape to the Councils' work environment and it has also simplified bulky and complicated work procedures.

How significant is the impact on the Local Councils, especially for those that are in the outlying districts of the State where the work culture differs from the much more modern Local Councils in the urban setup?

The urban councils have to adopt ICT out of necessity in order to be at par with its private counterparts. The

environment where they operate is more challenging and require them to be very efficient due to the high expectation of urban dwellers and demands for service.

At the same time, local councils in the outlying districts will reap two major benefits from the adaptation of ICT into their business processes: the first is improved services and standardization of practices with their urban counterparts to ensure up-to-date information and services; the second is that ICT will open doors to development opportunities in other fields in their areas such as public infrastructures, educational sites growth and so on.

In 1999, SAINS developed a system named Integrated Local Authorities Information System (ILAIS) that served as a first step towards Sarawak Government's vision of becoming a fully Electronic Government (EG). Progressively till now, the system has expanded and has been enhanced to offer workable features to integrate standard procedures among the local councils.

Advancing from that, a new system eLA evolved that extends ILAIS with web-based 24/7 e-business functions to the public over the Internet. The public now will not have to worry about office hours constraint, long queues, missed bills, or parking inconveniences.

Reaping the benefits of an integrated services

An integrated local council software has only benefits, benefits that are not only efficient but cost-effective as well.

The predominant benefits are:

- Enable standard and best practices for better overall management
- Integrated information offers easy access and easy reference
- Efficiency in keeping track of all properties under the local councils
- Speed up and improve revenue collection
- Provide timely financial information
- Reduce time consumption in handling repetitive and mundane tasks
- Improve customer relationship

Local Council Information System

The integrated services core functionalities

The services are subdivided into these sub-systems:

- Standard Accounting & Financial System
- Trade Licensing System
- Rating & Valuation System
- Miscellaneous Bill System
- Revenue Posting System
- Compound & Parking System
- Electronic Bill Presentment and Payment (EBPP)

Standard Accounting & Financial System

The integrated accounting and financial systems support both operational and management accounting functions. It is an accounting programme specially designed to handle all your tedious book-keeping, cash flow and financial reporting needs.

The main objective for this function is to adopt the best practices of accounting control. The system is linked with other related systems such as staff record and payroll in the Human Resource management system.

Trade Licensing System

The trade licensing system enables issuing of trade licenses for businesses operating in the local councils' jurisdiction. The system is designed to facilitate the management of licensing operations. With the existence of a more efficient system, the local councils can now overcome the common problems faced by both parties, such as expired licenses, double payment, accumulative arrears and missing copy bills.

Through this system, local authorities adopt a 'pay first then issue' concept. Some of the benefits earned are improvement in revenue collection, better license management and control, and improved administration work.

Rating & Valuation System

The Rating and Valuation System keeps track of properties under the local authorities, manage property rating and valuation, manage assessment billing and collection and capture information on rate payers. The main objective is to enhance the effectiveness and efficiency of tracking all the properties under the Councils and improve revenue collection. The system allows management to know at any one time the Assessment revenue

collectible and take action against those rate payers who have not settled their Assessment bill. This allows fast, accurate and up-to-date billing with no manual calculation and no manual hand-written bill.

Miscellaneous Bill System

The Miscellaneous Bill System is designed to facilitate the management of miscellaneous debtors in the Local Authorities. The development of this system is derived from the needs to provide fast and accurate debtors information, and to improve miscellaneous bills management and control. Some of the features of this system are reports can be printed as and when required, and information can be retrieved through query function for speedy info-search.

Revenue Posting System

Revenue Posting System is designed to facilitate the posting of revenue data collected from public payment counters of the Local Authorities. It allows payment data from receipting system in digital form at their collection counters to be verified, validated and posted into the software's sub-modules database. For example, it updates the Standard Accounting and Financial System for General Ledger transaction and Rates & Valuation System for assessment bill payment collection.

This system allows for a more and flexible operational approach to payment collection and revenue sum-up. Payment information is captured from receipting systems at public counters or third party collection agent to provide fast and accurate report. This process not only eliminates double data entry, but also saves both time and cost.

Compound & Parking System

Compound & Parking System is designed to facilitate the management of public parking system and compound notices in Local Councils. It serves to create a better and more efficient coordination in dealing with various summonses, notices, compounds and their payments issued by local authorities. The system monitors all type of compound notices issued by various groups of enforcement officers of Local Councils and also monitors payment of compound fine. Apart from that, it also generates computerised reminder notices issued to offenders who have not paid their compound at a preset date.

The advantage of this system is that the tracking of compound notices are made easier as compared to manual system of flipping through volumes of paper files. It gives an edge on the way a compound or fine is being issued, offenders' records are being tracked, fees paid by offenders, and fees collected by the management. Additionally, the system provides a better way to educate and discourage the public from going against the law because not only repeat offenders are marked, but all database records are centralised for fast and easy reference.

Electronic Bill Presentment and Payment (EBPP)

Electronic Bill Presentment & Payment simplifies billing by automating the process of bill distribution, payment authorisation and remittance. EBPP hosting service namely PayBills Malaysia (www.paybillsmalaysia.com), takes on the role of aggregating bills from multiple companies like

providers of electricity, water, telecommunication, and local councils onto a one-stop web payment service for consumers. EBPP involves the electronic delivery of bills from a billing company to a customer, followed by an authorised bank electronic payment from the customer to the biller. Local Councils' issuing of Assessment bills, parking compounds, licensing fees and its renewal can now be settled through EBPP.

The objectives of EBPP are to provide an e-commerce platform for government service providers to deliver their bills to the public electronically and to allow the public to pay online; to provide a fast and efficient way for the public to settle their bills hassle-free; and to improve and enhance information management. EBPP gives an edge on the way a payment service is rendered; through a fast delivery and secure channel.

Case Study:

Sibu Municipal Council (SMC) going online

Sibu Municipal Council (SMC) was the pioneer among the local authorities in Sarawak to heed the call of the government in implementing and integrating ICT into its services to the public.

The State Government realises that local authorities, the third tier in the government infrastructure, is responsible in providing critical services to the local constituents. Recognising this, the State has decided to help local authorities acquire and implement ICT systems to enable them to fully computerise their operations.

On March 18, 2004, SMC successfully launched Electronic Local Authority (eLA), a government project under the State's Electronic Government (EG) programme. The eLA was developed by SAINS and its subsidiary, SiliconNet Technologies Sdn. Bhd. (SNT).

The day ICT moved in, SMC's public services were greatly enhanced and continuously improving. Internally, work administration is also affected in a positive way – fast, easy and reliable.

Mr Hii Chang Kee, the Senior Assistant Secretary who is also the Chief Information Officer (CIO) of SMC said, "Implementation of eLA is an important milestone in SMC's quest to become a customer oriented service organization. It has enhanced the quality of service delivery to our customers."

With the implementation of every new improvement programme or system, the most affected staffs in the organization would be the ones accessing the system daily in managing their work tasks. The response from SMC was really encouraging. Despite the hardship of having to learn new things, they have been optimistic and keep a positive attitude towards the system. "The staffs are equally excited to be a part of the pioneers in implementing electronic government. Though tough initially, they are learning slowly but surely,"

In the long run, SMC looks forward to working closely and regularly with SAINS for the continuous improvement of the system. Hii Chang Kee added.



HR, Financial, Assets & Materials Management Systems

When getting the best business solutions for your organisation, the most important things are efficiencies and effectiveness in work solutions, cost-effectiveness in deployment, and ability to increase overall quality.

In this rapid economic overdrive, a successful company is not just measured from its profits, but also from its overall business management. In the long run, the best management solutions practised by the company will determine whether it will continue to sail ahead or stop midway. And the best solutions should be capable to allow both-way management, which is internally and externally. In other words, the business solution not only handles the staffs and the way they do their jobs, but also handles the overall belongings of the company.

An organisation spreads across geographical locations usually has difficulties in applying standard procedures or best practices among its staffs. Technically, tracking of stocks and properties would be complex especially if the company is short-handed. Imagine how complicated it is for an organisation to manage data from all over its various branches or departments without a single hitch. Notwithstanding, it is essential to do so as this will in turn assist the organisation to make more accurate critical business decisions and determine the correct corporate direction.

Deciding the best business solutions

In most business circumstances, it is always a thrifty task to decide which solution best suits your organisation's needs and if it will actually work in the long run. There are various and multiple software vendors in the market offering different kinds of value-added services and benefits and some may not actually function with others. For example, an organisation may opt for a different system for its Human Resource department to manage its staff, while installing other different systems for its accounting needs and assets tracking – all from different vendors.

However, are all these systems able to be integrated in a manner where information generated from personnel and payroll systems can be understandable by its accounting system? The answer is no by nature, due

to different protocols which are used in those systems. The concerns arise may be not just protocol conflicts, but also strenuous work functions, repeatable tasks and thus worsen work quality, information timeliness, and precarious business processes. In the end, the company will end up with a next to worthless investment. To solve this, why not have an integrated solution comprising of all your business management needs from just one service provider?

When getting the best business solutions for your organisation, the things to look out for are efficiencies and effectiveness in work solutions, cost-effectiveness in deployment, and ability to increase overall quality.

HR Suites for Dynamic Personnel Management

SAINS software, the HRSuites consist of personnel records and management of payroll, claims and leave applications. This integrated system reduces multiple data entry and improves office efficiency by having a centralised personnel information database. Other than that, other benefits include streamlining payroll processes, submission of online leave application for approval in electronic form, direct update to database once leave is approved, fast and controlled retrieval of information and status, automatic routing of claims and leave to supervisors, and integration between each suite with the other for better work processes. HRSuites also incorporates organisation rules and policies for effective management and personnel monitoring processes.

The integration between each suite with the other is what makes HRSuites a comprehensive, affordable and effective solution to manage your personnel. For example, the payroll system is integrated with the claims system, so when a staff has a sum due to him from his claim or reimbursement, it will be traced and auto-calculated into his salary. Another example is that a staff's medical leave is tracked in the leave system, his claimable medical bills can be routed to his claims,

Integrated Business Solutions for Statutory Agencies

and verification of his leave can be checked from his total leave entitlement in the personnel database.

The HRSuites manages information electronically, and thus reduces paper usage. It has a built-in security features to allow access only by authorised users for data integrity and information security sakes. The system's extensive interfaces and information sharing capability will definitely increase work quality for the HR department, respective business units' supervisors and section heads, and thus contribute to overall productivity.

Exploiting Financial Intelligence System

SAINS financial system has an integrated financial structure to support both operational and management accounting functions. It is also an accounting programme specially designed to handle all your tedious book-keeping, cash-flow and financial reporting needs.

The need for a dynamic financial system derives from the necessity to adopt the best practices of accounting control, which is crucial in an organisation's business management. The other objectives are to use industry open standard databases for easy data portability, and to generate timely and accurate accounting reports.

The comprehensive accounting system covers seven main modules, i.e. General Ledger, Accounts Payable, Accounts Receivable, Fixed Assets, Fixed Deposits, Cash Book and Project Accounting. The newly added Project Accounting module is built to track development project cost progressively. It allows multiple jobs of a project to be tracked and supports Work-in-Progress (WIP) movement.

All the accounting modules adopt the best practices of accounting control such as different authorisation levels for records viewing, data entry and confirmation, and compliance with applicable laws and regulations. All financial transactions require confirmation by designated level of authority before it flows into relevant reporting interface. The reporting interface is customisable for organisation's report layout requirements and it is flexible for users to select from the numerous filtering criteria (such as time period, division and section) and grouping styles.

In essence, the accounting controls are configurable and work together with the organisation's internal control system to produce reliable and accurate reports. This shall then provide management a tool to make good business decisions and to keep the financial aspects of the organisation working.

The financial system is integrated with the HRSuites, in particular the payroll system. Salary allocation for staffs involved in multiple projects (charged to different GL accounts) and accounting entries automated with this facility. All you need to do is to maintain the staff-projects relationship on a one-time or as-and-when needed basis.

Assets Management System

The assets management facilitates the organisation's operational and financial management such as plants and fleets. Through this system, the organisation can administer an effective and efficient plant and fleet information and management, while allowing a comprehensive financial planning and budget control.

This system is designed for organisations owning numerous plants, and large number of vehicles and machineries. Most times the properties are not located in one central place and this could cause great management difficulties in tracking and may even lead to business losses. With this integrated system however, asset information is recorded and track to ensure maintenance and supply is taken care of. At the same time, preventive and repair maintenance budget can also be allocated and its actual maintenance cost tracked. The cost, as mentioned, is integrated with the financial system.

Materials Management System

Procurement and inventory system is a multi-user, central database and electronic system that facilitates the monitoring, tracking and management of purchasing, inventory and store operations as well as generating accounting entries to the financial system.

Unlike the manual method of requesting items in common store inventory, the system functionalities, which incorporates electronic store request submission and online reference of stock items available in the store. This system also provides useful features such as stock-taking as and when necessary, penalty calculation, and ability to supply or issue stock partially. Other features are the support of multiple hierarchical levels of locations, inventory adjustment, purchase requisition/purchase order creation and approval workflow, and receipting.

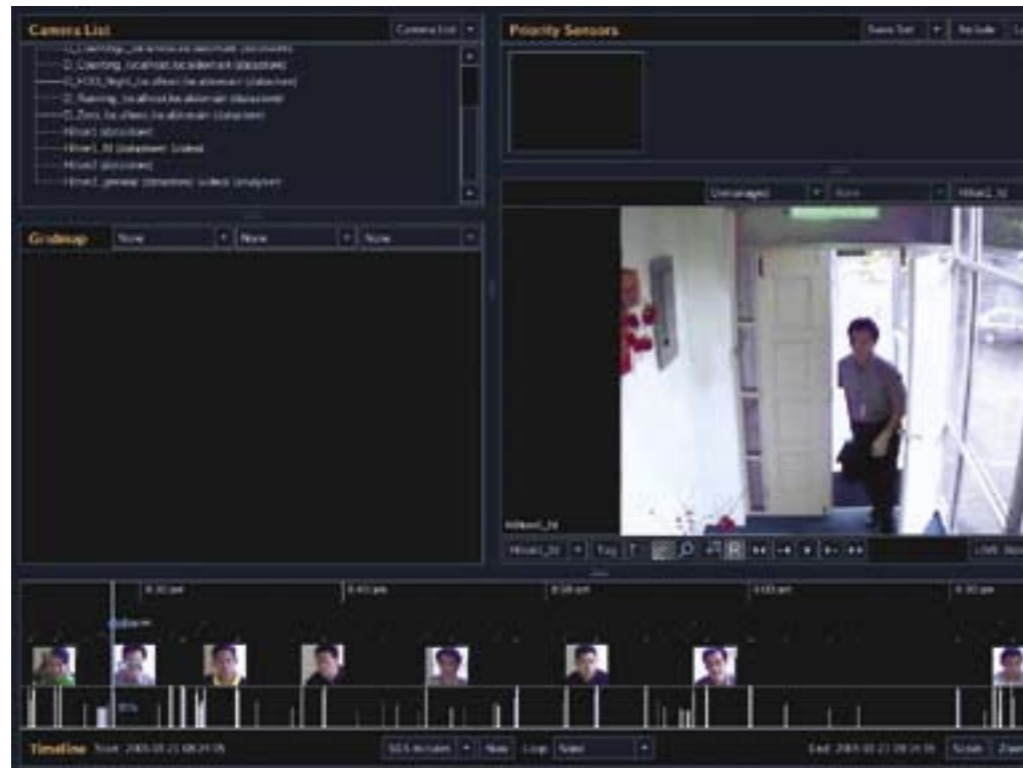
For organisations operating multiple stores in different locations, the materials management system would be very practical and efficient in tracking their various inventories and stocks. This will help the organisations to have a better financial planning and budget control for purchasing.

SAINS HR-FAM Solutions

In its continuous efforts to provide cost-effective business solutions, SAINS offers its HR-FAM (Human Resource-Financial Assets Materials) Solutions as its latest customisable IT solutions, catering for various-size enterprises and business organisations. Depending on your business needs and future directions, one can opt to deploy all systems or certain systems gradually over time, as the business requires.

ICT Solutions for **Security** Management





Sight Beyond Sight

Computer-aided Analysis in Visual Security Surveillance

Visual Surveillance System (VSS) optimises the task of security surveillance, both in cost and effectiveness, whilst significantly broadening access to surveillance data and managing privacy concerns.

Overview of Visual Security Surveillance

Camera based security surveillance systems, commonly known as closed-circuit television (CCTV), is a television transmission system in which live or pre-recorded images captured by a camera or an array of cameras, are sent over a closed loop to a finite and predetermined group of receivers over several available mediums such as coaxial cable or radio waves.

CCTV technology has many industrial and scientific applications ranging from but not limited to, electron microscopy, medical imaging, robotics control and industrial automation. The technology can be found in the transmission of images directly to television sets, visual projection units, plasma displays or over communication networks, and so forth. CCTV technology is also used in diverse settings and situations, for instance, during entertainment events such as concerts, sporting events at stadiums, at focal stages of a medical operation, conventions and seminars, in courts of law for special cases, etc.

The conception for many on the uses of CCTV technology dates back to the earliest years of television. Expectations were high that this technology would be able to enhance industry, education, science and commerce. The expression “closed circuit TV” refers most often to security and surveillance camera systems, chiefly used to provide security surveillance in key buildings or premises such as shopping complexes, parking bays and airports, subterranean rail system, lifts, fuel stations, and 24-hours convenience stores. The list is virtually endless, so much so that security cameras are now a ubiquitous feature in many institutions and places.

In correctional facilities or prisons, CCTV systems reduce the costs of staffing and operating observation towers and make it possible to maintain a constant watch on all areas of the facility. Retail stores often install CCTV cameras as a safeguard against theft and robbery, a

practice, which municipal authorities in major countries have adopted as a way of curtailing crime in public housing and even on city streets. CCTV is also used as a means of monitoring performance in the workplace for example in a production line.

‘Big Brother’ is Watching You

These uses of CCTV technology are not neutral; indeed, they are often a matter of some controversy, especially anxiety of the “big brother” or Orwellian implications of constant perceived surveillance. Based on George Orwell’s book titled 1984, the Orwellian implications mean a police-state society where everybody is seemingly an informant and everyone is essentially a ‘big brother’. The theory is that with the ‘big brother’ system in place, it will create utopia, the perfect society, the perfect state, and the perfect country.

Digital Technology

The basic technology of CCTV has not really changed that much over the years. However, of late, a revolution of sort seems to have taken place with the advent of digital technology. Digital camera, Digital Video Recorder (DVR), Internet Protocol (IP) cameras coupled with the wide acceptance and usage of computers have inevitably transformed the humble CCTV into a very powerful and complex security tool. The visual surveillance landscape has rightfully transformed overnight. Internet technology offers wireless connection coupled with the seemingly endless possibility of remote visual surveillance.

Artificial Intelligence

The latest wave of visual surveillance system incorporates what is being coined as machine vision or computer imaging software to provide the layer of artificial intelligence that is greatly needed to transform the typical CCTV surveillance into a higher plateau of effective and efficient operation. By using intelligent video management techniques, automatic detection

Visual Security Surveillance

of abnormal or unusual events can be achieved. The human operator, instead of having to actively scrutinize all camera feeds, now would be alerted to events as they are detected through preconfigured instructions programmed beforehand.

Similarly the captured video images are still being recorded and stored in a database for instant playback or future analysis. Past events could be reviewed at a glance over a specified period of time, say, the last half an hour, six months ago or even a couple of years back.

Visual Surveillance System (VSS)

The Visual Surveillance System (VSS) utilises various components of technology from Clarity Visual Intelligence, an Australian based global technology company focusing on the development and marketing of unique vision based technology products and solutions that draw intelligence from images of all kinds. VSS is Clarity's core product, an intelligent, turn-key, enterprise-wide system that provides customers with world-class security performance while significantly reducing costs of operation. VSS optimises the task of security surveillance, both in cost and effectiveness, whilst significantly broadening access to surveillance data and managing privacy concerns.

With the massive growth in the deployment of CCTV cameras, the need to automatically filter the available video, so that only video streams containing attention-grabbing information are presented to security professionals, is becoming essential. Using advanced image analysis techniques, the VSS is able to detect and segment activities, detect, identify and track objects and events, and record information captured by surveillance cameras in real-time. Artificial intelligence is used to prioritise these observations so that, once correctly configured, the system can automatically trigger alerts for user defined events and bring the most important security issues to the attention of the security staff.

The system uses a highly scalable and robust database to store recorded video and associated high-level semantic information over large periods of time, providing significant benefits over today's most advanced digital video recorders.

This means that the storage and the management of the video data and the associated operations of reviewing, retrieving, purging or archiving are simplified. The design of the database system itself is also kept flexible in order to accommodate various changes to the surveillance system as and when required. For example, increasing storage capacities or storing recording over fragmented networks is very much possible.

The interface for the VSS has been specifically designed for security professionals. It provides access to real-time and recorded data using many innovative features that improve the process of security surveillance and response management and readily provides the operator with all of the high-level information created by the system.

The VSS is designed to integrate with existing surveillance and IT infrastructure as well as being used as a standalone turn-key solution. So there should be no concerns over having to change the current infrastructures to suit the VSS technology, as it will instead merge with it and together the new amalgamated system will evolve in tandem with the security requirements of the day.

How the VSS works

The VSS uses various components of the Clarity Visual Intelligence's patented technology, combined with a highly interactive interface to create an intelligent security surveillance solution.

The VSS core functions are:

1. Video Acquisition and Distribution
Captures video from analogue or digital cameras and makes it available to the network, the systems applications and the workstation.
2. Image Analysis - Intelligence Engines.
Uses state-of-the-art computer vision algorithms to analyse video footage in real-time to find 'interesting' objects, events, or 'abnormal' behaviour in the video.
3. Data Storage
Stores and serves data created by the Intelligence Engines to other systems and the workstation.

4. Viewing and Surveillance Management

An advanced surveillance workflow tool that provides a highly interactive and intuitive user interface for the viewing of real-time and recorded images and "intelligence data" for surveillance operations.

5. Remote Viewing

Provides remote access to real-time and recorded images and intelligence from handheld computers and from other computers, which have not been designated as dedicated visual surveillance workstations.

The VSS comes with automatic, accurate and dynamic analysis of object and people activity in an area enabling the automation of surveillance. The system then uses pre-configured settings to determine how and where to deliver the information. This enables both real-time and recorded video to be analysed, stored, viewed and acted upon without delay. For example, one would be able to quickly review the start of a security breach if so desired, whilst the event is still taking place.

The Intelligence Engines can be configured to perform the following functions:

- Foreground/background segmentation
- Motion detection in user defined areas
- Object tracking
- Automatic detection of "abnormal behaviour". Examples of abnormal behaviour that can be pre-defined are high-speed motions, stationary objects or zero motion, or objects moving in the wrong direction
- Identification and recording of key "fixed" feature of an object, such as human faces or car license plates
- Object counting such as counting people or cars captured by the camera

Exposé - Highlights of the Visual Surveillance System

Prioritised recording, storing, and reviewing

Existing products simply record everything, as there is no high-level understanding of what is in the video. Having high-level knowledge of what is in the video enables users to:

- Optimise storage and networking by ensuring that valuable resources are used in such a way that the most important aspects get priority. E.g. faces that are detected can be stored in high-resolution while everything else can be stored in low-resolution.
- Improve operations workflow as the operator attention is drawn to focus on the relatively more significant and important video images. The majority of video being captured is mostly not interesting or pertinent and pose as security concern. Having highly trained security personnel watching non-interesting video is highly inefficient and over time the personnel effectiveness would tend to relegate. With VSS, one can have more effective use of human intelligence in an improved workflow environment. The security guard, observing suspicious content in the recording, can place a tag, like a bookmark, to call attention of other guards on duty or for later reference, comparison and analysis.

Increased efficiency

As organisations invest significant resources in video surveillance and security, real-time event detection will become essential to ensure efficient use of those resources. In addition, the efficient use of IT networks and data storage requires intelligent management of video to increase efficiency. The Visual Surveillance System meets these needs.

Minimisation of network use and storage

Through the use of highly intelligent optimisations, use of network and storage can be minimised.

- Robust adaptive activity/non-activity segmentation.
The 'action' can be compressed and stored at a high resolution, while the 'non-action' can be compressed at a very low quality level and also stored far less frequently. This significantly reduces network and storage requirements.
- Region of Interest (ROI) encoding
This allows the operator to designate regions of interest (which can also be automatically chosen by the system), and only this ROI is transmitted or stored.

Visual Security Surveillance

- Network prioritisation

By using sophisticated machine vision processing, objects and events of interest is "picked up, alarms can be raised and the storage and network transmission are assigned highest priority and quality to ensure that these discovered objects and events are captured and transmitted promptly.

Installation, Scalability, Flexibility and Robustness

- Highly scalable

The system scalability is restricted only by the network structure used by an organisation.

- Self configuring network

This means that for a system of many hundreds of cameras, the system can be set-up extremely quickly and when new components are added, the system does not need to be reset or re-configured. Except for some configuration at the Intelligence Engines and setting up task specific Visual Surveillance Workstations, the individual components of the system are self-configuring.

- Standard IT hardware

The system uses standard CCTV cameras and certified off-the-shelf computers and networking equipment.

- Analogue and digital cameras

Video can be acquired and processed from both analogue and digital cameras, enabling organisations to leverage their existing CCTV infrastructure while significantly increasing efficiency

- Robust and maintenance free operation

The Intelligence Engines use sophisticated adaptive scene modelling techniques, as well as robust multi-object tracking algorithms to ensure robust and maintenance free operation for diverse environmental conditions both indoors and outdoors.

- Highly customisable

The whole system can be designed to suit the specific needs of each organisation. The Intelligence Engines can be configured to automate a diverse range of surveillance tasks and the Visual Surveillance Workstation can be configured specifically for individual surveillance professionals' roles.

Your Confidants

Clarity Visual Intelligence is a business partner of SAINS. The company also has research relationships with the University of London, Monash University in Australia and prides itself on maintaining an active role in the academic and research community. Virtual Security Surveillance System is the result of many years of development and is a product that has been designed to solve many of the real world issues faced by security managers and others involved.

Object tracking process



Network Security



Network Security Best Practices:
Applying Multiple Level of Defence

Have you ever wondered what could happen to your corporate information when there are no proper security solutions in your network infrastructure? Take this scenario for example: you put your money or valuable possessions into a safe-deposit box, but somehow, you left your safe-deposit box ajar on your desk. Anyone seeing it will surely be tempted to steal! Imagine your losses when you find the valuables in the safe-deposit box missing or disturbed after returning to your desk.

In a bigger context, this same situation could also happen to your organisation if there are no proper security solutions placed in your network infrastructure. Your corporate information is an asset to your business, maybe even the most critical! It can be information about your organisation's financial statement, your organisation's five-year plan, business proposals or any other information that drives the business. This information could jeopardise the business if it falls into the wrong hands. Network security issues should never be taken lightly because it could spell disaster for the whole organisation.

How do you protect your network? The bad news is that there are no available complete network security solutions that you can buy 'off-the-shelf' in the market. However, the good news is that there are some best practices on how to overcome and manage your network security with the sole purpose of keeping your information untouched by unauthorised people.

One of the best practices is to implement multiple levels of defence mechanism utilising different technologies and tools. The defence mechanism can be implemented at the end user level, physical access level, perimeter level, end device level, and on the data itself as shown in Fig. 1

Defence mechanism at the end users

The first line of defence should start with you – the end user. End users are susceptible to different kinds of threats. The most common and recent one are threats that uses 'social engineering' whereby users are tricked to perform certain actions (e.g. open emails, launch attachments or visit links) that may give detrimental

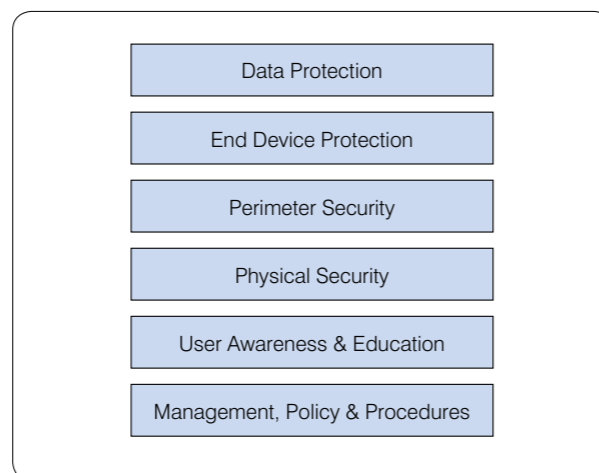


Fig1: Defence at multiple level

result to the user. The objective of the social engineering attack is to by-pass the perimeter security, exploit vulnerabilities found in the host machine and launch further attacks by creating 'backdoors' and such.

Security should begin with each individual in an organisation. Training and security awareness are some of the ways to educate the end users to understand the threats and possible exploitations, and to nurture best practices in safeguarding themselves. This should be further enforced with policies and procedures by the corporate management.

Defence mechanism at the physical access

The biggest mistake that an organisation makes when implementing a network security, is to overlook the importance of securing the physical access to the systems. For instance, it would be pointless to install a firewall if your personal computer or network devices are left accessible for anyone to meddle with (e.g. power down the firewall).

Business critical systems should be hosted in a confined and secured environment e.g. in a Data Centre. Only authorised personnel should be given access to the data centre. Card access with PIN code should be

The best security practice to PROTECT the organisation's network infrastructure is using a combination of firewall, network based Intrusion Detection System (IDS) and antivirus softwares.

used to authenticate and validate all accesses. All accesses, including attempted access, are logged for audit tracking purposes. A surveillance system may be installed to monitor the entrance and movements in the data centre.

Defence mechanism at the perimeter

A networking perimeter is the border between the internal network and the outside network, a crossover from your internal sphere to the networking outside of your sphere.

In this fast moving world, people are getting more and more adept to the changes in technology. Sophisticated tools are now made easily available in the Internet as compared to 10 years ago. Nowadays, it does not take a hacker with excellent programming skills to hack into your network but mere "script kiddies" who have little knowledge in programming. They can cause a catastrophic impact to your network by using "tools" downloaded from the Internet.

To protect the organisation's network infrastructure from the attacks of skilled hackers or script kiddies, or even attacks from within the internal network, a combination of network firewall, network based Intrusion Detection System (IDS) and antivirus softwares are essential mechanisms in building a strong perimeter defence.

A firewall monitors both incoming and outgoing traffic on a network. Its main function is to allow or disallow traffics and to monitor the type of traffics coming into or going out of the protected network. However, the perimeter defence with only firewall will not be adequate, for it will not be able to stop "masqueraded" traffic from getting through, thus opening a "backdoor" for further attacks.

A network-based IDS however, will be able to scan the network traffic and identify patterns that resemble or indicate a possible attack. IDS systems are designed to recognise defined attack signatures or "suspicious behaviour". The network-based IDS can alert the system administrator of the anomalous behaviour for further investigation and actions.

Virus attacks emerged as the cause of the largest total of losses to companies in the United States, according to a survey conducted by the Computer Security Institute in 2004 (due to the numerous variants of worms such as the MyDoom, Code Red and W32.Nimda). It is definitely worth the investment to install the different types of antivirus software suited for securing servers, email gateway and desktop PCs or notebooks on a network.

Defence mechanism at the host (End device)

Although firewalls are extremely effective, they are not reliable enough to be a solitary medium of securing a network perimeter. Therefore it is important that individual systems are protected. These individual systems or end devices are identified as user PCs, servers, routers and other network devices.

There are few ways to strengthen your system and one of them is to ensure that vendors' system software patches are installed and kept current. A patch is defined as a piece of code added to the software in order to fix a bug, especially as a temporary correction between two releases. Patch management is crucial to protect your system. Why? Because the creation of malicious software that exploits software weaknesses is increasing at an alarming rate even after reports of vulnerabilities and patches are posted in the security bulletin.

Even if you have installed the antivirus software and are aware of all the threats, then why do you continue to experience virus attacks? What you might not know is that antivirus software needs to be regularly amended with up-to-date signatures in order for it to recognise latest known viruses, worms and Trojans.

Disabling or removing all unused services and protocols is also an effective way to strengthen your system and minimising opportunities for exploitation. If you are not sure which services and protocols are unused (because it has been set to "on" by default), you can consult your system administrator. For example, when installing Windows XP on your PC, most of the parts and sets are installed at the

default setting. Disable and remove all unused services and protocols to reduce chances of attacks.

In short, practice good computing habit and use readily available and strong computing methods with due diligence at the personal level. You can enable the internal firewall on your desktop as an added security. For instance, a laptop is mobile and can be moved out from the 'protected' network perimeter. When mobile, it needs a firewall on its own to have the same security effect.

Another strong computing method includes using a "safe and strong" password. Avoid documenting your password on paper or storing it somewhere convenient for easy retrieval (like on a post-it note on your computer monitor), for it is equivalent to airing your password for everyone to see.

Defence mechanism at the Data Level

The database is what you want to protect primarily and it is the most prone to attacks by hackers. How do you protect your data?

Encryption is the most effective way to achieve data security. Encryption means the translation of data into

secret codes. To read an encrypted file, you must have access to a secret key or password that enables you to decrypt it.

Another way to secure your data especially when transmitting it over the Internet is via a protocol called Secure Sockets Layer (SSL). SSL works by using a private key to encrypt data that is transferred over the SSL connection. Users of a public network sending credit card details should use this feature. The SSL thereby authenticates the client and server to each other and thus ensure data integrity and privacy.

Why different level of defence?

- 1 If one defence mechanism fails, another will already be in place to thwart an attack.
- 2 It reduces the risk of having a costly attack on a network.
- 3 It creates a more difficult environment for the attackers to have a successful penetration.
- 4 It creates a higher chance for an attack to be detected.
- 5 With a multiple layer of defence, it is most likely that an attacker will give up and prey on more vulnerable targets.

Case Study:

Curbing worms attacks on SarawakNet

SarawakNet is the Wide Area Network (WAN) for Sarawak and operating on it is are the Intranet services for the Sarawak Government. SarawakNet is designed, developed and operated by SAINS and has been in operation since 1997. This Government Intranet service is available by subscription and its online services transmit information in the form of textual data, voice, image and video format. At present, it links over 200 Local Area Networks (LANs) and serves a total of over 13,000 registered users.

Currently, there are over 80 points of presence (POP) spread over 1,000 kilometres connecting the State Capital to all the 11 Divisional Administrative Centres in the State. It serves as the focal point for effective data processing and dissemination of government information as well as an efficient gateway for e-government and e-commerce.

In 2004, the Sasser worm outbreak hit the global IT world, leaving disastrous impacts on computerised systems worldwide. SarawakNet was not spared and if it weren't because of the foresight and strong defence mechanisms already invested and built in and around SarawakNet, the system would have taken longer time to recover.

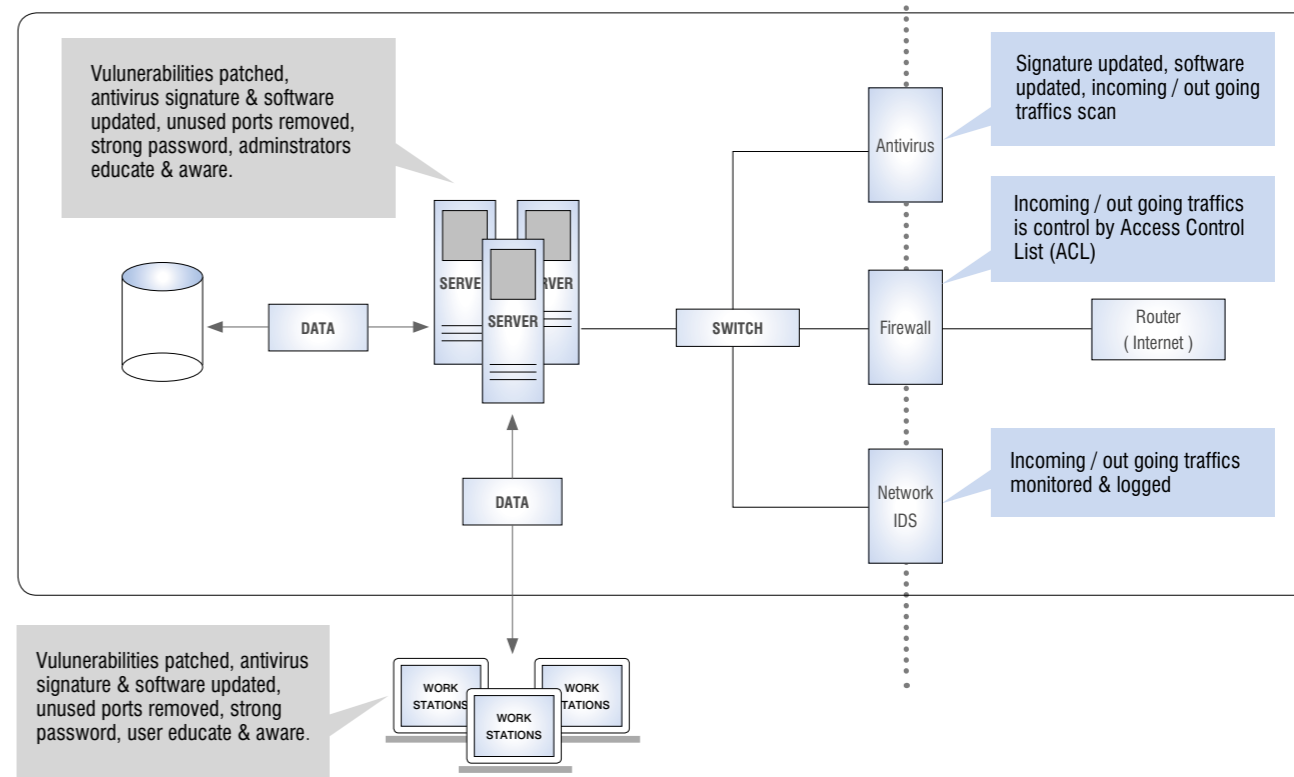
The Sasser worm was initially declared a medium risk virus when it was first discovered in May 1, 2004 but later declared

Typical Network Design Security

Physical & logical access secured.

Physical & logical access secured with OS hardened.

Critical systems are located in confined space, restricted to authorised personnel.



as a high risk virus after its impact was studied and analysed. The Sasser worm (W32.Sasser.A and its variants) targets a security issue with the Local Security Authority Subsystem Service (LSASS) that Microsoft later addressed with a released security update. Sasser targets computers with out-of-date software, and those computers remain at risk of infection until the update is installed. It propagated through network connections and LSASS "vulnerability hole" that enable remote code execution on an infected system. The worm causes computers to crash and reboot numerous times, which in turn congested computer networks and slowing down systems worldwide.

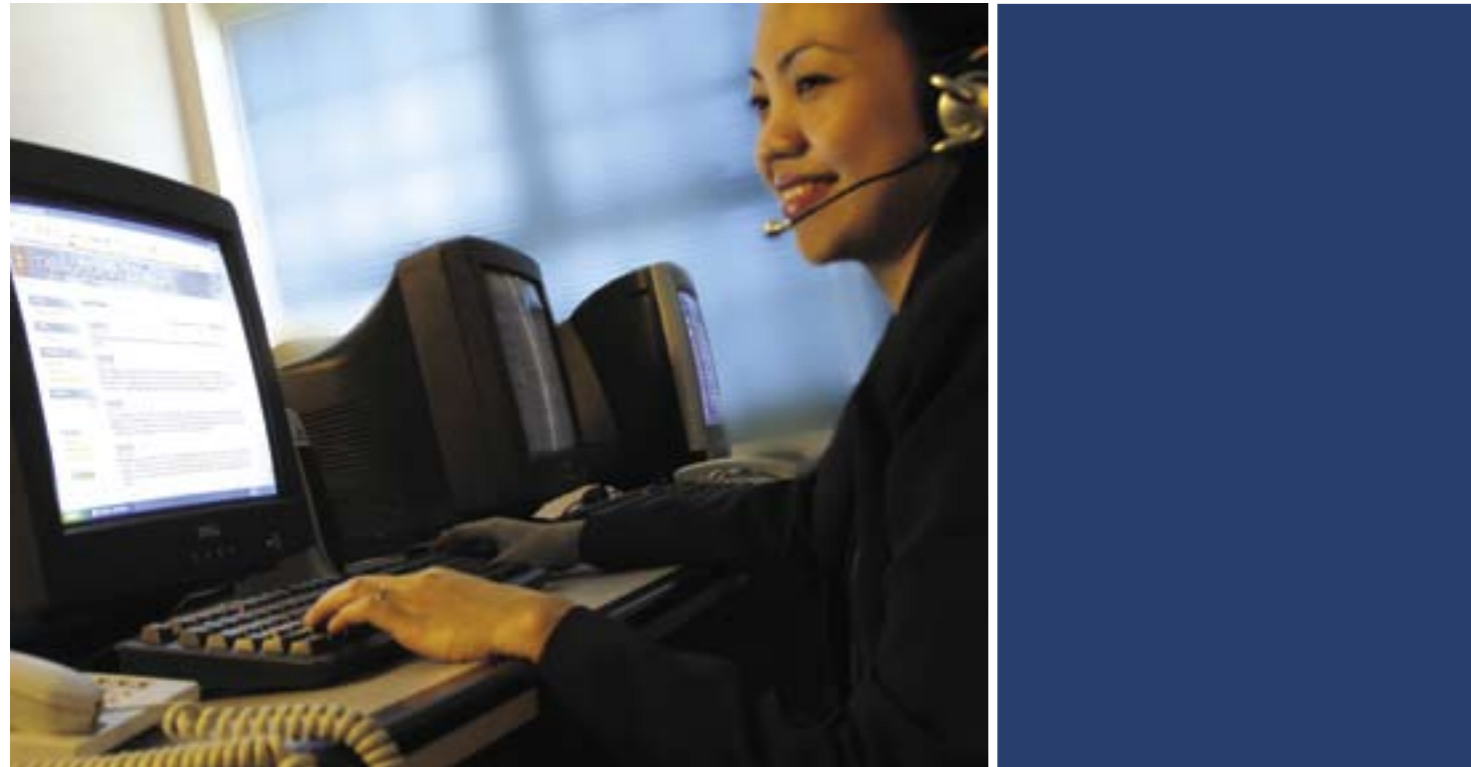
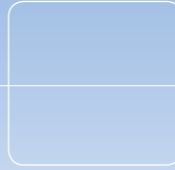
The outbreak on SarawakNet was quite minimal as the situation was detected and put under control at its early stage.

The situation might have been worse if the loopholes were to have gone unnoticed and if we were ignorant of good users' computing practices. The Sasser might have passed through the perimeter security or through mobile users who may have connected to shared networks (peer-to-peer network e.g. kaza) while at home, and then unknowingly contracted the virus. When PC vulnerabilities are exploited, infections are usually rapid and propagated to other vulnerable PCs. Almost immediately, rapid propagation happened across unpatched machines to bring down networks and fatally affect business processes.

To restore and fortify SarawakNet after the attack, SAINS personnel teamed up to minimise the attack effects. Those involved were the helpdesk unit, on-site support team, system administrators, and engineers.

ICT Outsourcing Opportunities





Beyond Picking Up The Phone

Citizen Helpline becomes a communication platform for citizens to reach a wide and vast group of government agencies in a speedy manner

Ever wonder what goes on at the other end of the line when you picked up the phone to make a complaint or request for a service from a company providing a call centre facility? As a first-time caller, you may have apprehensions on how you will be treated, what kind of services you will be getting and if it will meet your expectation. It is normal for a caller to be hesitant and anxious while anticipating on the kind of service to expect. After all, the company did advertise its surety and agreement to offer assistance that comes with providing the call centre facility.

With the capability and super-strength of Information Communication Technology (ICT), most call centre facilities today can provide better and improved services. Technology gives an edge on how a call is received, treated, monitored, and eventually resolved. The call centre and the caller both receive due satisfaction and thus the system are deemed functional and effective.

Most call centre facility acts as a help-desk for the company to assist its customers in information requests, and receiving feedbacks and complaints to a certain service or products rendered by the said company. But how will this facility work in a bigger realm like the Government?

Connecting the Public with the Government

The dynamic Government houses many ministries, departments, agencies, sections, and units – each functioning either separately or hand-in-hand to manage and provide services to the public. These bodies and

organisations are spread out across geographical locations and territorial boundaries, but their one main goal is the same – to be able to offer sound public service to the community as a whole.

Somewhere along the line of supply and demand for service, there arises a common understanding to keep improving, to have a better communication, to make sufficient provision, and to ensure issues are resolved. However, the public is sometimes unaware of how to get their voices heard by the Government. Of course, there are many ways to connect to the Government but those ways cannot always ensure correct connection and thereby cannot guarantee correct treatment. Too many numbers to call, which one will give you the answers you need without you having to be passed around?

The Government offers so many services at one time to the public through its many agencies and organisations. Setting up special units at each agency or organisation to keep track of public response towards the services is not only impractical, but also costly in terms of infrastructure and manpower.

Citizen Helpline

That was how the Citizen Helpline was conceived – to create a single interface between the Government and the public without any geographical and time boundaries. That means the public will not have to worry about who to call when they want to make a complaint, give their feedbacks or request for information on public

Citizen Helpline

services. One designated Helpline service is not only easy for the public, but the centralised function also eases administration work for the Helpline operators and all Government agencies and organisations.

The Citizen Helpline is a call centre outsourced by the Government to handle all calls pertaining to public services. It is also treated as a One-stop Centre for the public to reach the Government. In no time, the Citizen Helpline can evolve to include handling calls from non-Government or private agencies who also offer public services. These can be financial institutions, construction companies, airline companies and so on.

The goals of Citizen Helpline are to give the public a speedier reply to their calls, relay the reports to the correct government agencies or organisations, and making sure the calls are acted on and resolved to ensure customer satisfaction. This in turn, allows relevant agencies or organisations to work together to come up with a solution to solve the issue raised by a caller. Overall, this will encourage civic consciousness among citizens and also fosters closer cooperation and teamwork among departments, for overall community benefits.

The Citizen Helpline receives various type of calls pertaining to public services such as complaints, feedbacks and suggestions, request for information and even compliments. Examples of calls received by the Helpline are reports of fallen trees blocking roads, potholes on busy roads, delays in garbage collection, noisy neighbours disrupting public peace, abuses of power by individuals, lack of enforcement, requesting for help during disaster occurrences such as floods, requesting of information on public events or name of a certain VIP, and giving feedbacks and suggestions to improve services.

However, emergency calls such as fire breakouts or crime cases needing urgent attention are advised not to be reported using the Helpline due to the nature of the cases. Personal problems are also not encouraged to be reported using the Helpline.

How the Citizen Helpline is executed

The Citizen Helpline has a designated set of number which is easy for the public to remember, and easy to call either via a mobile or a fixed-line. At the same time, the public can also reach the Helpline services via other modes of communication such as fax, postal mail, email, public kiosk, or walk in into its centre. Now with Internet, the Citizen Helpline is enhanced with web-based capability, thus allowing the public to make self-service online submission and checking on the status of their reports.

The Citizen Helpline administration and work-flow is performed using a system called the Centralised Case Tracking Management System. With this system, the Helpline personnel can manage, track, monitor, and record all calls efficiently and effectively.

How it works:

- Caller called Citizen Helpline
- Reports are recorded in the system
- Caller will be given a reference number (Docket number) for reference
- Calls/Report routed by Citizen Helpline operator to relevant agencies/department for further action
- Caller will be informed of progress – calls routed, complaints acknowledges, action taken
- Caller updated on case status
- Citizen Helpline acquiring caller's feedback (satisfied/unsatisfied)
- Rerouted if unsatisfied
- Case closed

The e-Legislative System offers a paperless quality management system to enhance the efficiency and effectiveness of the Government Legislative Assembly. It is imperative for the Assembly to provide an efficient, precise and speedy record and report on the proceedings and its committees through advance information resources and research system

Standing at the forefront and the first person a caller come in contact with, Citizen Helpline personnel are trained and knowledgeable in providing exceptional customer service. They operate by shift to ensure the Citizen Helpline service does not stop.

New Perspective: Relationship between Parliamentary Agencies and Public Services

The society of late, demands that the Government be more transparent in relaying information to the public and to provide an effective and accountable government. These aspects tie in with the thrust of the administrative practices and the culture of the Public Service.

In a bigger political context, the basic levels of Government public administration starts with the public, going up to the Departments/Ministries, to Legislative Assembly, and finally to the Parliament.

So where does the Citizen Helpline comes in? How will it relate the public concerns to the Government ?

This new perspective was borne from the concept that if public services can be improved using the Citizen Helpline, then overall future development whether physical or virtual can be achieved using the same facility function.

The Parliamentary is the highest level of decision-makers which determines the directions of the country's overall development and future progress. The decision-makers

are influenced by voices of the Legislative representatives, who indefinitely represents the public voice. The Citizen Helpline's management system is already reliable and capable to be the channel of public voice.

Electronic Legislative Assembly Proceeding System

The e-Legislative System offers a paperless quality management system to enhance the efficiency and effectiveness of the Government Legislative Assembly. The electronic Hansard System is specifically used in the Legislative Assembly Proceedings today.

It is imperative for the Assembly to provide an efficient, precise and speedy record and report on the proceedings (Hansard) and its committees through advance information resources and research system.

The e-Legislative system comes with intelligent features:

- Designed on web-based technology and can be accessed by any authorised user in a Local Area Network (LAN) or Wide Area Network (WAN) environment using a web browser.
- The built-in security features allow only authorised users to access the system.
- Its user-friendly interface allows easy, fast and accurate queries on any subject or topic.

- Stores speeches, debates and other proceedings of the House, which users can search and retrieve from the exact records of the proceedings.
- Users can view the textual information on the document as well as access the multimedia hyperlink in the form of sound (for speeches), still and moving images that are being referred to, in that particular document simultaneously.
- E-Legislative is a living system. Not only is data conversion continuously running on past records of the proceedings, but it also captures the current proceedings as they unfold.
- Allows new information to be added to the existing State Constitution, the Standing Orders of the House and records of proceedings to be amended.

Citizen Helpline and e-Legislative combine forces

Figure 1 below reflects how Citizen Helpline and e-Legislative interacts. The Helpline receives various and numerous calls from the public daily. Some calls are easier to solve, albeit longer, but some issues are relevant to be raised in the Legislative Assembly.

Currently too much emphasis is placed on Parliament's role of debating and passing bills and too little emphasis on the examination of what has happened with past legislation in terms of its implementation and impacts on society. By shifting more of its efforts into the scrutiny of executive performance and the transmission of public concerns to the cabinet and the bureaucracy, Parliament could develop a more meaningful role within the policy process.

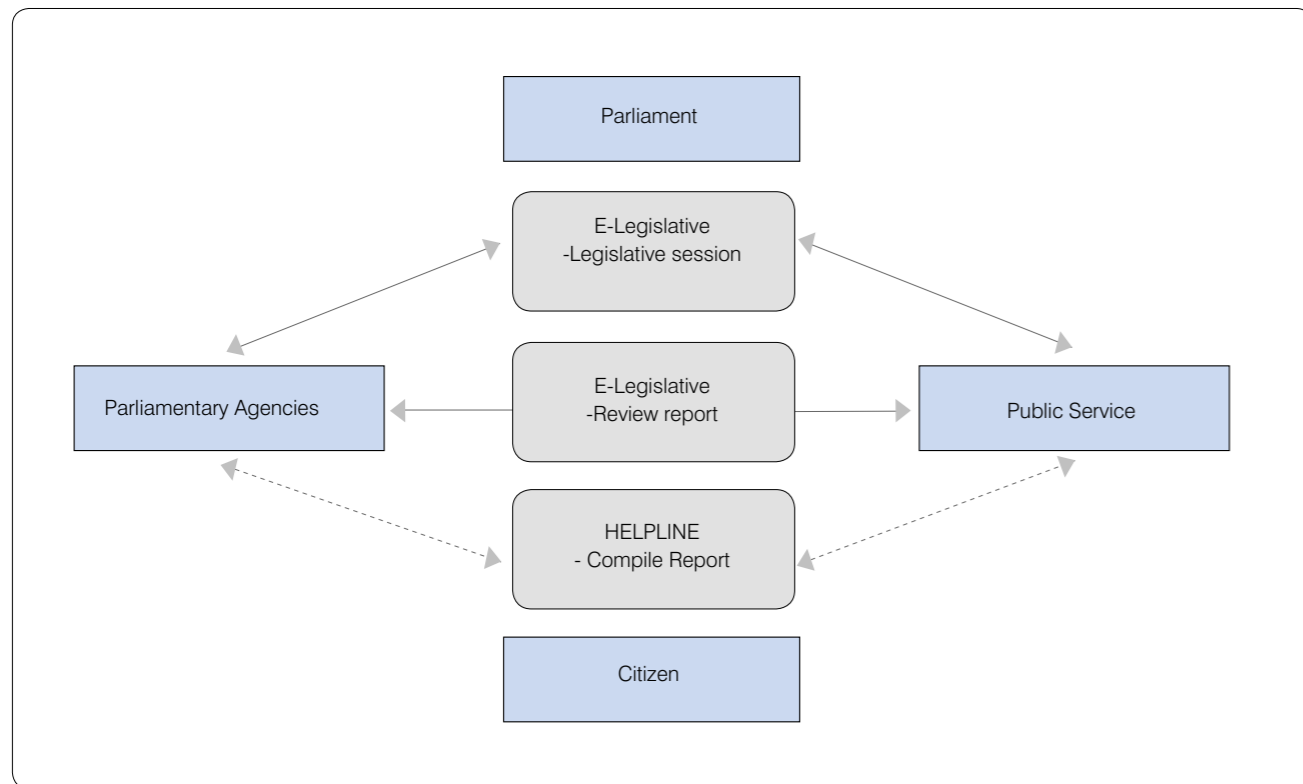


Fig 1: Relational activities between Citizen Helpline and e-Legislative

Case Study:

Citizen Helpline in Sarawak State Government, more than just a Call Centre

A living model of the Citizen Helpline was first implemented by the Sarawak State Government in 1992; initiated by the Chief Minister's Department. Then, it was handled manually and monitoring of calls was paper-based and responses were slow. In 1996, the Citizen Helpline was computerised using a client-server system developed and implemented by SAINS, and by 1999 the Helpline was upgraded with web-based features. Currently, the service is available on the Internet.

In the aim to provide 24-hour service, the State Government fully outsourced the Citizen Helpline (also known as Talikhidmat in Malay language) to SAINS. The owner of the Helpline system is still the Chief Minister's Department who oversees the whole process and monitors the responses but SAINS acts as the facilitator and overall manager of the calls and cases reported.

In year 2004, Citizen Helpline reported that calls related to roads condition were on the rise. Callers called to complain about terrible road condition due to road maintenance or upgrading work and new development project on the coastal road area in the state. Callers also complained of inconsiderate road construction companies doing their job at ungodly or peak hours thus disturbing the peace or inconvenience other road users.

Other issues highlighted were on poor road maintenance works where, in some cases, roads were not properly patched and holes still exist. Even underground pipes were broken due to road maintenance work. The worst part was the waste such as soil dust and tars were not clear after the upgrading work and this caused accidents.

These reports were compiled, tabled and recorded by the Citizen Helpline personnel. Some were rectify immediately by local councils and enforcement organisations. The issues caught the attention of some politicians and were raised during the Legislative Assembly Proceedings.

To contact the Citizen Helpline:

Call 555999 (State-wide)
or Fax to 555888

Email: 555999@sarawaknet.gov.my

Or make an online submission at its homepage <http://talikhidmat.sarawaknet.com.my>

Or you can also write to:
Talikhidmat Centre, Level 8, Corporate & Public Relation Unit,
Chief Minister's Department,
Wisma Bapa Malaysia, Petra Jaya,
93502 Kuching, Sarawak.



Business Continuity Assurance

Outsourcing Data Center operation reduces the total cost of ownership for any ICT investment made as well as simplifying ICT operation complexity without sacrificing quality service

Data Centre is becoming a familiar jargon to most business organisations in this globalisation and digital world. As long as business organisation leverage more and more on Information Communication Technologies (ICT) to be competitive in their business world, a data centre will soon be part of their ICT plan.

A Data Centre is a facility used for housing a large amount of electronic equipment, typically computers and communications equipment such as application and database servers, storage system storing business data or information. As the name implies, a data centre is usually maintained by an organization for the purpose of handling the data necessary for its operations. Practically every company mid-sized and upward has some kind of data centre, and large companies often have dozens of data centres.

As data is a crucial aspect of most organizational operations, a smart organisation would be very protective of their data. A Data Center must therefore keep high standards for assuring the integrity and functionality of its hosted computer environment. This is depicted in its physical and logical layout. It is expensive to build and to be equipped with redundant electrical power supply, highly sensitive fire protection system, precise environmental control system, raise floor system, secured access and surveillance system.

Data Centre Concept

Data Centre is not a new idea and it exists back in the 1960s and 1970s during the mainframe world. It was then recognized as a highly centralized space to host the expensive computing resources that were only reserved for most critical functions.

However, the introduction of client server technology and low cost computing resources in 1980s and early 1990s encourage the distributed approach to implement ICT at the departmental level or branches of each business organization. The rapid growth of distributed

ICT deployment brings about a high cost of ownership. Building, maintaining and operating numerous reliable and stable data centres are costly. With the limited budget, the data centres were replaced with distributed small server rooms without proper infrastructure and thus, causing lots of application downtime and business interruption.

In late 1990s, the paradigm began to shift with the introduction of Internet and web-centric technologies. The web-centric technology enables application and database servers to be consolidated at a physical location and accessed by end users over the Internet without any geographical boundary.

The web-centric technology drives the need of high-service level facility infrastructure to house all the ICT resources to minimize the application downtime and business interruption. Since then, the idea of building a Data Centre is reborn.

Data Centre Values

The main purpose of a Data Centre is to run the applications that handle the core business and operational data of the organization. Some of the values of a Data Centre are as below:

Reliable infrastructure

By consolidating several distributed buildings of less adequate server rooms into a Data Centre with excellent and redundant infrastructure, the web applications are able to enjoy a good, stable and reliable infrastructure to meet the end user higher service level expectation.

Optimise computing resources

A good Data Centre drives better computing resource utilization and optimisation by sharing the server, storage and network infrastructure across multiple applications, since all the applications reside in a single physical location. Such sharing approach will save money for an organization by eliminating duplication, thus reducing investment in computing resources.

Lower operational cost

By consolidating server rooms, there will be savings in the ongoing overheads and operational cost. Some examples of cost-savings are manpower salary and administration, support and maintenance of ICT applications and facility, rental, etc. Less ICT experts and computing resources such as server, storage and network are required to run a Data Center in a physical location comparing with operating distributed server rooms and computing resources located across multiple sites.

Streamline manpower and experts

Simplicity of ICT operation is another driver to build a Data Center. Managing a huge team, enforcing consistent operational processes and practices as well as ensuring high service level across multiple sites are complex and difficult to achieve. With a Data Center and consolidation approach, hiring and managing a slim team of ICT experts, who are good in operational processes to deliver a high quality ICT service to the end users, could simplify such complexity.

Technology complexity, a common issue and bottleneck when advancing ICT in a heterogeneous and distributed environment, will be of less impact to a Data Center as the specialization of ICT skill set can be streamlined and made readily available. ICT specialization is a fundamental requirement to operate a Data Center and therefore, a team of ICT experts with respective specialized skill sets in the data center facilities and infrastructure such as environment control, power, network, server, storage, database, backup and security will be employed and retained.

Skill growth opportunities

Only a reasonably smaller team of ICT experts is required due to the consolidation approach. The issue of shortcoming of skills in ICT experts is overcome because the savings in reduced headcount can be used for continuous skill development program for

these ICT experts; hence will attract, enhance and retain their loyalty for their career path in such a rapidly changing technology world is ensured.

In short, a Data Center will reduce the total cost of ownership for any ICT investment made in a business organization as well as simplifying the ICT operation complexity without sacrificing the quality of service.

Data Centre and Disaster Recovery

A good and reliable Data Centre not only offers benefits to organizations in maximising storage utilisation and operation, but also can be relied upon when disasters occur. With the IT revolution hitting every enterprise, organisation and global market, a Data Centre role has quickly evolved to include the ability to provide business continuity services.

A Data Centre is now not only required to be able to protect critical business information and data, but also the ability to recover in a case of business interruption. In order to be efficient, all businesses that rely on ICT must be prepared for interruptions of any type and duration, from day-to-day glitches to a full-scale disaster.

In general, disaster could be divided into two: Natural Disasters and Chronic Disasters. Natural disasters are catastrophic natural events such as hurricanes, tornados, earthquakes, floods, fires and rainstorms. Meanwhile, chronic disasters refer to the everyday shortcomings in performance, availability, capacity and accessibility of your IT systems that impede or make it impossible for your customers to do business with your organisation. Computer/internet crimes, computer viruses, power failures, network/telecommunication failures and human errors are instances of chronic disasters.

When planning for a Data Centre, one of the important factors to look into is the Disaster Recovery (DR) plannings and how a Data Centre can help organisations recover quickly from any business interruptions thus saves millions of dollars.

SAINS Data Centre

SAINS offers a comprehensive range of end-to-end Data Center Services to meet your business needs and growth such as:

- Data Protection Services which include data recovery and centralized backup services. The data recovery will ensure restoration to enable organizations to pick up from the point of downtime
- Shared Hosting for small and medium-scale business organizations embarking into e-business at an affordable budget
- Dedicated Hosting aimed at organizations that needs dedicated or specific hardware, software and network equipments to run their businesses
- Server Co-location for organisations that have invested in business applications and hardware but require a reliable facility to ensure that the applications operate in an optimum environment which guarantees maximum uptime
- Application Hosting for organizations that require customised applications and a 24/7 managed and safe environment with scalable server, redundant power and network links for maximum uptime.

SAINS currently operates two data centres located within 10-kilometer apart. Our Data Centres are highly secured and operate 24/7 to ensure non-stop business functions and uninterrupted performance.

Each centre is equipped with leading edge infrastructure:

- Power Systems
 - UPS with N+1 Redundancy
 - UPS with Power Management software for servers
 - Dedicated backup generator
- Air Conditioning Systems
 - Installed and designed based on N+1 for redundancy

Monitor and control temperature and humidity

- Security Systems
 - Proximity/Pin Code Card Access system
 - 24 x 7 CCTV monitoring and recording
 - Security Guard
 - Firewalls and Intrusion Detection System
 - Switching based Local Area Network
- Centralized Monitoring
 - 7 x 24 System Monitoring and Support by the Data Center Specialists
 - Detect environmental changes for early warnings
- Fire Detection & Suppression Systems
 - High Sensitive Smoke Detection system
 - Non-toxic gas for suppression
- Raise Floor
 - Spacious area for computing equipments
 - Easy access to electrical and data cabling
 - Improved airflow in the Data Centre
- Internet Connectivity
 - High speed Internet link
 - Internet load sharing and redundant link via two separate Internet Service Providers
- Network Infrastructure
 - Fast Gigabit and Fiber switching technology
 - Leading edge network equipment; Cisco and 3Com
 - Redundant and Hot-Swappable network components
- Technical Support
 - Partner of leading edge technology providers such as: Cisco, 3Com, Sun, HP-Compaq, Veritas, Oracle, etc.
 - Certified and well-trained engineers to provide support

SAINS Subsidiaries



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Stratfos Consulting Sdn Bhd

Stratfos Consulting Sdn Bhd is a rapidly growing consulting firm focused on delivering practical **Information Technology** and **Management Consulting**. Having seasoned management with hands-on experiences and successes, Stratfos Consulting provides an impartial and pragmatic perspective on ICT Management and Planning.

Stratfos Consulting anchors its strength on the selection and development of its consultants. Stratfos Consulting is made up of a group of dynamic and experienced consultants, some with over 20 years experience, who are multi-faceted and multi-disciplinary consultants. Our experiences include ICT Planning, Project Management, Analysis, Development and even Operations / Maintenance. Our consultants are conversant with best practices in the consulting realm and are exposed to international ICT issues.

In addition to full-time professional staff, Stratfos Consulting collaborates with world-class partnership firms, both local and international, in niche technology and business areas in providing excellent training and consulting support. The close association with these world-class partnership firms and their business connections has also given Stratfos Consulting access to latest developments in business intelligence and consultancy services management.

Stratfos Consulting's Services are:

ICT Situation Analysis and Audit Services

Occasionally management may have concerns on specific ongoing ICT projects or initiatives. Stratfos Consulting can provide an insight into the project through proven methodologies and experienced analysis skills. Hence, recommendations would be practical and be implementable by our knowledgeable consultants.

Strategic Information Systems Planning

Development of medium and long-term IT Strategic Plans for the clients include development of Data, Applications, and Technology Architectures. This is done in such a way that it would optimize the users of an organization's information resources to support the organization's mission and objectives.

Technology and Architecture Planning

As corporations seek to deploy integrated solutions, large pitfalls await them in the form of expensive implementations. We can help in developing requirements and ensuring that clients do not fall into the same traps that many ill-fated companies have fallen into.

Business Process Re-engineering (BPR) Services

To support development efforts, BPR is essential before designing new applications. Re-engineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance. The said performance comprise of cost, quality, service and speed. Therefore with BPR, we do not automate, but obliterate.

Methodologies Development

Frequently, in-house design, development and implementation efforts in IT do not give the expected or desired results. Often the projects are behind time and usually overrun planned costs. We can help institute a discipline that allows the management of those activities better and in a more orderly and consistent manner. This is done by developing a methodology for each activity that would include principles, policies, guidelines, templates and tools.

Some of Stratfos Consulting's key projects are:

Implementation of an ERP for a Power Utility in Sarawak

Stratfos Consulting provided 11 consultants for the implementation of SAP in Sarawak Electricity Supply Corp in 2002. The project was led by PwC in the software implementation. Stratfos Consulting also acted as overall coordinator including the hardware implementation. The areas covered in the software implementation were Customer Care Service, Materials Management, Financials, Controlling, and Project Services.

Development and implementation of ICT Strategic Planning Methodology for the Sarawak State Government

Stratfos Consulting developed and implemented a customized ICT Strategic Planning methodology for the Sarawak Public Service consisting of over 90 agencies. The implementation process included workshops that were held for 6 months.

Facilitation of the ICT Strategic Plans for the Sarawak State Government

Stratfos Consulting managed and facilitated over 90 agencies under the Sarawak State Government in the development of their 5-year ICT Strategic Plans using a customized methodology. Parts of the requirements were assisting in the development of key State ICT directions and strategies as the foundation for the agencies' ICT plans. The scope of the project included an application system for monitoring the development and implementation of the plans.

Development of the Sarawak Government Applications Architecture

The project required the identification and outlining of a road map for the Public Service applications systems and how they interact. The scope included prioritization and opportunities for consolidation for central projects.

Development of the Sarawak Government Technology Architecture

This is an ongoing key project as the State Government strives to integrate all its technologies and to maximize the investment in ICT. The scope of the project recommends technology directions and migration plans. The architecture also includes identification of essential services for the Government.

ICT Audit Services for the ICT Unit of the Sarawak Government

Stratfos Consulting provided consulting services in the auditing procedures of an agency's troubled ICT project. The scope of the auditing included a situation analysis, recommendations for the directions and actions to be taken to resolve the situation.

Study on Customer Information & Billing System and Associated Systems for Kuching Water Board

A study was conducted for Kuching Water Board (KWB) in its effort to upgrade the then Customer Information & Billing System (CIBS) and other associated systems. Among the recommendations were the implementation



of unique consumer number, development of KWB Intranet, and integration with State Government ICT initiatives. Strategies were also proposed for migration, for product and vendor evaluation, for product procurement, and for data conversion.

Development of IT Strategic Plan for CMSB Construction and Road Maintenance

A project was undertaken in 2004 to develop an IT Strategic Plan for Construction & Road Maintenance SBU (Strategic Business Unit). The scope covers the SBU and its group of companies. The elements

prescribed included a situation analysis, the organization's strategies for moving forward, HR requirements, applications model, ICT facilities requirements, network communications requirements, and recommended technology platforms. It also included strategies for integrating with the parent holding company (CMS) initiatives.

Stratfos Consulting operates as an independent company without any links to vendors or technologies. Our services are honed from years of practical experiences instead of through theoretical training only. Hence, we pride ourselves on recommendations we would be prepared to implement.

Stratfos Consulting Sdn Bhd (542870-K)

2nd Floor Lot 318, Lorong 12 Jalan Rubber
93400 Kuching, Sarawak, Malaysia
Tel: (6082) 234342 Fax: (6082) 234454
Email: service@stratfos.com

www.stratfos.com

SAINS Subsidiaries

SiliconNet Technologies



SiliconNet Technologies Sdn Bhd

SiliconNet Technologies Sdn. Bhd. (SNT) was established in July 1996 as a wholly owned subsidiary of Sarawak Information Systems Sdn. Bhd. (SAINS).

As an ICT-related company, we specialise in the forefront of the Internet technologies. SNT strives to become a total Internet Solution provider mainly focusing on the so-called I3 industry, namely Internet, Intranet and Extranet solutions.

Experience & Expertise

Nearly every facet of the business cycle has now been modeled through service technology. Recognizing the challenges, we therefore strive to ensure productivity, efficiency, and profitability with quality professional services.

Dedicated Team

SNT has a dedicated team of experienced professionals necessary to achieve both an immediate returns on investment as well as long-term sustainable results. We identify the needs and objectives of our clients without outsourcing our work to ensure confidentiality and total value and commitment for their investment.

Products & Services

We specialize in :

- Web designing
- IT Consultancy
- Development & Implementation of Solutions for the I3 (Internet, Intranet, and Extranet) Industry
- Networking & Custom programming
- Java Centric Web Development
- Portal Solutions,
- ECommerce
- Multimedia Services & Security

Services & Solutions

• Internet & Intranet Solutions

Our team of developers will be working closely with our clients to help them visually and functionally develop, manage and implement portals and websites in a manner that capitalizes on today's market environment.

• EBPP (Electronic Bills Presentment & Payment)

SNT also implemented a reliable and convenient online electronic billing system under ' Paybills Malaysia '. A convenient, safe and secure way of paying your bills online. Paybills Malaysia (www.paybillsmalaysia.com) It acts as a ' one-stop payment web service'. The system speeds cash flow and reduce collections, save labour and time, enhance customer relationships and help business grow namely utility providers, telecommunication providers, banks and financial institutions, and public agencies etc.

• Web-based Applications Development & Implementation

Whether you are looking for custom hardware development, custom application development, consulting services or mentoring, our experienced team members will work with you to meet your precise needs.

SiliconNet Technologies

• Data Hosting & Services

Our Data Hosting service provides secure hosting of your company data and other information on servers and are managed 24 hours, seven days a week by skilled operators if you encounter any problems. The servers are configured to ensure maximum uptime with various security measures in place for protection, allowing only authorized personnel access to the information.

• ASP (Jaring Access Services Provider)

SNT is in partnership with Jaring / MIMOS (Jaring Access Service Provider – JASP) to provide user services to local and regional companies and individuals requiring guidance and support for their maximum benefit.

• Digital Certificate

SNT is a reseller of Jaring Access Service Provider (JASP) where we issue the Digital Certificate as a bona fide Registration Authority (RA) for DigiCert.

• Multimedia Products and Services

We provide a one-stop multimedia production services such as conceptualization, scriptwriting, storyboarding, production, and editing for corporate use, documentary, marketing tools or archival purposes. Some of our multimedia products and services include :

- Video Production
- Interactive Multimedia

SiliconNet Technologies Sdn. Bhd.

1st Floor & 2nd Floor, Lot 369, Block 10, KCLD
Jalan Tun Ahmad Zaidi Aduce
93150 Kuching, Sarawak
Tel: (60) 82-234008 Fax: (60) 82-232008

Website: www.snt.com.my

Silicon Communications



Silicon Communications Sdn Bhd

Silicon Communications

Silicon Communications Sdn Bhd (Silicon), the holding company of Silicon Group of Companies, officially commenced its business in 1996. Silicon currently has 3 wholly-owned IT subsidiaries of varied interests, namely Silicon Intranet & Networking Sdn Bhd, Silicon Navigator Sdn. Bhd., and Silicon Professional Services (MSC) Sdn. Bhd. Each of these companies specializes in different Internet Solutions ranging from system integration, Internet access, website development, Internet Security to E-Commerce solutions.

Silicon Group of Companies is wholly-owned by Sarawak Information Systems Sdn Bhd (SAINS). With its headquarters in Kuala Lumpur, Malaysia, Silicon is spread across the West Malaysia with branches in Penang, Johor Bahru, Malacca and more business strategies coming soon.

From the humble beginnings of a web design company (previously known as Proliquet Sdn Bhd) to a consortium of around 50 staff with all levels of expertise and experience, we have applied effective and innovative business practices to ensure a successful organisation. Our expertise and proven track record with customers ranging from government sectors, financial institutions, telecommunications, education bodies, enable us to provide the total solutions for your organisation. Since its founding, Silicon has partnered with leading security companies, consulting organisations, and VARs to deliver best of breed security solutions across South East Asia.

Part of our partnership milestone includes the appointment by MIMOS Berhad to become one of the JARING (Joint Advanced Research in Integrated Networking) Access Service Providers (JASPs) and function as a Total Solution Provider in the Information Revolutionary Age.

OUR ACHIEVEMENTS

Throughout the years, Silicon has received many accolades and accomplished praiseworthy efforts in bringing the best IT solutions in the Malaysian market. Below are some of our acquired achievements:-

- Awarded Authorised Distributorship by Internet Security Systems Inc for Malaysia
- Awarded Authorised Distributorship by Array Networks Inc.
- Silicon officially signed with leading software house Infodesk Manipal to provide GIS solutions
- The opening of Malacca branch
- Won Microsoft Sales Excellence Award
- Launched E-Commerce Solutions
- Launched E-Payment Services
- Awarded Microsoft Certified Solution Provider (MCSP) Excellence Award

- Selected as one of the 19 Potential World Class Malaysian Companies
- IntraFlow™ promoted as one of the product in Microsoft Certified Solution Provider
- Voted "Asia Pacific's 50 Most Dynamic Channel Companies" by Channel Asia

PRODUCTS & SERVICES OF SILICON GROUP OF COMPANIES

Today, Silicon Group of Companies is an established and one of the fastest growing internet conglomerates in Malaysia. Our business focuses on 3 major sectors, namely Internet Security & Consultancy, Internet Services and E-Commerce. We align our directions and business expansions to meet the new market demands with the exponential growth in Internet in Malaysia and worldwide.

SILICON INTRANET & NETWORKING SDN BHD (SIN)

Silicon Intranet & Networking Sdn Bhd (SIN) is a purveyor of system integration services, spanning system study and concept design to the development, commissioning, testing and maintenance of complex turnkey projects. Internet Security and Consultancy Services are some of the key services offered. SIN is the foremost leaders in digital technology offering a wide coverage of Internet Security, Intranet and Networking solutions. We take great pride in our technical skills, quality of services and our reputation as a top-notch ICT Security Solutions Provider.

SIN provides total comprehensive security solutions, security needs at different levels of IT setup and consultancy to companies and government bodies. We specialize in Internet security solutions at all levels for large and complex IT setup to basic firewall requirements for SMEs. We are partners with global security leaders like Internet Security Systems, Array Networks, Nokia, CheckPoint, and NetScreen to provide risk management & assessment solutions. Our strong track record speaks for itself of our lending expertise and knowledge in security.

SIN plays a key role in extending consultancy and recommendations to eliminate risks and build strong security in infrastructure. We provide security consultancy to businesses and organisations with the aim to provide consultation and advice to corporations on the correct security measures to adopt to protect their data, thus, maximizing and strengthening the system's security. Our mission is to provide the best method and solutions, especially to those companies engaged in e-business by giving unbiased and independent consultation.

At SIN, we also provide on-site security seminars and training tailored to customers' requirements covering latest security techniques to the most recent security vulnerabilities.

SILICON NAVIGATOR SDN BHD (SN)

Silicon Navigator Sdn Bhd (SN) is involved in providing value-added Internet services such as Internet access, telnet accounts, web-hosting, personalized emails, leased lines, server co-location, File Transfer Protocol (FTP) space and miscellaneous web-hosting maintenance works. It is the largest JARING Access Service Provider, with a reseller network of more than 500 Silicon Premier Partners throughout the country, providing Internet access and value added services on behalf of Mimos Bhd.

At the same time, SN also sets up Customer Service Centres and co-operates with Silicon Premier Partners to provide quality services. We have currently recruited over 700 Silicon's JARING Service Outlets (JSOs) to distribute and activate Internet access nationwide.

The Silicon Premier Partner Programme (SPPP) is formed to support and service our business partners and assist them in providing Silicon Internet access and services. At Silicon, we have always believed in partnerships that will enable us to work with companies that share this same fundamental belief. We will assist associated companies in every way we can to stay ahead in this dynamic, ever changing world of Internet. To this end, Silicon has already teamed up with several leading corporations to achieve the goal of leading Malaysia in unleashing the potential of a new-age digital economy.

SN's Internet Systems Integration includes consultation services, networking and systems integration, and Local Area Network (LAN) upgrades. We assist companies to overcome geographical boundaries by providing total integration of multiple-protocol networks and operating systems. We offer professional consultation services on Internet, Intranet and Networking issues to both established and new corporations. In order to upgrade or create a LAN or WAN, we conduct a Systems Study or a Systems Development Life Cycle

Silicon Communications

to attest to the feasibility of the network. We provide LAN upgrades either by revamping or expanding the current LAN, catering to the client's requirements. Our expertise extends to the implementation of WAN (Wide Area Network).

SILICON PROFESSIONAL SERVICES MSC SDN BHD (SPS)

Silicon Professional Services (MSC) Sdn. Bhd. or SPS is an E-Commerce solution provider that enables companies to jump-start their E-Business by developing & customising Business-to-Business (B2B) and Business-to-Consumer (B2C) E-commerce solutions. SPS provides high-level consultancy in application development and deployment. We are also a dedicated software development house with expertise in Microsoft Technologies, developing and delivering advanced, leading age and cost-effective solutions to clients.

Our E-Commerce solutions enable companies to shift into E-Business with minimal investment in computer hardware, communication and IT expertise. Silicon's customized solutions allow integration with existing business operations to cater to specific business needs.

Our corporate portal intranet solution offers an E-Commerce store front demonstrate an application with basic online shopping task including product catalogue, user authentication and personalisation, shopping baskets and order checkout. SPS' corporate portal is a powerful tool that allows organised control of information, and designed to meet the business concerns of corporations regardless of size and market.

SPS also offers e-Payment services with secure online payment solutions with the capability to enable our customers to collect payments securely and effortlessly. The E-Payment Manager is an online payment gateway, which allows trader to process credit card payments online automatically.

At SPS, we are also able to develop customised solutions for our customers depending on their business needs. Using client/server development tools, a proven method and process modelling techniques, our developers standardise the process of creating custom solutions, making them less time-consuming to build, more reliable and easier to maintain.

Silicon Communications Sdn Bhd

Unit 15.02, 15th Floor, MCB Plaza
No. 6, Changkat Raja Chulan
50200 Kuala Lumpur, Malaysia
Tel: 03-2715 8648 Fax: 03-2715 9648

Website: <http://www.silicon.com.my>

SAINS BRANCH OFFICES

Sains Business Centre

Lot 9366, Section 64 KTLD, Jalan Uplands
93620 Kuching, Sarawak
Tel: (60) 82-426733 Fax: (60) 82-423533

Sains Call Centre

Ground Floor, Lot 369, Block 10, KLCD
Jalan Tun Ahmad Zaidi Aduce
93150 Kuching, Sarawak
Tel: (60) 82-236633
555999 (Talikhidmat - throughout Sarawak)
Fax: (60) 82-235522

Sains Training Centre

Ground Floor, Lot 369, Block 10, KLCD
Jalan Tun Ahmad Zaidi Aduce
93150 Kuching, Sarawak
Tel: (60) 82-239004 Fax: (60) 82-235522

Betong Office

Pejabat Residen Bahagian Betong
Jalan Pengarah Isek
95700 Betong, Sarawak
Tel: (60) 83-472811

Bintulu Office

No. 87, 2nd Floor, Parkcity Commercial Square
Jalan Tun Ahmad Zaidi
97008 Bintulu, Sarawak
Tel: (60) 86-314518 Fax: (60) 86-314519

Kapit Office

Pejabat Residen Bahagian Kapit
Kompleks Kerajaan Negeri
96800 Kapit, Sarawak
Contact Person: Kong Ee Fan
Contact No.: 019-858 7416

Limbang Office

Lot 309, LTD, Jalan Kubu
98700 Limbang, Sarawak
Contact Person: Mhd Syukeri Ibrahim
Contact No.: 012-870 0201

Miri Office

Lot 791, 2nd Floor, Jalan Bintang Jaya 4
Bintang Jaya Commercial Centre
98000 Miri, Sarawak
Tel: (60) 85-431213 Fax: (60) 85-431211

Mukah Office

Tingkat Bawah
Bangunan Pejabat Daerah Mukah
Jalan Kubu 1
96400 Mukah, Sarawak
Tel: (60) 84-872 987 Fax: (60) 84-873 987

Sarikei Office

No.13, 1st Floor, Jalan Wisma Jubli Mutiara
96100 Sarikei, Sarawak
Tel: (60) 84-651132 Fax: (60) 84-651132

Sibu Office

No. 29, 2nd Floor, Taman Damai
Jalan Tun Haji Openg
96000 Sibu, Sarawak
Tel: (60) 84-349148 Fax: (60) 84-349149

Sri Aman Office

Lot 117, No.5, 1st Floor, Club Road
95000 Sri Aman, Sarawak
Tel: (60) 83-327103 Fax: (60) 83-327104

Acknowledgement

Contributors Angeline Kho, Chin Jun Ngian, David Dzrandinuraidi, Dinah Samuel, Iskandar Zainal, Mark Gau, Mohd Faizal Shebli, Nadia Suhaili, Ricky Guing, Ronnie Ee, Teo Tien Hiong, Vincent Ho, Wong Teck Seng and Yung Lac
Editorial Lucy Wong, Dinah Samuel and Tay Eue Kam
Design & Production Yung Lac
Photography Yung Lac, Hiew Chi Wang and Sains Image Archival
Advisor Teo Tien Hiong
Publisher Sarawak Information Systems Sdn Bhd.

To obtain a copy of Sains Corporate Focus book, please contact Sains Business Centre at (60) 82-426733

Sarawak Information Systems Sdn Bhd

Level 3, Wisma Bapa Malaysia, Petra Jaya
93502 Kuching, Sarawak, MALAYSIA
Tel: (60) 82-444199 Fax: (60) 82-444211
Email: service@sains.com.my
www.sains.com.my

Call Centre:

Tel: (60) 82-236633 Fax: (60) 82-235522

For Business Enquiries:

Tel: (60) 82-426733 Fax: (60) 82-423533

Direct Line: (60) 82-422472