Submission of Hong Kong Institute of Land Administration (HKILA) on "A Public Consultation On The Draft 2004 Digital 21 Strategy"

Legend for the Presentation of the Submission

Presentation	Colour	Lettering
HKILA Views	RED,	Times New Roman
Relevant extracts from the Government's Consultation Document	BLUE	*Times New Roman , Italic (contained in boxes)*
Extracts from other quoted source	GREEN	Arial (contained in boxes)

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I. HKILA'S inputs on the DRAFT 2004 Digital 21 Strategy

- **On "how we should work together."**
- On the new strategy proposes **eight main areas** of action:

1 .Government leadership
2. Sustainable e-government programme
3. Infrastructure and business environment
4. Institutional review
5. Technological development
6. A vibrant IT industry
7. Human resources in a knowledge economy
8. Bridging the digital divide

II. HKILA'S inputs on "how we should work together."

2A. The Vision of the Government of the Hong Kong Special Administration Region-

2.A.1 The HKSARG has adopted the global view in environmental protection and proclaimed that "**Sustainable Development (SD)** must continue as a key focus in long-term development" ("Bringing the Vision to Life" - Hong Kong's Long-Term Development Needs and Goals-The Commission on Strategic Development-21 February 2000).

I. A VISION TOWARDS SUSTAINABLE DEVELOPMENT

"Hong Kong should position itself as "Asia's World City".----------

- ***It must develop world-class "hard" infrastructure (such as transportation and telecommunications) and "soft" infrastructure (such as education and training), and***
- ***must be able to provide a high quality of life that enables retention and attraction of the best of talent.----------***

We need a SPATIAL PLANNING FRAMEWORK to support and help achieve these strategic objectives and policies.----------
The HK2030 Study has therefore adopted sustainable development as an overarching goal."

Extract from – page 4 –Consultation Booklet-English

2.A.2 Modern land administration studies and experiences in recent land administration reforms in both urbanorrural land and developed or developing countries have led to the conclusion that **adequate Land Administration system (LAS) is crucial to Sustainable Development, sound sound Land Information System is crucial to Land Administration System and integrated Spatial Geo-referenced Data information System (S/G DIS) is crucial to Land Information System. This was confirmed by the Bathurst Declaration** on Land Administration for Sustainable Development (1999) (UN-FIG 1999)

2.A.3 For the *2004 DIGITAL 21 STRATEGY,* we strongly believe that it should include the holistic approach of the Spatial /Geo-referenced Data information System (S/GDIS) as one of the major Information Database Development in order to meet the key focus of the Hong Kong's Long-Term Development Needs and Goals- the SD Strategy.

"Land administration is the process of regulating land and property development and the use and conservation of the land, the gathering of revenues from the land through sales, leasing and taxation, and the resolving of conflicts concerning the ownership and use of the land (Dale and McLaughlin 1999). Land administration has a critical role in helping to address the tension between environment and development.

This was confirmed by the Bathurst Declaration on Land Administration for Sustainable Development (1999) (UN-FIG 1999). This was an initiative that brought together 30 leading experts and researchers from around the world, from a wide range of disciplines, including six UN agencies, the World Bank, and the UN Director for Sustainable Development. They confirmed the pressing need to re-engineer land administration systems to manage the competing economic, environmental and social priorities that constitute sustainable development as described in the UN's Agenda for Development (UN 1997).

Sustainable development demands complex decision-making. Complex decision-making requires ready access to current, relevant and accurate information. Of particular significance is information from a spatial perspective that links into GIS, SDI and DSS. A Geographic information system (GIS) is a powerful set of tools for collecting, storing, retrieving at will, transforming and displaying spatial data from the real world for a particular set of purposes

(Burrough 1986). Spatial Data Infrastructures (SDI) are a means to collect, collate and disseminate available spatial data to users at an organisational, local, national, regional and international level. Land and spatial information are infrastructure, with the same rationale and characteristics as roads and communications infrastructure (ANZLIC 1998). Decision support systems (DSS) link into that infrastructure to help manage and analyse information for the process of decision-making. Relevant DSS and SDI are imperative driving forces in the development of a new generation of land administration systems that are appropriate for the changing humankind-land relationship."

ABSTRACT OF "SPATIAL DATA INFRASTRUCTURES AND GOOD GOVERNANCE: -FRAMEWORKS FOR LAND ADMINISTRATION REFORM TO SUPPORT SUSTAINABLE DEVELOPMENT."

Lisa Ting & Ian Williamson, Department of Geomatics, The University of Melbourne, 4th Global Spatial Data Infrastructure Conference, Cape Town, South Africa, 13-15 **March 2000**

"Given the magnitude of the problem of assessing land phenomena and its resources, modern science and technology are the keys to acquiring and analyzing **the basic data needed to achieve the extensive knowledge required to understand the actions and interactions related to land.**

For the first time in history technology has advanced to the point where man now has the capacity to measure the Earth's resources, monitor the environment on a regular basis, and use this information to develop strategies that **will achieve sustainable development while preserving the environment.**

However, while Africa has not been left behind from these technologies, its effective use to support decision-making has proven elusive.

At the beginning of this millennium, there is a number of well defined challenges confronting the effective use of **Geoinformation in the decision-making process**, such as gaps in spatial data and information, lack of datasets, the capacity to apply new technologies to bridge spatial data gaps and to transform the data in information and knowledge, geoinformation emerging as a commodity, internet access and particularly awareness and commitment by decision-makers. While there is no a unique formula or recipe that can accommodate the needs and peculiarities of all countries or regions, **Geographic Information Infrastructures (often referred as Spatial Data Infrastructures or SDIs)**, the way they are being conceptualized are, without any doubt, a robust response to the above challenges. They contain key elements that are practical solutions to the major constraints for the use of geoinformation in development:"

Geoinformation and Sustainable Land Management

O. Nino-Fluck
Senior Cartographic Officer
Development Information Services Division
Economic Commission for Africa

Paper presented at Marisy 2000 conference for Africa and the Middle East
Rabat, Morocco, 26,27 October 2000

Chapter 10 of Agenda 21-INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES **(Agenda 21, Para. 10.1)**

"Integrated planning and management of land resources is the subject of chapter 10 of Agenda 21, which deals with the **cross-sectoral aspects of decision-making** for the sustainable use and development of natural resources, including the soils, minerals, water and biota that land comprises**. This broad integrative view of land resources, which are organized in ecosystems which are essential for life-support systems and the productive capacity of the environment**, **is the basis of Agenda 21 and the Commission on Sustainable Development consideration of land issues.------"**

"-----By examining all uses of land in an integrated manner, it makes it possible **to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement,** thus helping **to achieve the objectives of sustainable development."**

"-----the **Commission on Sustainable Development** noted **the importance of addressing sustainable development through a holistic approach,** such as ecosystem management, in order to meet the priority challenges of desertification and drought, sustainable mountain

development, prevention and mitigation of land degradation, coastal zones, deforestation, climate change, rural and urban land use, urban growth and conservation of biological diversity. Such an approach should take into consideration the livelihood opportunities of people living in poverty in rural areas**."**

The Commission identified **six priorities** for future work, including:

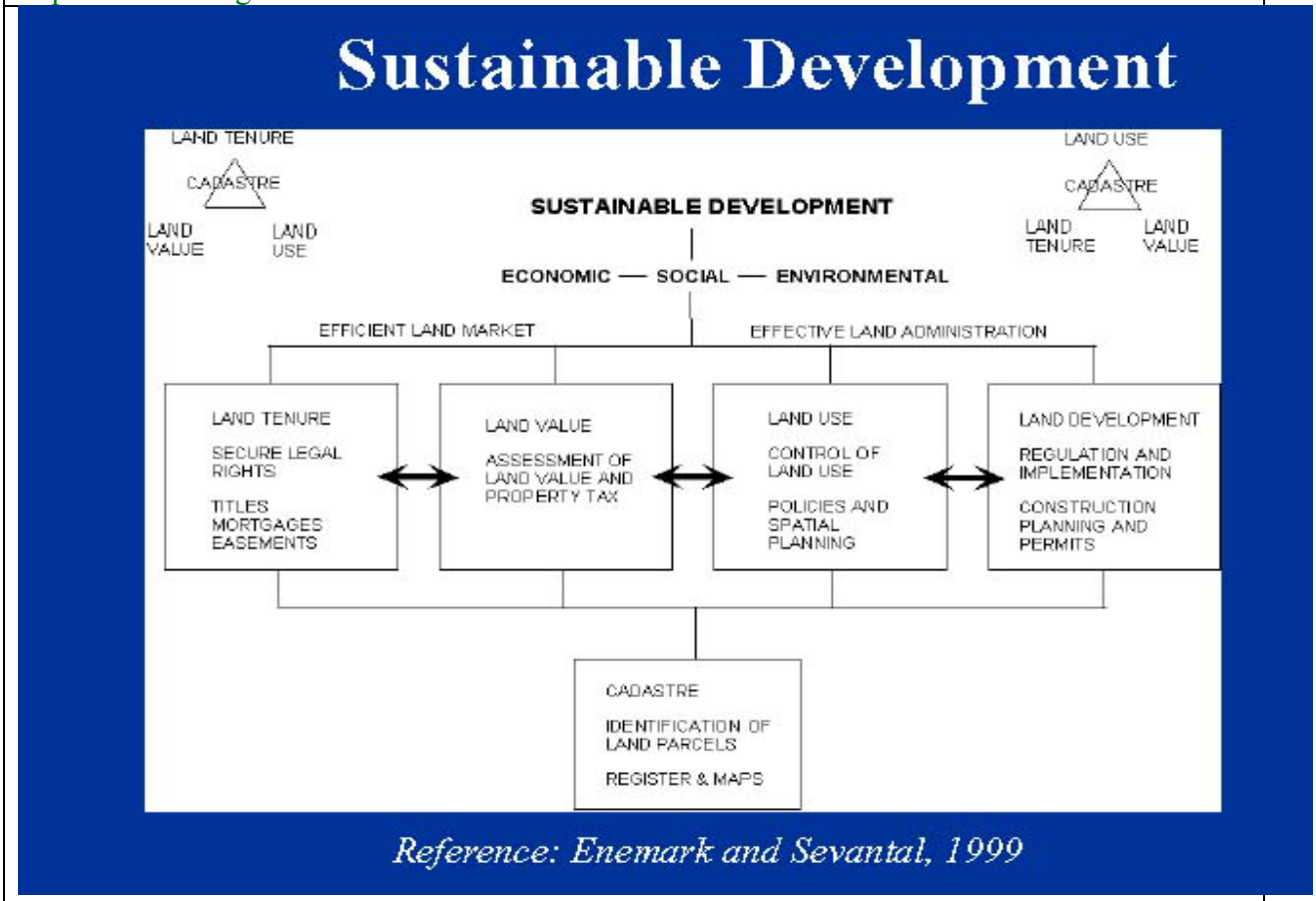
1. prevention and/or mitigation of land degradation;
2. **access to land and security of tenure;**
3. **critical sectors and issues** (such as biodiversity, drylands, rehabilitation of mining areas, wetlands and coastal zones, coral reefs, natural disasters, and r**ural-urban and land management interactions**);
4. **access to information and stakeholder participation;**
5. i**nternational cooperation,** including that for capacity-building, i**nformation-sharing technology transfer**; and
6. 6.minerals, metals and rehabilitation of land degraded by mining in the context of sustainable development.

Governments were urged to support the implementation of a number of important international agreements, including the UN Convention to Combat Desertification (CCD), the UN Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol, and the Habitat Agenda adopted by the UN Conference on Human Settlements in 1996.

"Commission on Sustainable Development-**CSD 2000**

-http://www.un.org/esa/sustdev/sdissues/land/land.htm

-http://www.un.org/documents/ecosoc/docs/2000/e2000-29.htm#Decision 8/3



2B. The Existing Government Approach to Spatial /Geo-referenced Data information System (S/GDIS) –

2B.1 Major S/GDIS developments in Government departments or subvented institutions:

(a) Sustainable Development Council

- **THE CASET SYSTEM- The Computer Aided Sustainability Evaluation Tool** System-as described in the Executive Summary Of the Study on Sustainable Development in Hong Kong for the 21 st Century, completed by PD in August 2000
- The CASET System is accompanied by a powerful **Geographical Information System (GIS)/database containing the datasets relevant to the sustainability indicators.**

(b) Land Registry (LR)

- **One of the first trading fund departments and its computerised land register provides a complete record of all transactions affecting a property.**
- **In 1998, a Strategic Change Plan (SCP) was developed to advance the Registry into the 21st century.** The SCP is based on two key Modernisation Drivers, namely, a Central Registration System and a Title Registration System.
- The LR commissioned an Information Systems Strategy Study in May 1999. proposes an **Information Systems Strategic Plan (ISSP)** for the LR to satisfy information needs and to support new business objectives over the next five years and beyond.
- The ISSP specifically recommends that, LR should develop **an Integrated Registration Information System (IRIS)** to replace the existing fragmented core business systems.

(c) Survey and Mapping Office

- **Survey and Mapping Office (SMO)** of Lands Department –has converted the entire set of Hong Kong maps into **digital form** and has been supplying the **digital mapping data** to users both within the Government and in the private sector. (maps:-about 3,000 sheets in total) The **digital map features** are separately coded thereby enabling selective retrieval and display.
- **Computerised L I S: The L I Centre** for maintaining a set of topographical mapping information in digital form, covering the whole territory of Hong Kong

(d) Planning Department (PD) -L I Studies in P D

- Study to examine ways to **Centralise And Disseminate Planning Data-** NCSI (HK) Ltd. NCSI (HK) Ltd. 02/2000 -mid 2001

(e) The Census and Statistics Department-

- **Census Pro 2001 GIS CD-ROM Package** is a powerful knowledge-based product includes **the superb Geographical Information System (GIS) functions and features.**
- Statistical data on the demographic, economic, education, household and housing characteristics of the population are **included** and can be **easily selected and retrieved** through our intuitive and easy-to-use application interface.

(f) Other GIS Development in other Government departments or subvented institutions-The present efforts in the development of GIS **have (a) resulted in duplication of efforts, unnecessary additional costs, inaccuracies/inconsistencies in the data; (b).failed** to meet the great public demands **for rapid access to relevant and correct information**; and (c) have caused **confusion resulting in wrong decisions** and **undesirable outcomes** in some of the recent socio- economic policies for **lack of transparency & accessibility.** Though the effort of integration has been initiated, there is still no effort to unify and centralize the spatial data, not to mention the lack of a 3D approach..The divorce of the spatial data above ground from that below ground indicated that the HK IT Stategy is lagging behind the global trend for planning model development

To exploit the full potential of their GIS applications, two initiatives within Government **to integrate the spatial data assets:**

1. The Planning, Environment and Lands Bureau, Works Bureau and Planning Department are considering the conduct of a consultancy study **to examine the sharing and exchange among concerned Government departments of geographical data collated for land, planning, development and other purposes. This study will involve a total of 13 departments,** including all the departments under PLB and WB, the Census and Statistics Department and the Rating and Valuation Department**.**
2. Highways Department, in conjunction with Drainage Services Department, Water Supplies Department, and five major utility undertakers, are carrying out a joint study **for developing the technical infrastructure for exchanging underground utilities information electronically and automatically.**

A written reply by the Secretary for Information Technology and Broadcasting, Mr K C Kwong, in the Legislative Council LCQ16: Application of geographical information systems December 8, 1999
http://www.info.gov.hk/gia/general/199912/08/1208156.htm

2B.2 HKILA"s Comment on Current **HKSARG's S/GDIS- HKSAR Government (**HKSARG) has a tradition of **separate governmental institutions**

involved in the S/GDIS implementation work. This results, for example, in tedious and separate inquiries having to be made about relevant spatial data before any decision can be made and appropriate action can take place. These **diverse administrative arrangements are normally well established politically and historically** and hence it is imperative to alter them.

HKSARG do not have an integrated policy with regard to S/GDIS. There is often a lack of guidelines. Each ministry/department often makes up its own design and rules for S/GDIS. Each department has its own role to play and its team of spatial information managers.

III.. HKILA'S INPUT ON THE EIGHT MAIN AREAS OF ACTION OF THE NEW STRATEGY

1 .**Government leadership-** The Government will continue to be an advocate and champion to promote Hong Kong's international image as a dynamic digital city. We will press on with our aggressive IT outsourcing strategy and e-government programme t**o generate not only business for the private sector, but also opportunities for innovation, entrepreneurship and technical development.**
Extract from Government press Release (October 10,2003)The Secretary for Commerce, Industry and Technology, Mr John Tsang, announced today (October 10) speaking at a luncheon organised by the Hong Kong Information Technology Federation

3.1 HKILA's Input-

(a) Based on the past experience of those countries that have developed S/GDIS, their Governments must play the leading role in such development.

"It is responsibly claimed that over 80% of government information has a spatial/geographic element and that a society which is not "spatially enabled" is deprived of the ability to develop a comprehensive socio-economic development plan (Grant 1999). Good governance is necessary to guide the development of SDIs, set standards, monitor progress, as encourage contribution to and facilitate use of SDIs with sustainable development objectives in mind. Good governance requires setting up a coherent and dynamic legal, institutional and technological framework - a task that requires dynamic partnerships between government, private sector and diverse sectors of the community."ABSTRACT OF "SPATIAL DATA INFRASTRUCTURES AND GOOD GOVERNANCE: -FRAMEWORKS FOR LAND ADMINISTRATION REFORM TO SUPPORT SUSTAINABLE DEVELOPMENT."
Lisa Ting & Ian Williamson, Department of Geomatics, The University of Melbourne, 4th Global Spatial Data Infrastructure Conference, Cape Town, South Africa, 13-15 **March 2000**

"Governments must play the major role in

- **formulating the land policy and the principles of their land administration systems (LAS), including the land legislation and land-related regulations.**

The **UN-FIG Bathurst Declaration,1999**:

- *Encourage* all those involved in land administration to recognise the relationships and inter-dependence between different aspects of land and property.
- In particular there is **need for functional cooperation and coordination between surveying and mapping, the cadastre, the valuation, the physical planning and the land registration institutions."**

(More in Attachment 9, The Role of Spatial Data Infrastructure in supporting Decision-Making, F. 318-354 & Attachment 10, Victoria's Spatial Data Infrastructure, F. 355-379)

(b) Government's leading role in S/GDIS development

1. Policy Development
- Government has leadership role in policy development, with participation of academia, the private sector, clients and the community.

2. Research & Development
- Government is client for R&D providers.

3. Data Capture &Maintenance
- Government ensures the development and maintenance of framework information, and business information required for its own purposes. Framework information is information upon which other business information (in both the public and private sectors) is dependent.
- Government encouraged to outsource data capture and maintenance of framework and business information

4. **Access**
- Government to provide access to its spatial data, subject to privacy and confidentiality.
- Policy provides for consistent, uniform access conditions.

5. Pricing
- Government pricing policy set to:

(a) encourage use; and
(b) provide sustainable maintenance
- Encouraging use means positioning pricing so that it is not an impediment to use.
- Providing sustainable maintenance means positioning pricing to ensure revenue is sufficient to support data maintenance at the standard required by clients.
- Increased usage means sustainable maintenance costs are distributed over more clients, so pricing levels may be reduced.

6. **Distribution**
- Government 'wholesale' distributor to private sector, only undertaking data distribution where private sector unable or unwilling to distribute. Government may seed new distribution content or models, prior to take up by the private sector.
- Government:

(a) provides base level data discovery capability in Victorian State Data Directory (VSDD);
(b) maintains competitive neutrality and discourages monopolies; and
(c) implements privacy and intellectual property policy.

7. Value Adding
- Government actively seeks to provide value add opportunities to private sector. The extent and depth of value added products assure the viability and value of framework information and government base information products.
- Government branding and IP are retained at the framework and base information level.

"Victoria's Spatial Data Infrastructure, Govt - Private Sector Partnerships"-PPT-Melbourne University, 9 April 2002

3.2 HKILA's Input-S/GDIS is not only one of the new suggested areas for the Interoperability Framework, but it is a very basic component of the Sustainable e-government programme. As spatial/geo referenced data is a cross-cutting layer for all basic information system, the sustainability and the successful implementation of the new strategy would depend greatly on how such system can be integrated into the IF.

2. **Sustainable e-government programme-**

"The Government will focus on driving up utilisation, promoting customer relations management and improving customer interface, promoting horizontal integration in service delivery, enhancing government accessibility and transparency, leveraging the most appropriate technologies, and enhancing the measurement of the benefits of e-government projects."

We need a SPATIAL PLANNING FRAMEWORK to support and help achieve these strategic objectives and policies.----------
The HK2030 Study has therefore adopted sustainable development as an overarching goal."

Extract from – page 4 –Consultation Booklet-HK 2030 Strategy Stage III Public Consultation

The Interoperability Framework

Suggestions: Addition of New Areas-

Spatial / geo-referenced data

"Result of the Industry Consultation on the Interoperability Framework for E-government"- Plenary Meeting of the IIAC-9 April 2002- Information Technology Services Department

Identified Benefits

- Improved business and strategic planning
- Increased productivity
- Development of new business opportunities
- Improved scheduling and co-ordination of investment projects

"National and International **Spatial Data Infrastructures**", Professor Ian Williamson, Department of Geomatics, The University of Melbourne, 7th MAY 1999.

3.3 HKILA's Input-The strengthening of policies and regulatory framework with **a broad and clear vision for S/GIDS development** would benefit the co-operation between **public and private sector** in **all industries** (not only broadcasting industries) which will beneficial to HKSAR's **Infrastructure and business environment**. The need of **public and private sector partnership** has been fully recognised in the implementation of the **S/GDIS** in those countries that have developed such system.

3. **Infrastructure and business environment-**

"The Government will continue to promote e-business adoption, intensify the support to different sectors provided by the two flagships at Cyberport and Science Park, and strengthen our policies and regulatory framework to facilitate the development of the broadcasting industry."

Role of Private Sector in Switzerland(FIG PPT-CADASTRE 2014)-2 Partners:	
Public Sector	**Private Sector**
• **legislation (Federal and cantonal level)** • **financing structure** • **setting standards** • **supervision** • **co-ordination** • **verification**	• **production** • **maintenance** • **service to clients** • **innovation**

OPPORTUNITIES FOR PUBLIC AND PRIVATE PARTNERSHIP IN SDIS

- Fixed production costs are high
- Reproduction costs are near to zero
- Scarce commodity = high price
- Large end user market = near to zero price
- Dissemination of spatial products not possible without infrastructure
- Combine infrastructure with the Internet, leads to...
- Self-organising rather than central control
- Protocols provide access and exchange
- Connections between parties bring efficiencies and new industries eg. geodemographics through post codes
- Near zero costs encourages new applications, eg. large street mapping industry, geographic pattern of users
- Much data already exists
- Value Added Resellers v global use

"National and International **Spatial Data Infrastructures**", Professor Ian Williamson, Department of Geomatics, The University of Melbourne, 7th MAY 1999.

3.4 HKILA's Input-The Institutional Review should be expanded to include ALL INDUSTRIES since "Integrated planning and management of land resources is the subject of chapter 10 of Agenda 21, which **deals with the cross-sectoral aspects of decision-making** for the sustainable use and development of natural resources, including the soils, minerals, water and biota that land comprises.**". We attached below HKLIA 's proposal for such Institutional Review.**

4. **Institutional review-**

"The Government will consider the case for merging the Information Technology Services Department into the Communications and Technology Branch of the Commerce, Industry and Technology Bureau in order to have a co-ordinated role in promoting the development of applications and services, supporting the information industry and driving IT adoption. I**t will also review whether the existing regulatory structures for the telecommunications and broadcasting industries best serve Hong Kong in the era of convergence and deregulation."**

The institutions (Public or Private) that are responsible for the supply of land and property-related data must cooperate both among themselves and with the users in order to produce a centralized S/GDIS and related individual databases

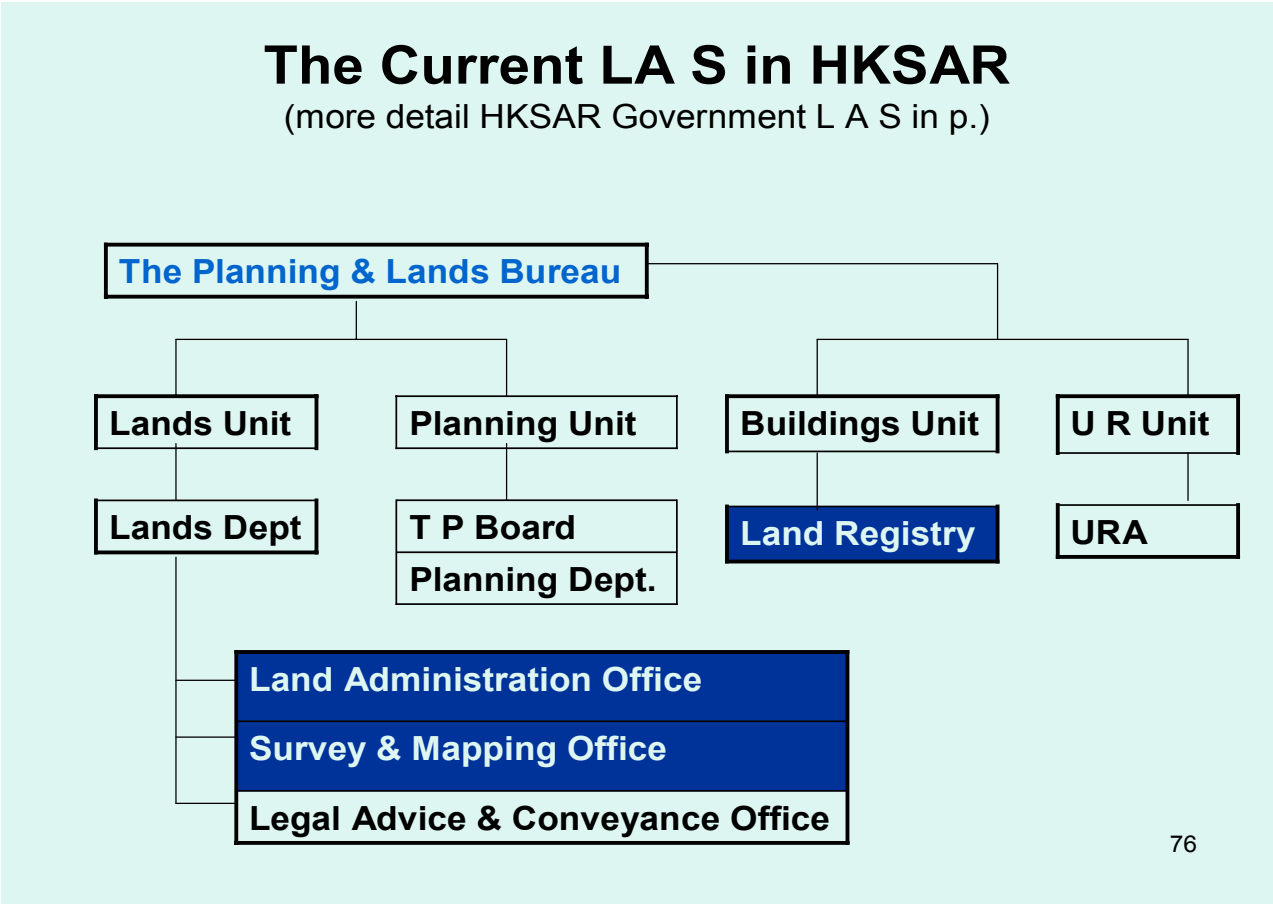
that will suit the needs of each organization.

- **The institutions need**
  - **to *refocus Land Administration education, training and organisations* to reflect market requirements for *modern holistic approach* rather than traditional divisional specialisations.**
  - **to encourage *Public and private partnership* in the *modern human resource development***

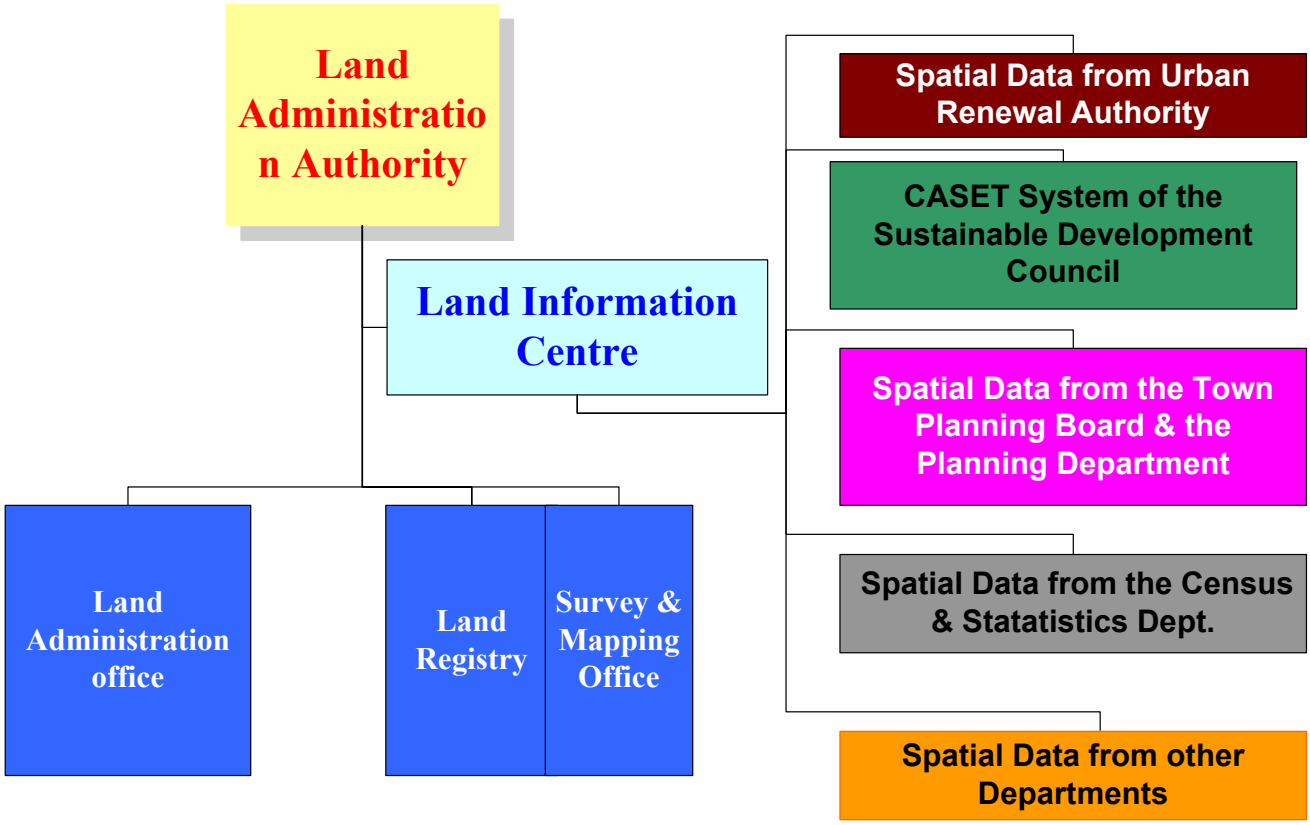
- **Institutional Restructuring- *One Land Authority***
  - **Proposed to establish *the Land Administration Authority* (L A A), replacing both the Urban Renewal Division and Planning & Lands Division under the Housing, Planning & Lands Bureau (HPLB) to become *an independent Statutory Body*.**

- **The present Land Information Centre (LIC) in the SMO of the Lands Department should be expanded to become an independent organization under the L A A.**
  - **Pulling together digital information from various government and private agencies. It will be *a one-stop resource centre* for complete, comprehensive and accurate digitised land data.**
  - **The LIC should combine the efforts of Land Registry (LR) and SMO to establish the fundamental Cadastral Layer which is vital for the unification of the SDIS.**

- **A more urgent issue is to have all cadastral and spatial data processes (SMO, LR and LAO) *unified and administered within one organisation*.**
  - ***Unification of S/G DI Ss* with the *LAS* is more important than statutory and regulatory reforms or the introduction of new systems and technologies.**



HKILA'S PROPOSED INSTITUTIONAL RESTRUCTURING FOR LAND ADMINISTRATION



3.5 HKILA'S Input-

- 3.5.1 **HKILA'S Comment**-Although administrative mechanisms may exist for the exchange of land / geographical information between government departments, they are **not operating effectively**. It is obvious that there are also **constraints and barriers** in the channels of communication and cooperation between these institutional bodies and these different SDIS/GIS which **failed to meet the great public demands for rapid access to relevant and correct spatial/geo-reference information.**

5. **Technological development-** "The Government will continue with its investment in research and development, and foster the development of innovative applications and services in areas including wireless technologies, digital entertainment, and open source software."
"We encourage the development of **shared spatial data and broader application of GIS** within Government as well as between Government and the private sector. The studies referred to in (b) above will help us to plan the way forward on **possible integrations**." A written reply by the Secretary for Information Technology and Broadcasting, Mr K C Kwong, in the Legislative Council LCQ16: Application of geographical information systems December 8, 1999 http://www.info.gov.hk/gia/general/199912/08/1208156.htm
The Interoperability Framework Principles for Defining the Areas of Interoperability – areas where there is a business need to do so – areas where we have a choice on what specifications to adopt – industry-specific areas where Government is one of the stakeholders (respective bureaux/departments (B/Ds) should take the lead to liaise with the industry on industry specific standards) – Focus on the interactions between computer systems, e.g. – data interchange between two discrete application systems – interactions between central infrastructure services and business-specific applications using the infrastructure – document exchange formats – security specifications for stated purposes under a security policy Suggestions: one of the Addition of New Areas-Spatial / geo-referenced data "Result of the Industry Consultation on the Interoperability Framework for E-government"-Plenary Meeting of the IIAC-9 April 2002- Information Technology Services Department

- Though the **Land Registry** (LR) and the **Survey & Mapping Office** (SMO) of the Lands Department are making positive progress in technology development**, their basic role in S /GDIS has not yet been recognised by the Government (even in the Lands Department (LD) and the Planning & Lands Bureau).**
- **LR-should push ahead with the Land Title Registration**
- **SMO- should complete (i) the production of all digital Cadastral Plans and (ii) the Cadastral Survey of the HKSAR**

- At a technical level, **standards for the exchange of data** will almost certainly need to be established. Although such standards may be **directed towards the exchange of data** rather than towards internal operational procedures, they inevitably change the way that things are done, especially in respect of **transparency and accessibility.**
- Recent HKSAR Government re-structuring exercise did not have a land administration system vision and broad implementation strategy for the **S/G D IS. The Interoperability Framework for Spatial /Geo-referenced Data was only introduced in 2002.**

3. 5.2 S/ GDIS as one of New Areas to the Interoperability Framework of the *2004 DIGITAL 21 STRATEGY* should be given top priority to develop. Recognition of the role of SDIS by the HKSAR Government is vital in the following ways:

- The importance of **land and spatial / geo-referenced data** as **a basic cross-cutting issue**.
- **The Modern Cadastre** as a **basic infrastructure** for supporting land equity and sustainable land development
- The Relationship between **cadastral surveying/ mapping and Spatial Data Infrastructures**
- The Relationship between **cadastral surveying/mapping and land registration**
- The urgency in the **Inter-ministerial coordination** of **land information and other spatial / geo-referenced data.**
- The **SDIS's** role in the **cost-effective implementation of land policy**.
- The **SDIS** will ensure **transparency and accessibility** of land information, other spatial / geo-referenced data and land policy to the public and private sector**.**

Abstract
"Author of the paper understands the problem of the cities as one of the global problems. The intention to solve that problems and use all newest communication and information technologies and contemporary improve the level of the life of the inhabitants lead to the ideas of the digital cities. The idea is connected with such a streams as e-government, e-commerce, e-education and others. **For realisation of these ideas geographic (geospatial or spatial) information (GI) is necessary part of the process. Looking inside to the GI disciplines we are developing ideas link with the creation and existence of the spatial data infrastructures (SDI), such as metadata service, reference data, legal framework and standard framework.** Author is giving overview of some global spatial data and European projects. He is discussing about aspects necessary to accept at the creation of the SDI especially for the digital cities. He is commenting using of GI at the conditions of the Sustainable Information Society. Some new research trends in the field Use of GI are mentioned." **Key words:** geographic information, spatial data infrastructures, global projects, global information society, sustainable information society, digital cartography, GIS

8. Conclusions

1. Perspective, effective spatial data infrastructures in digital cities cannot be develop without linkages with information infrastructures in the states, regions or in global scales,
2. The important role are playing GIS and digital mapping, not only in the technological part of the stake but as well as in the realisation of the sustainable digital cities ideas,
3. Citizens and also digital one are from many points of views different, but many problems are the similar or same and could be solve by the same tools.
4. SDI is necessary background for using GI in the efforts such as e-government, e-commerce, e-education and last but not least digital cities ideas.
5. There are digital cartographic tools and products ensuring true representation of the high quality data and information as a presumption for right decision making in the cities, and regions.
6. The new era of the digital cities and the role of GI will be connected with the 3D approaches which will give new highest quality tolls for decision making to the digital cities managers.
"SDI and Cartography for Digital Cities" -Milan KONECNY, vice-president of International Cartographic Association Proceedings on Mapping 21st Century. The 20th International Cartographic Conference. ICC2001 Beijing, China. August 6-10, 2001.e-mail: konecny@ics.muni.cz Stored Date : 2002-4-30 , Urban Planning ONLINE http://www.upo.com.cn/eupo/index_02.asp?classid=3&Nclassid=8&articleid=79 -Guangzhou Urban Planning Automatic Center (ADDED 06-11-03)

3.6 HKILA'S INPUT-Development of the SDIA is an urgent and important programme

- **An S/GDIS (including A *modern Cadastre and an unified Land Information System)* should be established.**
- **Especially both LR and SMO have already made a start in the path for SDIS development.**
- **In order to ensure the efficient production and use of cadastral data, at least, *a product-based S/GDI* S(suitable techniques and organizational arrangements for spatial data exchange) must be put in place.**
- **Although S/GDIS may be expensive, an effective and efficient SDIS will produce benefits that significantly *outweight the costs*.**

6. A vibrant IT industry-

"The Government will promote a vibrant, competitive and innovation driven IT industry in Hong Kong, through leveraging the opportunities afforded by the Mainland market, the brand-building and trade promotion efforts of the Hong Kong Trade Development Council, and **various programmes to help the local industry enhance service quality and build capability**.."

Private Sector

Data Service Providers

Policy Development (DSPs)
DSPs, with specialised knowledge of government products and client requirements, input directly to government policy through data custodians, and formally through GIRG. DSPs will play a significant role in informing and developing access, pricing and distribution policy
Research & Development
Government encourages private sector and client R&D particularly in partnership with academia. DSPs will have particular expertise in terms of delivery mechanisms, protocols and

data management.

Data Capture & Maintenance

Private sector encouraged to seek data capture and maintenance opportunities from government. However, data capture/ maintenance and DSP roles considered incompatible. Data maintainers must provide, and be seen to provide, absolute competitive neutrality (with particular reference to provision of data to DSPs) prior to taking up data capture and maintenance functions for government.

Pricing

DSPs have full access to agreed government data sets based on a single annual fee, for uses set out in the DSP agreement (essentially distribution to licenced end users, and data management services, including change management).

DSPs set their own pricing for services and processes undertaken in providing government data to licenced end users, but may not vary the licence conditions of the actual data.

Distribution

DSPs complete the distribution network by linking government 'wholesale' outlets with a range of other sources, by assembling comprehensive clearinghouses including a wider range of data, and by providing the necessary data provision services (formatting, transformation, translation etc).

DSP clearinghouses may be accessed from VSDD.

Value Added Resellers

Distribution

VARs complement the DSP distribution network by providing additional new and derived products (VARs may only distribute their own products, not government data).

VARs may use DSP clearinghouses to maximise product visibility.

Value Adding

VARs add value to government framework and key business information by:

(a) enhancing

(b) integrating; and

(c) developing new/derived products.

VAR product branding and IP rights increase commensurately with value add; government branding and IP diminish/cease accordingly.

End User

Pricing

End users have choice of providers for both geospatial information and services, and obtain value for money.

End users inform and contribute to both government and private sector pricing policy by demonstrating pricing policy consequences.

Distribution

End users have choice of distributors for both geospatial information and services.

Academia

Research & Development

Government engages academia for principal R&D role, and seeks to have advice from clients, the private sector and government guiding R&D directions.

Data Capture & Maintenance

Academia contributes to setting the direction for data capture and maintenance through R&D, but is not seen as a participant with the private sector in direct data capture or maintenance activities.

Access

Academia has access to government data for R&D at no cost.

"Victoria's **Spatial Data Infrastructure**, Govt - Private Sector Partnerships"-PPT-Melbourne

University, 9 April 2002

3. 7.1 HKILA'S INPUT-

- Though the **Land Registry** (LR) and the **Survey & Mapping Office** (SMO) of the Lands Department are making positive progress in Modernisation**, the role of L A has not yet been recognised by the Government (even in the Lands Department (LD) and the Planning & Lands Bureau).**
- **No Land Administrator** (one who has been properly qualified for a land administration/land management degree) **employed in both Government and private enterprises in HKSAR.**
- After taking on the land works for about half of a century, the ESS and LEE have **to cope with these changing circumstances and need to refocus their education, training and organisations to reflect market requirements rather than traditional divisional specialisations.**

7. **Human resources in a knowledge economy-**
"The Government will work with educational and vocational training institutions and the industry to enhance the training and skills of our workforce and the next generation. The Education and Manpower Bureau is now reviewing the progress of **integrating IT in education and formulating the strategic directions for the further development of IT in education**."

3.7.2 The long-term objective of the human resource development in S/GDIS for HKSAR community is to increase understanding of the benefits of geospatial information and to support the staff development in Modernisation of Land Administration in both public and private sector. It is imperative to establish a viable, developing educational programme, to establish a developing system of delivery and to establish working links within HKSAR educational providers and professions in Land Administration.

EXAMPLES OF UNIVERSITIES	DEGREE/DIPLOMA
The Faculty of Engineering at University Of New South Wales, Australia.	Graduate Diploma in Land Administration Master of Engineering Science in Land Administration

The University of Sydney at Orange.	Bachelor of Land Management, Advanced Diploma of Land Management
The University of Reading, UK The Department of Land Management and Development	M. Sc. and M. Phil. Land Management B. Sc. Land Management
Faculty of Geoinformation Science and Engineering , Universiti Teknologi Malaysia	Bachelor of Science (Land Administration and Development), Master by Taught Course (Land Administration)
Department of Real Estate and Construction. The University of Hong Kong.	M. Sc. in Real Estate (Major in Land Management)
The Hong Kong Polytechnic University, Department of Land Surveying and Geo-Informatics	PH.D, M Sc. Geo-Informatics (GIS) BSc (Hons.)(Surveying & GIS)
Urban Land International Institute for Geo-Information Science and Earth Observation (ITC)	Urban Land Administration degree

"Human Resource Development (HRD) Principles

55) The key to sustainability of land administration infrastructures is ***human resource development***, and particularly education and training, both in country and overseas.

56) One of the weaknesses in the design of land administration projects is often the commitment to human resource development (and particularly formal education and training, both in-country and overseas, short courses and study tours). Without doubt, this is one of the most important factors, if not the most important factor in the sustainability of projects. As a "rule of thumb" at least 10% of the overall budget for a project should be committed to human resource development (this does not include consultant input). For example the Swedish aid agency SIDA tries to adopt 30%.

57) There is a major world deficiency in higher education and associated research in land administration. Experience shows that programs cannot be grafted on to existing surveying or geomatic engineering programs with a strong "measurement science" focus. For a successful higher education program in land administration and cadastral systems, it is essential that university departments have a number of active land administration academics to coordinate and drive it, and undertake research in the area. A major commitment needs to be made by such organisations as the World Bank and other international aid organisations, if the higher education needs of land administration are to be met globally. Each LAS project should invest considerable resources in the establishment of such education and research programs. Often governments and consultants have

a vested interest in minimising a commitment to education and HRD in general."
Extract from **"BEST PRACTICES FOR LAND ADMINISTRATION SYSTEMS IN DEVELOPING COUNTRIES"** *21 July, 2000* – INTERNATIONAL CONFERENCE ON LAND POLICY REFORM, Jakarta, 25-27 July 2000, by IAN P. WILLIAMSON, Professor of Surveying and Land Information, Department of Geomatics, The University of Melbourne Parkville, Victoria, AUSTRALIA

3.8 HKILA'S INPUT-

3.8.1 The issue is broader than data gaps. It r**elates more significantly to issues of data custodianship, harmonisation of definitions, and harnessing S/GDIS as a conceptual framework and technology platform for linking the spatial dimensions of environment, economic and urban development, and addressing issues of goals and standards.** S/GDIS cuts across nearly all disciplines, provides **a common language for discussion, and acts as a means to bring governments, agencies, and constituents together in the decision making process.**

8. **Bridging the digital divide-**
"The Government will continue in its efforts to organise a wide range of programmes to bridge the digital divide in the community."

3.8.2 S/GDIS has become so important to national governments and for international cooperation that the **United Nations recently formed the Geographic Information Working Group** to address collaboration in the fields of cartography and geographic information science.

"Land administration reform can encompass policy settings, information sources, transactional processes, regulatory regimes and administrative arrangements. Reform can have a number of outcomes, including improved customer services, more efficient operation of property markets and better decision-making. Reform **can encompass the more traditional land interests or a broader range of property rights over other natural resources. Provision of comprehensive property rights information** is seen by ANZLIC as **a key deliverable**.
There is anecdotal evidence of an emerging demand for **consistent information and transactional processes across jurisdictional boundaries.** Potential users include financial institutions, property developers, bodies involved in social issues such as native title and (increasingly) national and **regional natural resource conservation programs.** This is not surprising given the growth of national organisations dealing in land and property in different jurisdictions and growth in a national policy framework to deliver economic, social and environmental objectives which transcend borders."
Dr Ken Lyons, Mr. Ed Cottrell and Mr. Kevin Davies- "The Case for Refocusing & Re-engineering Land Administration to Better Meet Contemporary and Future Needs in Property Rights and Markets.". This paper was presented at the Joint AURISA and the Institution of Surveyors Conference, Adelaide, South Australia, 25-30 November 2002.

" The goal of integrated land management is **to optimize the combination of economic and environmental benefits to society that are provided by the land's soil, mineral, and water resources, while preserving or increasing the capability of the land to provide these and other benefits in the future.**

Science contributes to effective land management by providing the information and understanding needed to evaluate consequences of alternative approaches to land management problems, and by developing technologies for land use and management that more effectively achieve society's objectives, including meeting basic human needs and reducing gender inequities. **The integrated approach to land management is not a fixed procedure, but rather a continuous,iterative process of planning, implementation, monitoring, and evaluation that strives to meet as many of the multiple economic, social and environmental needs of society as possible.**

Sciences and technologies that support 1) information needs, 2) evaluation of options, 3) applications for solution of specific problems, and 4) infrastructural capabilities provide the foundation for an integrated approach to land use planning and management. Most of the basic scientific knowledge and applied technologies needed for integrated land management are already available. The effective use of many of these technologies in the developing countries that are experiencing the most severe land use problems, however, is hindered by a number of factors, including: 1) limited access to appropriate information and technology, 2) lack of appropriate infrastructure to use science and technology effectively, 3) problems caused by current unsustainable land use practices, and 4) unresolved conflicts between different land use goals.

Elimination of these barriers requires approaches that are tailored to the specific conditions and needs of each country, and that take advantage of local knowledge and human resources that are already available. Based on its analysis and past experience, the Commission has identified four approaches as having the greatest potential impact on the effective implementation of integrated land management: 1) intra- and inter-governmental cooperation; 2)private public partnerships; 3) targeted training and technology support programs; and 4) direct public investment in resource protection.

Report of the Panel of the Commission on Science and Technology for Development on Science and Technology for Integrated Land Management-THE SCIENCE AND TECHNOLOGY ASPECTS OF THE SECTORA ISSUE TO BE DISCUSSED BY THE COMMISSION ON SUSTAINABL DEVELOPMENT IN 1995.

"**Information (especially spatial data infrastructures) and good governance are the essential bedrock for the development of components of land administration systems necessary to serve the dynamic needs and tensions of 21st century society. The same bedrock is necessary to manage the tensions between economic, social and environmental imperatives.**

Information technology is a vital tool in the complex decision-making processes of the future, particularly for sustainable development. Informed participation from diverse sectors has been identified as vital to sustainable development.
Equity of access to information technology has implications for effective participation. Access, equity and privacy are the issues of our age and are very relevant to the development of acceptable SDIs. **This poses challenges for good governance at every level of society, from local to global. Whilst there is general understanding of the existence of this divide between developing and developed countries, it is important to understand the divide at local and national levels.-------**

Decisions are usually only as good as the information and analysis of that information. A tool such as a multi-purpose cadastre and land information system is only as good as the data that is

fed into it. That data has in turn been created for a particular purpose that may not be interoperable with other data which have in turn been created for their particular purposes. **The challenge for creators of multi-purpose cadastres and land information databases can be summarized as accuracy (and currency), interoperability, access (by GIS managers and the public) and privacy.** The expanded list would include: wide variety of data collection methods; the range of data accuracies; lack of suitable feature coding, identification and data exchange standards; occurrence of sporadic data coverage; differing data types; the need for temporal data; incompatibility between data sets, informality of agreements between data providers and their incompatibility, particularly between pre-existing large information systems (Williamson and Hunter 1991)."

ABSTRACT OF "SPATIAL DATA INFRASTRUCTURES AND GOOD GOVERNANCE: -FRAMEWORKS FOR LAND ADMINISTRATION REFORM TO SUPPORT SUSTAINABLE DEVELOPMENT."
Lisa Ting & Ian Williamson, Department of Geomatics, The University of Melbourne, 4th Global Spatial Data Infrastructure Conference, Cape Town, South Africa, 13-15 **March 2000**

3.8.3 In bridging the digital divide (DD) o**ne very important step is to take a broader scope to bridge the DD between HKSAR and that of the and PRC.** The determination in the implementation of t**he Strategy and Policies for Development of Geo-spatial Information Infrastructure in PRC** (especially the Guangdong /Pearl River Delta cities) **showed that HKSAR is lagging behind in this area of information system development.**

The Strategy and Policies for Development of Geo-spatial Information Infrastructure in China (4 / 30 / 2002 , 409)

Yang Kai, State Bureau of Surveying and Mapping

Abstract

In this paper the strategy and related policies for development of geo-spatial information infrastructure in China are described.
A new development strategy namely the Digital Earth (DE) strategy has been vigorously developed in recent years. **One of the top priorities of digital earth development strategy in China is to build China's National Spatial Data Infrastructure (CNSDI).** The planned model accepted and developed in China for CNSDI is composed of the following parts: the fundamental datasets; the data exchange network; the legislation and standardization; and the institutional framework.
The National Fundamental Geographical Information System of China has been gradually established during the passed ten years, which includes following fundamental databases: 1) Geodetic Database; 2) Topographic Database; 3) Geographic Name Database; 4) Digital Elevation Model (DEM); 5) Digital Imagery Database; 6) Gravimetric Database; 7) Cadastral Surveying Database; 8) Land Use and Land Cover Characterization (LUCC) Database.
There are mainly two sorts of GIS system in China, namely the fundamental and the professional one (separately simplified as FGIS and PGIS).

The linking model of the data exchange networking within FGIS as well as between FGIS and PGIS can be described as follows: a) vertically graded tree model within the FGIS; b) parallelogram model for two grades of linking one objective professional system from FGIS; and c) radial parallelograms model for linking more objective professional systems from FGIS with two grades.

Policy issues related to the development of CNSDI are mainly the mechanism for updating of fundamental geo-spatial data and the mechanism for common sharing of geographic information. **The central government of China has listed fundamental surveying and mapping into the State Economic and Social Development Plan and also determined to set up special budget and to increase the amount of the funds for it.** Recently the SBSM has formulated and promulgated the Administrative Regulations on Licenses for Using National Fundamental Geographic Data, which is related to the data sharing policy in China.

http://www.upo.com.cn/eupo/index_02.asp?classid=3&Nclassid=8&articleid=84
URBAN PLANNING ONLINE, Guangzhou Urban Planning Automatic Center

3.8.4 HKILA's Inputs-A more urgent issue is to have all cadastral and spatial data processes (SMO, LR and LAO) *unified and administered within one organisation*. *Unification of Spatial Data Systems* with the *LAS* is **more important** than **statutory and regulatory reforms** or the introduction of **new systems and technologies**.

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- **IAMSD- Land Management Issues -- Inter-Agency Meeting on Sustainable Development** http://www.un.org/esa/sustdev/land.htm
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