Electronic Governance for the Lands and Surveys Department in Cyprus

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Key words: eGovernance, Information searches, Internet

SUMMARY

This research work examines existing electronic governance (eGov) systems in the area of interest of land registry, and investigates products and benefits provided to users, along with their policy of pricing. It analyses the eEurope initiative and the strategy of Cyprus regarding electronic access to public services. In addition, it proposes principles for the introduction of an eGov system in the field of business operations and the sphere of responsibility of the Lands and Surveys Department in Cyprus (DLS) and suggests basic amendments at land legislation. Furthermore, this study makes recommendations to the DLS, so that it could improve its productivity, the efficiency and effectiveness of services to citizens and business as well as to maximise its contribution in the development of the wider electronic Cyprus (eCyprus).

ΠΕΡΙΛΗΨΗ

Αυτή η ερευνητική εργασία μελετά υπάρχοντα συστήματα ηλεκτρονικής διακυβέρνησης (eGov) στον τομέα των Κτηματολογίων, ερευνά τα προϊόντα τους, την πολιτική χρέωσης τους καθώς και τα ωφελήματα που παρέχονται στους διάφορους χρήστες. Επίσης αναλύει την πρωτοβουλία eEurope και τη στρατηγική της Κύπρου αναφορικά με την ηλεκτρονική πρόσβαση στις δημόσιες υπηρεσίες. Επιπρόσθετα, προτείνει αρχές για την εισαγωγή ενός συστήματος eGov στην περιοχή των επιχειρησιακών λειτουργιών και στη σφαίρα ευθύνης του Τμήματος Κτηματολογίου και Χωρομετρίας (ΚΧΤ) καθώς και βασικές τροποποιήσεις στη νομοθεσία της ακίνητης ιδιοκτησίας. Τέλος, σε αυτή τη μελέτη εγγράφονται εισηγήσεις στο ΚΧΤ, έτσι ώστε να βελτιωθεί η παραγωγικότητα, η αποδοτικότητα και η αποτελεσματικότητα των υπηρεσιών του προς τους πολίτες και τις επιχειρήσεις, καθώς επίσης να μεγιστοποιηθεί η συνεισφορά στην ανάπτυξη της ευρύτερης ηλεκτρονικής Κύπρου (eCyprus).

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1. INTRODUCTION

The dramatic evolution of telecommunications, computers and the Internet, creates a demanding society for public administration and services. Electronic government refers to the utilization of the above technology by a government to fulfill its works and responsibilities efficiently, effectively and with the ability to liaise (share information) with other similar authorities. Electronic governance (eGov) refers to the adaptation of public services with the Internet and the operation of government offices through the World Wide Web. It implies high quality services and reliability with speed and low operational costs. Moreover, eGov eliminates distances and office working hours. Electronic commerce (e-commerce) is business exchange applied through any electronic media and it is an indispensable tool for applying eGov. The application of eGov in the Lands and Surveys Department should improve and speed up the services to citizens and businesses and increase productivity. However, there is a need for the development of a new computerized system to allow citizens to access the department, and a need for the re-engineering of the land processes and functions along with additional amendments of land legislation. Such a new computerized system will be a subsystem of today's Cyprus Integrated Land Information System (CILIS).
This research work critically examines existing eGov systems of land registry and investigates the products and benefits provided to users, along with their pricing policy. It investigates the land registry systems of New Zealand, Western Australia, Singapore, England and Wales, Ireland and Canada. Additionally, this study describes the Lands and Surveys Department in Cyprus (DLS) and the CILIS as well as analysing the eEurope initiative and the strategy of Cyprus regarding eGov and electronic access to public services. It proposes principles for the introduction of an eGov system in the field of business operations and the sphere of responsibility of the DLS, and suggests basic amendments at relevant land legislation. Moreover, this project makes recommendations to the DLS, so that it could improve its productivity, the efficiency and effectiveness of services to citizens and businesses as well as to maximize its contribution in the development of the wider eCyprus.

2. ELECTRONIC GOVERNANCE IN LAND REGISTRY SERVICES

The experience of New Zealand, Western Australia, Singapore, England and Wales, Ireland and Canada is investigated as a background to considering the needs of Cyprus concerning eGov systems in the area of interest of land registry. In addition, this section investigates products and benefits provided to users, along with their policy of pricing.

2.1 New Zealand

The vision of the government of New Zealand is to become a world leader in e-government. New Zealand's national transition, from a manual paper-based system to a computerized one, began in Otago in April 2000 with the introduction of the Land Online (Landonline). Land

Online is a project which moves New Zealand from an unsustainable paper environment to the new world of digital exchange (Robson, 2001). The Land Information of New Zealand (LINZ) operates the Landonline, an automated system for land title and survey transactions, and is responsible for the maintenance of the land titles register which provides a true and up-to-date record of the ownership of freehold land and minimize any risks to the State's guarantee of title (Land Information of New Zealand, 2003). Landonline is an advanced search tool that enables registered users to have direct online access to an electronic database, remotely, via the Internet. The database covers land title and survey information. Landonline stage one which was completed in July 2002 and involved converting about seven million survey and title records (Landonline, 2002). Stage one has primarily been about the capture of records and automating LINZ business processes. Stage two commenced in April 2001 and ended on 31 January 2003 (Landonline, 2003). This is the part where customers see the most change and benefit. With a Landonline license, surveyors and conveyancers are able to search the LINZ database, download and print title and survey plan details and images, prepare survey plans and property dealings electronically, pre-validate their lodgments and submit them online to LINZ. The processes are the same as in the manual environment, but much faster. In the case of property transactions the LINZ titles register updates automatically once an eDealing is registered (Landonline, 2002). Landonline users pay a set-up fee, license fee and annual maintenance fee. Other charges are on a user-pays basis and vary according to the amount and type of work undertaken.

2.2 Australia

The Western Australian Land Information System (WALIS) started growing in 1990 and is a partnership of 27 state government agencies, local government authorities and an increasing number of private organizations. The primary purpose of WALIS is to support Government and its agencies in the management and development of the State (Western Australian Land Information System, 2003). WALIS moved to the Department of Land Administration (DOLA) in 1987 (Western Australian Land Information System, 2001), which is a lead agency in the WALIS (Government of Western Australian, 2001) and is responsible for ensuring that the population's land ownership records are current and easily accessible. Today, DOLA comprises the Valuer General's Office too and it is under the name "Department of Planning and Infrastructure". The DOLA and its predecessor agencies have, for more than 150 years, provided the State with high quality survey and mapping services, a secure land titles system and administrative services for the Crown estate. The key services of DOLA are the following:

- providing survey, geographic and mapping information;
- providing a secure system of land ownership;
- developing, selling, allocating and administering Crown land;
- providing solutions to the future land information requirements of Western Australia; and
- providing land administration services around the world through their International Services section (Department of Land Administration (DOLA), 2003).

DOLA provides the customer with a remote search facility, which is an Internet user-friendly system. Any user with a PC, a DOLA customer accounting system and an Internet connection, can get the latest land tenure information from the Department's mainframe network. Additionally, users are able to search and order copies of titles, surveys and documents such as transfers, mortgages and caveats. Meanwhile, they can access free DOLA information such as the Power of Attorney Index, Dealing Progress, Issuing and Duplicate Title Production information (Western Australian Land Information System, 2001).

2.3 Singapore

Integrated Land Information System (INLIS) is another innovative product which Singapore Land Authority (SLA) has introduced since 1998. SLA optimises land resources for the social and economic development of Singapore. As a custodian of Government land, SLA is responsible for the management of all state land and buildings, land acquisitions, leases, sales, surveys, developing and marketing land information, and maintaining the national land information database (Singapore Land Authority, 2003). SLA's objective is to make INLIS the gateway to services across various agencies. SLA is working closely with other agencies to extend its range of land-related services to the private sector. The information sources include departments within Singapore Land Authority - Land Registry, Land Management Department and Land Survey Department and Land Transport Authority (Integrated Land Information System, 2003). INLIS users include lawyers, developers, real estate and property agents, property buyers, valuers, architects, land surveyors, financial institutions, banks, and members of the public. Unlike some other subscription-based services, there are no set-up costs or subscription fees. INLIS is the first system in South East Asia to combine Geographical Information System (GIS) and e-commerce technology to enable interactive digital maps tagged with land information to be delivered to any Internet user who has a card reader and a cash card or an Interbank Giro account or a credit/debit card account (Singapore Land Authority, 2001). Furthermore, INLIS is an Internet-based system that offers a one-stop information service by integrating selected land information from the various land agencies. The following information is provided by INLIS:

- building information service;
- control points management system;
- state land encroachment information service;
- online land information system;
- primary school listing service;
- road line plan;
- survey data enquiry and exchange system;
- self service map production system;
- surrounding amenities information service;
- surrounding lots sales transaction information service; and
- sales transaction history information service (Integrated Land Information System, 2003).

2.4 UK

The UK has set a clear target that all government services should be available electronically, and in a customer-focused way, by 2005. This will mean the transformation of access to Government, not focused on government departments, but on the consumer. Emphasis will be on services available via the Internet, although final delivery to the user will be via the most appropriate channel. The various teams are located at the e-Envoy Office, which was set up in September 1999 as part of the Cabinet Office, to achieve the above target (eEnvoy, 2002). The Land Registry of England and Wales currently has an online service known as Land Registry Direct and a number of extensive scanning programmes are under way to make full electronic access a reality. Launching the new service at the Land Registry Headquarters in London, the Lord Chancellor, Lord Irvine (2000), announced:

Land Registry Direct makes an important contribution to the "Modernising Government Agenda". The new technology, developed in partnership with the private sector, provides customers with improved delivery of land registration services. It indicates that the Land Registry is well on the way to meeting the Prime Minister's target of all government services online by 2005.

HM Land Registry which is a government agency responsible to the Lord Chancellor, keeps and maintains the Land Registers of England and Wales. Its main purpose is to register title to land and to record dealings once the land is registered. Land Registry Direct provides account holders with speedy electronic access to a range of Land Registry information, including nearly 18 million registers, title plans and, filed deeds. In total, well in excess of 100 million filed images are going to be scanned into the Registry's database (Land Registry Direct, 2003). Land Registry Direct underwent a lengthy and rigorous pilot that started in August 1999. In total, 13 professional users piloted the system offering detailed feedback and recommendations. Land Registry Direct is aimed at the professional user, such as the legal, financial and property professional. For security reasons, Land Registry Direct is not yet accessible through the Internet. Instead, it provides external users with online access to computerized records via a secure intranet (known as an "extranet") provided by the Land Registry's technology partner, Global Crossing (Land Registry Direct, 2003). The programme for the introduction of full electronic conveyancing is currently being planned. The statutory fees for each of the Land Registry services supplied by Land Registry Direct are set out in the current Land Registration Fees Order. Fees will be automatically debited to user's credit account. A Land Registry Direct account holder is able to carry out:

- online access to Land Registry data;
- online access to 18 million computerised registers and title plans;
- order office copies;
- lodge an official search of whole;
- electronically deliver a Matrimonial Home Rights Search (MHR);
- lodge applications for searches at the Land Charges Department (full search and bankruptcy search);
- request office copies from the Land Charges Department;
- enquire against the day list;

- apply for a search of the Index Map (SIM);
- send correspondence to any of district offices (or to Land Registry Headquarters); and
- participate in an ongoing programme of further system enhancements (Land Registry Direct, 2003).

2.5 Ireland

Land Registry of Ireland launched the Electronic Access Service (EAS) in August 1999 (Electronic Access Service, 2003). The EAS is part of a comprehensive programme of information technology being undertaken by the Land Registry and Registry of Deeds. The Land Registry provides a system of compulsory registration of title, which is simple, inexpensive and easily accessible. The Registry of Deeds provides a system of voluntary registration for deeds and conveyances affecting land to give priority to registered deeds over unregistered registrable deeds (Land Registry and Registry of Deeds, 2003). Initially the EAS provided online access to the Land Registry's database of Dublin folios and it is planned to cover the entire country by the end of 2004. The EAS is based on popular and widely-used Web browser technology and it is a subscription service that requires a pre-paid account kept in credit, an assigned user ID, password and configuration of the appropriate security access and no subscription fee. The online EAS service is the public access element of a major new project entitled Integrated Title Registration Information System (ITRIS) that provide direct support for internal staff members across the registration of title process. It supports several key Land Registry functions, including:

- electronic storage and retrieval of folios;
- tracking and processing of cases and applications submitted to the Land Registry by its customers;
- generation and electronic transmission of case-related correspondence; and
- provision of key statistics (Electronic Access Service, 2003).
- O'Donoghue (1999) explained that ITRIS objectives have been to the forefront from the early stages of the project and include:
- improving customer service by reducing the time taken to process cases;
- providing more readily-available information and support for staff involved in delivering Land Registry services;
- preserving and safeguarding the register itself;
- supporting improved communication between the organisation and its customers;
- providing Land Registry management with better statistical information; and
- delivering a Year 2000 compliant system.

Furthermore, ITRIS is a new system and has a feature, which enables customers to access certain Land Registry records over the Internet. This will be invaluable to many legal practitioners and other clients because it will allow them to conduct business from their own offices that would previously have required a visit to the Land Registry.

2.6 Canada

The Government of Canada has set a target of putting the most frequently-used services online by 2005. Saskatchewan Land Titles is the public registry of ownership of land and interests in land, in Saskatchewan. In 1995, Information Services Corporation (ISC) began a comprehensive redevelopment and re-engineering of the Saskatchewan Land Titles system known as the Land Titles Automated Network Development (LAND) project. This is the first fully-automated system of its kind in Canada and establishes Saskatchewan as a leader in land information systems. The development stage of the LAND project was completed in 2001 and ISC moves to the implementation of the new system (Axworthy, 2002). The LAND system involves substantial organizational and operational change, including the re-engineering of business processes, the enacting of new legislation, and the completion of Web-based delivery mechanisms for conveyance of title ownership, survey plan processing and registration of interests in real and personal property. ISC's success is built on the ability to develop, deliver and support leading-edge information, knowledge and document management technology to consumers, companies and governments. ISC's products offer a range of services and platform solutions that meet the needs of users in a variety of e-environments. The corporation has developed unique solutions, while ensuring the value of the product, clarity in function and excellence in quality in all business ventures (Information Services Corporation of Saskatchewan, 2001). The land titles system automates the province's land titles system and links it with GIS technology. It maximizes the use of technology and maintains the principles of a Torrens-based title registration system. Consolidation of the Chief Surveyor's Office and the Controller of Surveys creates a new plan processing function, allowing digital submission of subdivision plans online, and the simplifying and integrating of the examination process. It provides online information about land ownership, shape, location and relationship to adjacent properties. The LAND system's integration with GIS-based information (geodetic, topographical and photographic map layers) results in a menu of completely independent but interrelated state of the art solutions for mapping, survey boundary definition, ownership and security registration, complete with policy definition, legislation, and online services through the Internet. Additionally, the land project includes the title processing, which is a new electronically-based record that replaces the current paper certificate of title as the official record. New legislation supports Internet-based, online access for customers to perform searches and authorized users to perform online registrations. The information contained in Saskatchewan's land titles database is accessible to the public, while LAND's primary customers include law firms, financial institutions, realtors, citizens, surveyors and engineering firms, government agencies, companies and agencies. Furthermore e-business services, document storage and retrieval, imaging of new and existing paper documents into electronic pictures, client accounts and printing/distribution services are a part of the new LAND system. ISC also offers a variety of digital and paper maps and related information to customers. The pricing for these products varies greatly depending on the product, the delivery mechanism (hard copy versus electronic), the need for data customization, the volume, the usage level (one-time purchase versus bulk data customer), etc. The benefits provided by the LAND system are the following:

- consistent, province-wide turnaround of 24 to 48 hours for title registration;
- submission of work in person, by mail, fax or e-mail;
- online searches;
- integrity and quality of land titles records by transferring to computer-readable format;
- improved cost efficiency;
- consistent procedures across the system;
- creation of opportunities for development in government departments and agencies, crown corporations, other levels of government and various industries, such as real estate, mining, petroleum, forestry, tourism and agriculture; and
- support for economic growth in Saskatchewan (Information Services Corporation of Saskatchewan, 2003).

3. eEUROPE - AN INFORMATION SOCIETY FOR ALL

The European Commission launched the eEurope initiative in December 1999. eEurope is a political initiative to ensure the European Union benefits fully from the changes the information society is bringing. These changes, the most significant since the Industrial Revolution, are far-reaching and global. They are not just about technology. They will affect everyone, everywhere; bringing communities, both rural and urban, closer together, creating wealth, sharing knowledge, and they have huge potential to enrich everyone's lives (eEurope, 2000). eEurope has the following key objectives:

- bringing all Europeans, into the digital age and online;
- creating a digitally-literate Europe, supported by an entrepreneurial culture; and
- ensuring the process is socially inclusive and builds consumer trust (eEurope, 2000).

In June 2000 the eEurope 2002 Action Plan was adopted by the Feira European Council. It detailed the policy actions, which are required to meet these objectives by 2002. Smart Card is a specific action included in the eEurope initiative, which has already stimulated great debate in Cyprus. Smart Card is a multifunctional technology, which protects privacy and confidentiality. This activity was launched at the "Smart-Card Summit" in Lisbon on 11 April 2000 at which the participants agreed to set up a high level task force to initiate and support common developments in the deployment of Smart Card technology in the European Union.
eEurope 2002 is succeeded by eEurope 2005. The objective of its action plan is to provide a favourable environment for private investment and for the creation of new jobs, to boost productivity, to modernise public services, and to give everyone the opportunity to participate in the global information society (eEurope 2005, 2002). eEurope 2005 has proposed the following actions regarding electronic government:

- broadband connection: member states should aim to have broadband connections for all public administrations by 2005;
- interoperability: by the end of 2003, the Commission will issue an agreed interoperability framework to support the delivery of pan-European e-government services to citizens and enterprises;

- interactive public services: by the end of 2004, member states should have ensured that basic public services are interactive, where relevant, accessible for all, and exploit both the potential of broadband networks and of multi-platform access;
- public procurement: by the end of 2005, member states should carry out a significant part of public procurement electronically;
- public Internet access points (PIAPs): all citizens should have easy access to PIAPs, preferably with broadband connections, in their communes and municipalities; and
- culture and tourism: the Commission, in co-operation with member states, the private sector and regional authorities, will define e-services to promote Europe and to offer user-friendly public information. These e-services should be deployed by 2005 (eEurope 2005, 2002).

4. THE LANDS AND SURVEYS DEPARTMENT IN CYPRUS

The Department of Lands and Surveys in Cyprus (DLS) is a government service comprising land registration, survey, cartography, valuation, land management, tenure and administration. DLS is the state agency responsible for the application of the laws relating to landed property matters, for example:

- The Immovable Property (Tenure, Registration and Valuation) Law, Capital 224 (1946);
- The Immovable Property (Transfer and Mortgage) Law (9/1965);
- The Compulsory Acquisition of Property Law (15/1962); and
- The Requisition of Property Law (21/1962); and
- the provisions of many other laws which deal with land.

Its director is the adviser to the government for the formulation of land policy and its implementation. Table I shows the number of the applications accepted in the DLS from 1998 to 2001 by citizens, companies, organisations and other government services and departments. Note that citizens deposit applications by themselves or their agents, provided they are authorised by power of attorney. It can be concluded that a significant number of citizens visit DLS and that number is comparable with the total number of the applications accepted. Applications by citizens using post office services are very rare. Usually a

Table I Number of Accepted Applications

Number of Accepted Applications				
1998	1999	2000	2001	Type of Application
12317	12895	12550	12335	Major Various Applications
20326	24567	27493	28315	Certificate of Property Search
20966	23939	23903	29786	Copies of Property Titles
23934	34649	34474	41770	Copies of plans and maps
29353	30607	27414	28650	Property Transfers
32097	27435	27221	28218	Mortgages
23251	20945	20574	23338	Cancellation of Mortgages
1093	897	990	990	Compulsory Sales
11046	11840	12751	16515	Attachments on Properties and General Attachments
174383	187774	187370	209917	Totals

confirmation of the applicant's signature by the Chairman of the Community or a Certify Officer is required. Plans and maps are the only products of the DLS that can be acquired by anyone without authorisation.

In 1989, Sagric International prepared the strategic plan for the DLS, which is used for the development of the Cyprus Integrated Land Information System (CILIS) (Sagric International Pty Ltd, 1989). The Cyprus Land Information Centre of DLS has operated CILIS since 1999. The primary aim of the CILIS is to support all the current functions of the DLS. Furthermore, the system will be extended under a broad National Land Information System (NLIS) to include the integration of other government and non-governmental agencies' data. CILIS operations cover only the areas for which data have been converted from the manual format to digital. So far DLS has converted the 52 per cent of the land records from a total of 1.25 million and the 40 per cent of the plots from a total of 1.09 million. The project of the data conversion for titles and plans is expected to be completed in three years and data collection for mass appraisal purposes is expected to be completed in five years (Republic of Cyprus, 2002a). However, professionals, local authorities and other government services and organisations purchase digital information although DLS cannot always respond because the conversion of the land records has not been completed yet. The pricing for digital maps and plans is fixed, for land property information depends on the number of records purchased and for comparable sales an annual fee is paid by valuers of private sector.

CILIS authorised users are the only DLS employees in each District Land Office and the Headquarters. CILIS does not provide any World Wide Web site system and generally use of CILIS by non-employees of the DLS is not permitted for security reasons. The only World Wide Web site is the citizen's chapter at www.kypros.org/PIO/ministry_interior/ktimatologio and is maintained by the Press and Information Office (state organization). The purpose of this site is to inform citizens of the basic services offered by DLS, the procedure followed in each case and the procedure which all interested persons must follow so that matters of their concern may be considered and completed as soon as possible (Republic of Cyprus, 2002b). Furthermore, DLS has three connections to the Internet, mainly for research purposes, communication and sending data to international organisations.

There are 315 workstations in DLS, being fewer than the required needs of the department (Hatziraftis, 2001). Table II shows the total number of personnel in DLS, which, without the assistant clerks is 884: thus there is one workstation for three employees approximately.

Table II DLS Personnel

Sections /Category	Number of Personnel
Lands	309
Survey	108
Cartography	97
Lands (non-permanent personnel)	103
Accounting	1
Secretarial	90
Secretarial (non-permanent personnel)	26
Assistant Clerks	30

Sections /Category	Number of Personnel
Non-permanent personnel for data entry and resurvey.	Approx. 120
Total	884
Laborious task	234
Total Number of Personnel in DLS	1118

The paucity of workstation in DLS creates two kinds of employees, those who uses workstation and computerized methods and those who uses only manual methods. This prevents the fast adaptation of personnel to the new computerized procedures and generally prevents the development of the DLS within the electronic government and the full application of information systems strategy (ISS, see section for the electronic government policy in Cyprus).

5. ELECTRONIC GOVERNMENT POLICY IN CYPRUS

The Information Services Department (ISD), established in 1980, is the responsible government organization for the development and the application of the information technology (IT) policy of the state. In October 1998 the ISS was approved by the Council of Ministers (Republic of Cyprus, 2001). The ISS includes electronic government and its vision is the creation of an efficient and effective public service, able to provide high quality services to the public with the least possible cost and where possible without the need of visiting any government department to obtain such services. The electronic government project comprises security measures, legislation for the protection of personal data, legislation for public key infrastructure (PKI) and authentication as well as harmonization of the legislation with those of the countries in the European Union. Note that authentication services make it possible for all parties to a transaction, with a high degree of confidence, to identify the other party or parties, to transmit or receive sensitive information, to verify that information has not been altered during or after transmission, and to have a reliable record of transactions. Additionally the electronic government project includes a government Internet node for the connection of many government systems with citizens and business and the creation of Internet centers where citizens will be able to have access to government systems to be served effectively. According to the ISD plans, government systems will be enabled to the World Wide Web by the end of 2004. Note that 30% of Cypriots have access to Internet from home (eMinder, 2002).

6. PRINCIPLES FOR AN ELECTRONIC GOVERNMENT SYSTEM FOR THE LANDS AND SURVEYS DEPARTMENT

It is envisaged that electronic government will harness people and technology to revolutionize the delivery of government services to Cyprus and that the new services will be tailored, inexpensive, easy to use, personal and friendly. The following principles are recommended for an electronic government system for the DLS:

– Meet individual needs. Department's services should be tailored to the particular needs of the individual citizen. Where possible, services will be available 24 hours a day, seven days a week, through a variety of channels, and from most places in the world.

- Maintain, improve and protect the land information. The data capture program will continue to provide a strategic focus on data capture and ensure the most important information is captured first. Excellence guidelines for data management will be prepared with the support of Information Services Department. The guidelines will address, among other things, metadata, archiving, storage, maintenance, version control, access, security and data accountability. The DLS must apply rigorous data management processes if they are to gain the maximum benefit from online initiatives such as delivery of data and custom mapping over the Web or e-commerce.
- Protecting people's privacy. Cypriots should be able to have confidence in the security of the information that they provide to the department, the integrity with which it is used, and in the measures that government takes to ensure their rights to individual privacy.
- Community and Sewerage Council engagement. Governments should seek to maximise the net benefits to the community and sewerage council when developing their spatial data access policies and pricing regimes.
- Industry engagement. Access arrangements should be geared to maximising the use of spatial data resources in both public and private sectors and to encouraging the development of an innovative and competitive value-adding industry.
- Offer more open government. People should find it easier to discover and access the department's information that they think is important to them. Better information will take the puzzle out of dealing with government.
- Make it easy to have your say. People should be able to make their voice heard more easily. It will uniquely empower, for example, the disadvantaged. It is envisaged that policy-making will involve more continuous and open consultation with Cypriots.
- Bringing new kind of equality. The Internet will bring a new equality for the regions and by giving equal access to all, it abolishes the tyranny of distance.
- Less cost to taxpayers. People will benefit from the fact that government is using the power of information technology as efficiently and effectively as possible. Administrative processes will be streamlined. Where there is unnecessary duplication of information and technology, there will be strong incentives for rationalisation. Greater value will be leveraged from current infrastructures and bottom line costs of technology can be managed downward.
- Inexpensive to deal with. Department's information and services should be simple and easy to access. All government forms will be available over the Internet. "One-stop-shop" interfaces will be created for personal and business needs. If people want it, information that is common to a range of processes, like names and addresses, will only need to be changed once - it will be automatically updated everywhere that it is used across government. Government processes will be streamlined.
- Charging policy. The cost of extraction and distribution is the cost actually incurred in transferring information. It will generally include computer processing costs, cost of consumables, distribution staff costs and associated overheads. Such overheads might include royalties payable by the custodian to the data owner. The costs of collection, maintenance or upgrade of data are not components of cost of transfer. The charging of lodging an application through the Internet should be comparable to the charging of lodging an application manually. However, the DLS should encourage the use of

services through Internet because visits in District Land Offices will be reduced and less working hours will be spent by employees.

- Access. All sectors of the community should have easy, efficient and equitable access to fundamental spatial data where technology, data formats, institutional arrangements, location, costs and conditions do not inhibit its use.
- Sensitivity. Access arrangements should recognise confidentiality, privacy, security and intellectual property rights.
- Content. The fundamental spatial data needed by all sectors of the community should be available to support economic, environmental and social needs.

7. BASIC AMENDMENTS ON LAND LEGISLATION

The amendments to the Immovable Property (Tenure, Registration and Valuation) Law, Capital 224 (1946) and other basic land laws should preserve the legality of procedures and the continuous operation and development of the CILIS. The following amendments are recommended:

- A number of sections of the above laws refer to the manual land registers. Such references should also include digital records. DLS shall develop such infrastructure, which will replace the use of any manual records.
- A number of sections of the above laws refer to a specific District Land Office because of the manual registers that have been kept or because of the various procedures taking place in that office. As a result of the computerization, many procedures will tend to be completed by any District Land Office. So any references to the laws for a specific District Land Office should change to a general term, e.g. DLS.
- Where laws include forms and other documents for citizens, these should be amended in order to be compatible with CILIS procedures and made available to citizens through the World Wide Web.
- A number of sections of the above laws refer to the provision of information from the manual land registers. These should be amended and include provision of information from the digital records. In addition, DLS should examine the provision of digital information only and without any obligation to provide print out of documents, e.g. property taxation lists.

8. CONCLUSIONS

Land Registry offices in New Zealand, Australia, Singapore, Ireland, the UK and Canada apply and promote electronic governance successfully. Authorised users are able to access land records and plans, as well as to lodge routine transactions digitally.

The aim of electronic governance (eGov) is to provide effective services to citizens through the Internet and the World Wide Web. New Zealand, Australia, Singapore and Canada have started eGov services from land registry departments. The England and Wales Land Registry in the UK is one of the first government services to adopt eGov.

One of the most important priorities of the eEurope initiative is the online access to the public services of the European Countries. Additionally the eEurope 2005 Action Plan aims to

modernise public services and to give everyone the opportunity to participate in the global information society.

Lands and Surveys Department in Cyprus has a major role in the life of local society because it is the state agency responsible for the application of the laws relating to landed property matters. A remarkable number of applications are lodged in the department every year, proving that a significant number of citizens visit a local District Land Office. Applications for a number of products, e.g. plans and maps, can be easily lodged through the Internet, with the development of appropriate World Wide Web technology. Citizens will be released from the need of visiting a District Land Office for such enquiries.

Cyprus integrated land information system has a major role in the automation of the procedures in the Lands and Surveys Department in Cyprus but there is a need for a new subsystem for the provision of services to citizens and business through the Internet. This subsystem will assist the department to satisfy and meet the objectives and the requirements of eEurope initiative.

Land laws should be amended to promote the application of advance technology. Future Land District Offices should be operated as centers for servicing citizens and business only and not as centers for service and storing information. Employees will be able to access all relevant information, including historical data, from any Land District Office. Moreover the amendments to law will be adapted under the forthcoming law for electronic signature.

The Information Services Department in Cyprus has adopted an information system strategy which satisfies eEurope objectives. However, the application of information technology in Cyprus and the harmonization of the legislation with those of the countries in European Union have been subject to delay.

Information technology is a useful tool and can help breakdown bureaucracy, backwardness, inwardness, monopolistic practices, and inefficiencies in the public and private sectors. The implementation of the principles for an electronic government system in Cyprus with the application of information and communications technologies shall reduce barriers to entry and transaction costs in business, increase competition, and improve the mechanisms responsible for setting prices. This is the result of an improved flow of information and improved access to information sources.

9. RECOMMENDATIONS

The following recommendations would provide the means for the Lands and Surveys Department in Cyprus (DLS) to develop the provision of quality services for citizens and business through the World Wide Web. These comprise the development of a new system based on Internet technologies, amendments of land laws, training of personnel and re-engineering of Department's procedures in the light of the forthcoming law for electronic signature.

- The DLS must prepare a five-year strategic plan to meet the new challenges in public administration and to re-engineer all land procedures. The strategic plan must have a clear vision and must comply with the action plans of European Union, the eEurope initiative and the information systems strategy.
- The Government of Cyprus shall accelerate its works concerning the laws for electronic signature and public key infrastructure (PKI), authentication and security measures.
- The DLS should organize lectures, seminars and workshops for executive officers of government and semi-government organizations as well as to local authorities and other organizations in order to promote the importance of the role of the DLS to the socio-economic development of Cyprus. In addition, DLS should acquire their contribution and their assistance regarding computerization, collection of data and the creation of the National Land Information System.
- The DLS should be informed by the Department of Information Services about electronic government strategy of Cyprus, electronic signature, smart cards and any other tools, which are going to change DLS procedures dramatically.
- The DLS should enrich the business procedures section of the Land Information Center with personnel from all the other business sections along with Internet and electronic government experts. This section should change to the section of Application of Electronic Governance.
- The DLS should revise its policy for the collection of data and prioritise the collection of data for all of Cyprus. Moreover the policy of data collection should quarantine the provision of data to local authorities, sewerage councils, government and other organizations received from the DLS.
- The DLS should train personnel in the development of World Wide Web pages, electronic commerce and electronic government. A number of land officers of the DLS should visit the countries studied in this project and improve understanding not only of advance land information systems but also legal aspects.
- The DLS should provide the necessary knowledge to local authorities, sewerage councils and other government and semi-government departments on the best use of digital information received from CILIS and should encourage industry to invest and develop IT technology, based on GIS data.
- Electronic government tends to be mobile because mobile communications and devices are becoming more and more popular worldwide so the DLS should re-examine its procedures and IT infrastructure in the light of this trend.

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BIOGRAPHICAL NOTES

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