



Spatial Data Infrastructures in Cyprus: State of play 2010



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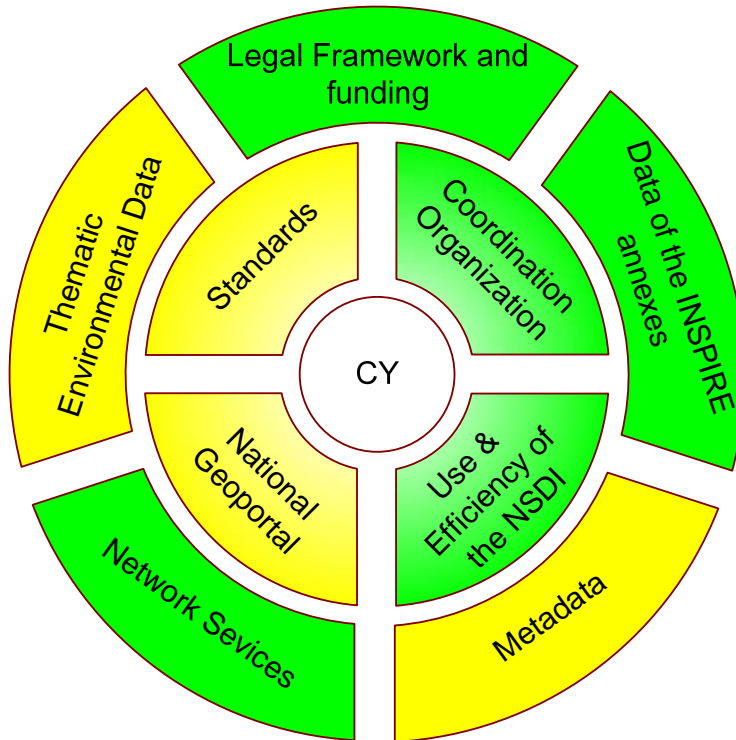
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Change matrix 2010 versus 2007

A concise graph is added to indicate changes of the various paragraphs compared to the previous report. Two colours are used: Green and Yellow indicating major and minimum changes respectively compared with the 2007 State of Play. This graph does not reflect the country situation. Merely it represents our findings/changes per section on our preparation of the desktop analysis



Executive summary

Whereas a number of SDI-related GIS projects are operational, it is especially within the ongoing National Integrated Land Information System project (NILIS) that a number of SDI-components are being developed.

A key actor in coordinating the NSDI development efforts is the governmental Department of Lands and Surveys (DLS), operating under the Ministry of Interior, which is the national mapping and cadastral agency. It is responsible for preparing digital geoinformation and maps, all the work associated with land registration, geodesy, topography, mapping, photogrammetry, hydrography, cadastral surveys, land tenure, land consolidation, management of state land, property valuation and the implementation of a National Integrated Land Information System (NILIS).

With NILIS, the Government of Cyprus and the DLS have embarked as from 1999 on a programme to improve the efficiency and effectiveness of GI-related departmental activities. The general strategic objectives are (1) to establish a fixed-boundary coordinated cadastre system, (2) computerise the land records and cadastral plans, (3) develop a number of computerised systems to support the survey, registration, valuation and land management functions of the department and (4) develop and implement in stages a national land information system where all agencies with land-related activities can share available data for the benefit of the country's economy. NILIS intends to automate the department's procedures and will serve the land information community in Cyprus.

The NILIS project is an umbrella program covering a whole group of activities, such as to reduce duplication of land administration work among government agencies, and to develop a Digital Cadastral Database, a Survey Database and a Topographical Database, a Legal Database and a Fiscal Database. It is steered by an inter-ministerial/interdepartmental Land Information Council.

Spatial data maintained by DLS is currently considered as property of DLS and the Government, and is not readily available to the public without official permission. However, DLS is studying different methods to revise the law to better serve the GI-community by providing digital LIS data more efficiently. Cadastral and topographical spatial and legal/fiscal information exported from the Land Information System databases are currently distributed in digital form to other Government Departments and semi-government organizations, and the private sector, upon their request. Other geoinformation such as aerial photographs and topographical datasets are provided both in raster and vector form to other Government Departments, interested persons or organizations. Apart from the DLS, other government departments and semi-government organisations maintain their GI in relation to the DLS cadastral plans and maps.

Although there is not yet an NSDI implementation plan, a new strategy is promoted including various land agencies via a pilot project of linking and exchanging spatial data for 2010. At the same time an INSPIRE management board has been set up and the final text on the INSPIRE transposition has been prepared as a new law and is currently being

reviewed by the Legal Service of Cyprus and forwarded to the Council of Ministers for approval.

A systematic database of metadata for the reference data and core thematic data has still to be developed.

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Abbreviations and acronyms

CAV	Computer Aided Valuation
CDB	Cadastral DataBase
CILIS	Cyprus Integrated Land Information System
CT	Core Thematic Data
CYTA	Cyprus Telecommunications Authority
DCDB	Digital Cadastral DataBase
DIMS	Data Input and Maintenance System
DITS	Department of Information Technology Services
DLS	Department of Lands and Surveys
EAC	Electricity Authority of Cyprus
EUROGI	European Umbrella Organisation for Geographic Information
FDB	Fiscal DataBase
FIR	Further Investigation Required
GDN	Government Data Network
GEAS	Geographic Enquiry and Analysis System
GI	Geographical Information
GIS	Geographical Information System
IACS	Integrated Administration & Control System for Agricultural Subsidies to Farmers
ICA	International Cartographic Association
IHO	International Hydrographic Organization
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
LDB	Legal DataBase
LIS	Land Information System
LTM	Local Transverse Mercator
MBSHC	Mediterranean and Black Seas Hydrographic Commission
NIA	No Information Available
NILIS	National Integrated Land Information System
NSDI	National Spatial Data Infrastructures
OGC	Open Geospatial Consortium
PPP	Public-private partnerships
PSI	Policy and legislation on access to public sector information
PVC	Private Virtual Circuit
RDBMS	Relational DataBase Management System
REF	Reference data
SDB	Survey Data Base

SDI Spatial Data Infrastructures
TDB Topographic DataBase

1 General Information

1.1 Method

This report is summarizing the review of SDI in Cyprus, and reflects the degree to which the SDI situation in Cyprus is similar to the ideas set out in the INSPIRE position papers¹ and the more recent INSPIRE scoping documents.

The 2002 report was based on the analysis of various documents, project references and web sites readily accessible in English (for full list: see 3.2 List of references for Cyprus). Most resources were gathered from the Internet. Earlier projects and country surveys regarding SDI have been taken into consideration and their findings integrated into this report, including the report about Geographic Information and the Enlargement of the European Union by EUROGI and the European Commission and the SDI surveys published on-line by Harlan Onsrud. However, there is in general not much information published about the development of a Cypriot SDI.

The first version of this country report has not been commented upon by GI-experts from Cyprus. A fully revised version for the update - version 2004 – has been provided by Mr Andreas Hadjiraftis of the Department of Lands and Surveys. In addition, the publication of Dimopoulou et al. (2003) on the comparative analysis of NSDI policies in Greece and Cyprus has been taken into account. The update of 2005 did not contain new information. All the information found was already reflected in the report of 2004 and no additional feedback was received from the Authorities of Cyprus. The update of 2006 contained all additional changes that occurred between 2004 and 2006. Mr. Andreas Hadjiraftis provided update information. In addition, the presentation at the workshop “Preparing the National INSPIRE Information Days” (organized by JRC for the new and candidate Member States), was integrated. In 2007, the authorities from Cyprus provided the data sets and services templates completed. They also answered the questions regarding data sharing.

For the 2009 update the survey questionnaire was used, along with various web sources, publications and the geoportal. In this version obsolete information was removed, while a conclusion paragraph regarding the status of each indicator was added for each component.

1.2 Overview of SDI-actors in Cyprus

The *Department of Lands and Survey* (DLS) is the national cadastral and mapping agency, which is responsible for preparing digital geoinformation and maps, land registration, maintenance of cadastral records and preparation and updating of cadastral plans, thematic and topographical maps. The Department of Lands and Surveys plays a leading role in the implementation of the National Land Information System which leads to the creation of the SDI of Cyprus.

¹ INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

The DLS is a member of the International Hydrographic Organization (IHO), the MBSHC (Mediterranean and Black Seas Hydrographic Commission (MBSHC), EuroGeographics, International Cartographic Association (I.C.A.), and cooperates with the Institut für Angewandte Geodäsie in Frankfurt, DE).

[\[1\]](#)

The Statistical Service of Cyprus is responsible for maintaining statistical records in close cooperation with DLS. Many datasets were commonly examined and information was coded in a commonly agreed manner between the two Departments. Commonly derived data were prepared for EUROSTAT. Part of the data were entered into GISCO system (GIS of the Commission).

The following ministries, government departments and services are also cooperating very closely with DLS in exchanging geoinformation. Most of them are member of the Land Information Council, a body responsible for supervising the NILIS-project which can be considered as the backbone of the emerging SDI in Cyprus:

These are:

- Ministry of Defence
- Ministry of Agriculture
- Ministry of Education and Culture
- Ministry of Commerce
- Department of Planning and Housing
- Planning Bureau
- Department of Public Works
- Department of Geological Survey
- Forestry Department
- Cyprus Police
- Public Information Office
- Water Supply Boards
- Sewage Boards
- Municipalities
- Communities
- Electricity Authority of Cyprus (EAC)
- Cyprus Telecommunications Authority (CYTA)
- etc.

[\[14\]](#)

[\[3\]](#), [\[4\]](#), [\[5\]](#)

2 Details of NILIS

2.1 General Information

Cyprus has taken an initiative which can be considered as an important step towards the development of an NSDI: the National Integrated Land Information System project (NILIS) (also termed 'Cyprus Integrated Land Information System (CILIS)').

With NILIS, the Government of Cyprus and the DLS have embarked on a programme to improve the efficiency and effectiveness of departmental activities. The general strategic objectives are (1) to establish a fixed-boundary coordinated cadastre system, (2) computerise the land records and cadastral plans, (3) develop a number of computerised systems to support the survey, registration, valuation and land management functions of the department and (4) develop and implement in stages a national land information system where all agencies with land-related activities can share available data for the benefit of the country's economy. NILIS is meant to automate the department's data handling and management procedures and to service the land information community in Cyprus.

The objectives of the NILIS program are summarized as follows:

- To establish a new Geodetic Network, on which all resurvey work will be based;
- To resurvey the properties for the free part of the country (5,760 sq.km, 1,089,480 land parcels) by modern and accurate techniques, aiming at an accuracy of $\pm 0.07\text{m}$ to $\pm 0.30\text{m}$ for commercial urban to rural areas respectively;
- To use air photographs for surveying work, in combination with field surveys;
- To convert all registers and cadastral plans covering the whole country into digital form;
- To develop a Computer Aided Valuation (CAV) System;
- To adopt a legally authorized business approach to the departmental procedures;
- To provide continuing education and training skills for the personnel.

The NILIS has two major application components, the geographical and the legal one. The first component includes two main subsystems: the *Data Input and Maintenance*

System (DIMS) and the *Geographic Enquiry and Analysis System (GEAS)*, a module embracing the operations of geographic manipulation, analysis, display and hardcopy of the spatial and descriptive data held within the databases.

[\[15\]](#)

Spatial information captured and maintained by the DLS constitutes the official database reference on which other government departments, semi-government authorities, local government and other private land related agencies, base or intend to base their local spatial networks. Government and semi-government departments are encouraged to base their data collection programs on DLS spatial databases.

The Cyprus LIS project is an umbrella program covering a whole group of activities, such as to reduce duplication of land administration work among government agencies, and to develop a Digital Cadastral Database (DCDB), a Survey Database (SDB) and a Topographical Database (TDB), suitable to support an integrated Land Information System. Herewith LIS is defined as a tool for legal, administrative and economic decision-making and as an aid for planning and development. It consists on the one hand of a database containing spatially referenced land-related data for a defined area, and on the other hand of procedures and techniques for the systematic collection, updating, processing and distribution of the data.

The survey database, the digital cadastral database, and the topographical database constitute the spatial database of CILIS.

The survey database (SDB) stores information related to the geodetic network and survey data. The SDB is the repository of data from original source records of surveys that underpin the cadastral framework. It is also the reference system for applications that require dimensions or accurate survey coordinates. SDB contains the foundation data for the digital cadastral database (DCDB). The DCDB has been designed to provide an up-to-date, continuous cadastral map base to support cadastral mapping and the land information system functions. The database stores the current cadastral framework, thematic overlays, and topographic data in a seamless form.

2.2 Component 1: coordination and organizational issues

The organisation coordinating the NILIS development efforts is the Department of Lands and Surveys (DLS). The DLS is a government department offering services in the areas of land registration, survey, cartography, valuation, state land management, tenure and administration. It is operating under the Cyprus Ministry of the Interior and undertakes all the work associated with land registration, geodesy, topography, mapping, photogrammetry, hydrography, cadastral surveys, land tenure, land consolidation, management of state land, property valuation and the implementation of an integrated national LIS.

The following representatives are members of the Land Information Council, a body responsible for supervising the NILIS-project which can be considered as the backbone of the emerging SDI in Cyprus:

- Director General - Ministry of Interior
- Director General - Ministry of Finance
- Director General - Planning Bureau
- Director General – Ministry of Agriculture, Natural Resources and Environment
- Director General – Ministry of Transportation and Public Works
- Director – Department of Lands and Surveys
- Director – Department of Information Technology Services
- Director General – Cyprus Telecommunications Authority
- Director General – Cyprus Electricity Authority
- Representative of Cyprus Municipalities Union
- Representative of Cyprus Communities Union

A new project starting in 2010 will cover the strategic upgrade of the currently used Integrated Land Information System into a National Land Information System providing the NSDI for Cyprus. A pilot project using real live data and databases will be implemented, and a total of 5 land related agencies will be linked together for sharing and exchanging spatial data. Special provisions will ensure that the whole project will be implemented according to INSPIRE. A Technical document was sent to the Planning Bureau for further approval and funding.

Although there is no specific funding policy for INSPIRE, a number of projects are running funded by the national government and the Department of Lands and Surveys.

The Coordination body for INSPIRE implementation is the INSPIRE Management Board which includes most of the organisations involved in NILIS.

It is composed of:

- Director General of the Ministry of Interior (Chairman)
- Director General, Ministry of Finance, or his representative, Member
- Director General, Planning Bureau, or his representative, Member
- Director General, Ministry of Agriculture, Natural Resources and Environment, or his representative, Member
- Director, Department of Lands and Surveys, or his representative, Member

- Director, Environment Service, or his representative, Member
- Director, Information Technology Services Department, or his representative, Member

In addition to the above Board there is a provision for the creation of a Team of Directors as follows:

- Director, Department of Lands and Surveys or his representative, Chairman
- Director, Environment Service, or his representative, Member
- Director, Department of Data Processing Services, or his representative, Member
- Executive Secretary of INSPIRE Management Board

Additionally, there are provisions for the creation of Technical Teams and Working Groups.

Furthermore, a number of organizations are already complying with INSPIRE such as:

- Department of Lands and Surveys, Creation and operation of an Integrated Land Information System with extensive usage of GIS technology.
- Department of Geological Surveys, Creation of datasets and databases, and extensive usage of GIS technology.
- Department of Water Development, Creation of datasets, Implementation plan for the development of an integrated GIS System.
- Ministry of Communication and Transport, Creation of databases
- Environment Service, Creation of datasets
- Statistical Service of Cyprus, Creation of datasets and adoption of GIS technology.
- Department of Postal Services, Creation of datasets.
- Electricity Authority of Cyprus, Creation of databases, and usage of GIS.
- Cyprus Telecommunications Authority, creation of databases, and usage of GIS.
- Sewage Boards (Nicosia, Limassol, Larnaka, Pafos), creation of datasets, and usage of GIS.

- Water Boards (Nicosia, Limassol, Larnaka, and Pafos) creation of datasets, and usage of GIS.
- Department of Forestry, creation of datasets, and usage of GIS.

2.2.1 Conclusions of Component 1

The Cyprus SDI approach is truly national. SDI building blocks have reached a significant level of operability. A new project starting in 2010 will cover the strategic upgrade of the currently used Integrated Land Information System into a National Land Information System providing the NSDI for Cyprus. Furthermore, a number of organizations are already complying with INSPIRE. The NMA is still playing a crucial role in the development of the NSDI and INSPIRE, but the Ministries themselves and major users are involved as well in the coordination through the INSPIRE Management Board.

Based on these conclusions we score the indicators as follows:

- The approach and territorial coverage of the SDI is truly national
- One or more components of the SDI have reached a significant level of operability (3)
- The officially recognised or de facto coordinating body of the SDI is a NDP, i.e. a NMA or a comparable organisation (Not so clear)
- The officially recognised or de facto coordinating body for the SDI is an organisation controlled by data users (No)
- An organisation of the type 'national GI-association' is involved in the coordination of the SDI (No)
- Producers and users of spatial data are participating in the SDI
- Only public sector actors are participating in the SDI

2.3 Component 2: Legal framework and funding

[2], [8] [13]

2.3.1 Legal framework

Currently, there is no encompassing legislation regulating the NSDI in Cyprus. The Council of Ministers Decision no. 41.657 of 1994 established the Land Information Council, which consists of 11 permanent members and is chaired by the Director General of the Ministry of Interior. The director of DLS has a leading role in the preparation of the strategic plan, data exchange standards, pricing policies etc. The Land Information Council can make recommendations to government departments and organised bodies before making agreements.

[\[1\]](#)

The final text on the INSPIRE transposition has been prepared as a new law and is currently being reviewed by the Legal Service of Cyprus and forwarded to the Council of Ministers for approval.

2.3.2 Public-private partnerships (PPPs)

The Cypriot commercial information market is small and relatively undeveloped. Private commercial firms are partially involved in spatial data capture projects through commonly agreed procedures and contracts.

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2.3.3 Policy and legislation on access to public sector information (PSI)

The Republic of Cyprus has ratified the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (“the Aarhus Convention”) by passing Law No.33(III)/2003. Further, the Parliament of Cyprus passed the Law on Public Access to Information Related to the Environment of 2004 - No.119(I)/2004 for the purposes of harmonising its legislation with Directive 2003/4/EC on public access to environmental information. According to Law No.119(I)/2004, public authorities are obliged to make available environmental information held by or for them to any applicant at his request, and without his having to state or prove an interest.

Directive 2003/98 on the re-use of public sector information was transposed in November 2006 by Law No 132 (I)/2006.

Spatial data maintained by DLS is currently considered as property of DLS and the Government, and is not readily available to the public without official permission. Cadastral and topographical spatial and legal/fiscal information exported from the Land Information System databases are currently distributed in digital form to other Government Departments and semi-government organizations upon their request. Spatial cadastral, topographical, legal and fiscal data can be accessed by officially applying to DLS Director. Citizens do not directly get access to the cadastral data, but they can get a Certificate of registration of Immovable Property.

Other geographic data such as aerial photographs and topographical datasets are provided both in raster and vector form to interested persons or organizations.

[\[14\]](#)

2.3.4 Legal protection of GI by intellectual property rights

The Cyprus Law relating to Copyright is set out in the Copyright and Neighbouring Rights Law of 1976 to 2006 (Law No. 59/1976, as amended by Laws 63/77, 18(I)/1993, 54(I)/1999, 12(I)/2001, 128(I)2002, 128(I)/2004 and 123(I)/2006). The amendment of 2004 included the 2001 Copyright Directive into Cypriot law.

The Copyright Act does not contain any specific protection for maps or geographic data, but it does protect photographs. All works created by or under the direction or control of the Government are explicitly protected by copyright.

2.3.5 Restricted access to GI further to the legal protection of privacy

The Constitution of Cyprus contains the following articles related to privacy in Appendix D, PART II. Article 15 guarantees that "every person has the right to respect for his private and family life." Article 16 guarantees that "every person's dwelling house is inviolable" and Article 17 guarantees that "every person has the right to respect for, and to the secrecy of, his correspondence and other communication if such other communication is made through means not prohibited by law" and "there shall be no interference with the exercise of this right except in accordance with the law and only in cases of convicted and unconvicted prisoners and business correspondence and communication of bankrupts during the bankruptcy administration."

The protection of personal data is regulated by Law 138(I) of 23 November 2001 on the Protection of Personal Data. It is based on the Data Protection Directive of the EU. Directive 2002/58 on privacy and electronic communication was transposed in national law in June 2004, in the Regulation of Electronic Communications and Postal Services Law.

The National Land Information System was designed in such a way to provide several security levels and to provide access to several groups of authorized users. Confidential information is kept only for internal DLS use and access is restricted.

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2.3.6 Licensing framework

Digital spatial geographic data is provided under terms and conditions. A specific set of terms governs the supply of digital cadastral plans, digital topographic information, and digital legal/fiscal records. The user is not allowed to copy, digitize, reproduce or transfer the data without the permission of the director of DLS. He can only use them for his own purposes within the agreement and is not allowed to provide the maps or part of them to

any other persons or organizations. For large projects which involve the bulk supply of digital geographic data, separate agreements are signed between the interested parties and the Director of DLS.

Standard licences are currently being set up to harmonise the description of conditions for different groups of stakeholders.

2.3.7 Funding model for SDI and pricing policy

Funds have been specifically budgeted and acquired for a number of NSDI activities, such as Cadastral Map Digitization, Planning Zones digitization, supply and processing of satellite images and digital aerial photographs, Re-survey Project - field survey, hardware and software installation for the National LIS, Photogrammetry data capture , and data distribution through Internet. The implementation of INSPIRE also will not have a general budget, but will be funded through the financing of several projects.

Charges are required for most data. The aim in Cyprus is to keep charging at a very low level, so that interested bodies and the citizens in general will get the benefits.

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2.3.8 Conclusions of Component 2

The final text on the INSPIRE transposition has been prepared as a new law and is currently being reviewed by the Legal Service of Cyprus and forwarded to the Council of Ministers for approval. Private commercial firms are partially involved in spatial data capture projects through commonly agreed procedures and contracts. The Copyright Act does not contain any specific protection for maps or geographic data, but it does protect photographs. Standard licences are currently being set up to harmonise the description of conditions for different groups of stakeholders The implementation of INSPIRE also will not have a general budget, but will be funded through the financing of several projects.

Based on these conclusions we score the indicators as follows:

- There is a legal instrument or framework determining the SDI-strategy or – development (In Preparation)
- There are true PPP's or other co-financing mechanisms between public and private sector bodies with respect to the development and operation of the SDI-related projects (Not so clear)
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector (No Information found)

- GI can specifically be protected by copyright (In Preparation)
- Privacy laws are actively being taken into account by the holders of GI (In Preparation)
- There is a framework or policy for sharing GI between public institutions
- There are simplified and standardised licences for personal use (In Preparation)
- The long-term financial security of the SDI-initiative is secured (No)
- There is a pricing framework for trading, using and/or commercialising GI (No)

2.4 Component 3: Data for themes of the INSPIRE annexes

2.4.1 Scale and resolution: European, National, Regional, Local, Other

The DLS offers its geoinformation at several layers and in a variety of scales. The following are given as examples, and they are not an exhaustive list:

- Digital Map of Cyprus at scale 1:350k (raster & vector)
- Digital Map of Cyprus at scale 1:250k (raster & vector)
- Digital Map of Cyprus at scale 1:100k (raster & vector)
- Digital dataset at scale 1:50k (vector)
- Digital street maps at scale 1:7500 (vector & raster)
- Digital cadastral plans, at scales from 1:500 – 1:5000 (vector and raster)
- Digital Planning Zone maps, large scale (in raster and vector)
- Digital cadastral records (from legal/fiscal database)
- Integrated digital datasets extracted from the Land Information System
- Geodetic control network [7]

The NILIS comprises so far four main Digital DataBases:

- The Survey Data Base (SDB), for storing information related to the geodetic network, current survey data and historical records of all surveys. From a total of 2.2 million land parcels, 60,000 have already been entered into the system. Scales available: 1:1000 and 1:2000.
- The Digital Cadastral DataBase (DCDB), designed to store digitized existing cadastral plans (approx. 8,500 plans in total) covering the whole island at different scales: 1:500, 1:1,000, 1:1,250, 1:2,500, 1:5,000. So far approximately 90% of land parcels have been converted in the free area. The CDB provides an up to date continuous cadastral map base to support cadastral mapping and LIS functions. Digitisation of cadastral plans covering the occupied area is under way. It is expected that the DCDB will be fully covering the whole country in two years. It must be noted that digital cadastral plans in raster format are available for the whole country.
- The Topographic DataBase (TDB), including all geographical data in support of digital cartographic work (road network data, land uses, hydrography data and contour lines). A variety of datasets at different scales is available both in

GIS raster and vector form. These datasets, in addition to the SDB and DCDB datasets, are used for creating and maintaining the standard DLS cartographic series and thematic maps. A full coverage of black and white digital aerial orthophotos is available for the free area of Cyprus. A full high resolution QuickBird satellite image dataset is available, covering the whole island. This dataset is used in relation to the other available datasets, making possible the accurate interpretation of ground features, which enable the updating and upgrading of existing cartographic datasets.

- The Legal/Fiscal DataBase (LDB/FDB), for storing and maintaining in digital form all land registers and other land records (such as land parcels' and owners' identity, description, mortgages, etc). The LDB facilitates transaction, provides a document tracking system and supports CAV. So far 950,000 from a total of 1.3 million existing records have been transformed into the system covering the free area of Cyprus. For valuation purposes sales history and other useful data are provided. It is estimated that from a total of 2.2 million sub-properties, 200,000 are already included in the FDB.

It is estimated that in 1-2 years the Digital Cadastral Database (DCDB) and the Legal Database data input and processing will be completed for the free areas, whereas the Fiscal database will be completed within the next 2-3 years. The Survey Database (SDB) is scheduled to be fully populated after the completion of the resurvey program (http://www.moi.gov.cy/moi/dls/dls.nsf/dmlinformation_en/dmlinformation_en?OpenDocument)

[15]

Other general categories of information which are stored in the GIS sub-system database of the NILIS comprise:

- Administrative boundaries –District, town/village, quarter, block and other administrative boundaries;
- Utility features;
- Road centrelines -Linear network representing roads and streets;
- Plan Indexes – Index map used in plan production;
- General Themes –Thematic overlays related to planning and property valuation;
- Planning Zones covering the free area of Cyprus (Available in raster and vector form).

2.4.2 Data by resolution or scale range for the INSPIRE themes

In January 2008, the DLS provided the data sets template filled for DLS and other organizations. At least one data set has been reported for each of the 34 themes of the 3 annexes of the INSPIRE Directive. On the other hand, the information regarding the accessibility (discover, view, download) are not clear (Y/N). A complete list will be

presented in the updated report including the information provided by the country in 2010.

2.4.3 Geodetic reference systems and projections

- UTM/WGS84 is used for digital administrative, topographical and street map series.
- LTM/WGS84 (Local Transverse Mercator projection) is used for cadastral plans and digital aerial photographs,

2.4.4 Quality of the data

NIA

2.4.5 Interoperability

Around the CILIS Data Base, a number of application systems have been developed (e.g. the Application Tracking System), including data entry, maintenance, enquiry and output functions, managed by Oracle and ESRI Software. More specifically, the system includes a relational database for data storage and retrieval and a standard Geographical Information System capable of integration to the relational database. The GIS and the relational database support all hardware and operational software. The system is implemented in both a central and decentralised environment. SUN Servers and Workstations running UNIX Solaris, Oracle Database and ARC Info GIS System, run in a client-server solution.

DLS is trying to encourage all LIS users to use the same DLS spatial database in order to ensure that it will be technically possible to exchange and synchronize data.

2.4.6 Language and culture

Greek and Turkish are the official languages. English is very well used.

2.4.7 Data Content

NIA

2.4.8 Geographical names

Geographical names are maintained in separate layers in the cadastral plan series and also in the dataset layers of the topographical map series and the LIS. The Land Information System data model provides the mechanism and the functionality for storing and maintaining the geographical names. Searches can be performed based on names or coordinates of one or more geographical names.

2.4.9 Character sets

Greek and Roman characters are used both as annotation and also within the spatial and non spatial databases of the LIS. Maps are produced both in Greek and English.

2.4.10 Conclusions of Component 3

In January 2008, the DLS provided the data sets template filled for DLS and other organizations. At least one data set has been reported for each of the 34 themes of the 3 annexes of the INSPIRE Directive. Around the CILIS Data Base, a number of application systems have been developed (e.g. the Application Tracking System), including data entry, maintenance, enquiry and output functions Greek and Turkish are the official languages. English is very well used.

Based on these conclusions we score the indicators as follows:

- Geodatasets exist which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components
- The geodetic reference system and projection systems are standardised, documented and interconvertable
- There is a documented data quality control procedure applied at the level of the SDI (No Information found)
- Concern for interoperability goes beyond conversion between different data formats (No)
- The national language is the operational language of the SDI
- English is used as secondary language (Partially)

2.5 Component 4: Metadata

2.5.1 Availability

Metadata is not yet readily available for DLS-datasets, but a great effort is undertaken on a project by project basis for the creation of complete metadata sets.

2.5.2 Metadata catalogues availability + standard

A systematic database of metadata for the reference data and core thematic data has still to be developed.

[\[1\]](#)

2.5.3 Dublin core metadata standards for GI-discovery

Not Applicable at this stage

2.5.4 Metadata implementation

NIA

2.5.5 Conclusions of Component 4

Metadata is not yet readily available for DLS-datasets, but a great effort is undertaken on a project by project basis for the creation of complete metadata sets. A systematic database of metadata for the reference data and core thematic data has still to be developed.

Based on these conclusions we score the indicators as follows:

- Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes (Partially)
- One or more standardised metadata catalogues are available covering more than one data producing agency (No)
- There is a coordinating authority for metadata implementation at the level of the SDI (No)

2.6 Component 5: Network services

At the moment there is no national Geoportal in Cyprus but the Department of Lands and Surveys has already implemented a new web site under which useful information on DLS's functions and products can be found. Digital cadastral plans, digital planning zone maps, topographical maps, administration maps etc are available on-line. The DLS webpage provides an online service for registered users to download data such as maps, cadastral zones, taxation data, and cadastral sales. This information is only in Greek:

(http://www.moi.gov.cy/moi/DLS/dls.nsf/dmlservices_gr/dmlservices_gr?OpenDocument)

Some products are available free of charge, whereas others are available subject to payment of specific charges depending on the type and volume of data. Further improvements of the web site are under way which will enable GIS on line applications and other useful applications. The price list for map is available at:

[http://www.moi.gov.cy/moi/DLS/dls.nsf/All/9E76E7B4F984BE3BC2256EA1002D01FF/\\$file/price_list_of_maps.pdf](http://www.moi.gov.cy/moi/DLS/dls.nsf/All/9E76E7B4F984BE3BC2256EA1002D01FF/$file/price_list_of_maps.pdf)

At the same time other organisations provide digital data as shape files (various coverage and resolutions) on their websites such as the geological survey department:

http://www.moa.gov.cy/moa/gsd/gsd.nsf/dmlDigitalData_gr/dmlDigitalData_gr?OpenDocument

In January 2008, the DLS provided the service template filled for DLS and other organisations. However, the information is relating to geo- and other portals through which services can be used. There is no direct link to the services itself.

Network services according to OGC standards are not yet available.

Services						
Service ²	Organisation responsible	Type of service ³	Metadata (N/Y/ISO) ⁴	Open for Public (Y/N)	Free/Not free ⁵ (Y/N)	
1	www.moi.gov.cy/dls	Department of Lands and Surveys	Discover, View, Download	Y	Y	Y
2	www.mof.gov.cy/cystat	Statistical Service of Cyprus	Discover, View, Download	N	Y	Y
3	www.moi.gov.cy	Ministry of Interior	Discover, View, Download	N	Y	Y
4	www.moa.gov.cy	Forestry Department	Discover, View, Download	N	Y	Y
5	www.moa.gov.cy	Cyprus Environmental Service	Discover, View, Download	N	Y	Y
6	www.moa.gov.cy	Ministry of Agriculture	Discover, View, Download	N	Y	Y
7	www.moa.gov.cy/gsd	Cyprus Geological Survey Department	Discover, View, Download	N	Y	Y
8	www.moi.gov.cy/tph	Department of Planning and Housing	Discover, View, Download	N	Y	Y
9	www.moh.gov.cy	Ministry of Health	Discover, View, Download	N	Y	Y
10	www.sbn.org.cy	Nicosia Sewage Board	Discover, View, Download	N	Y	Y

² List the names/IDs and where possible the link (URL) of all the discover, view, download, transformation and invoking services that are part of your infrastructure

³ Indicate the type (discover, view, download, transformation and invoking services)

⁴ Indicate whether the service has no metadata (N), or metadata according to ISO 19119 (ISO).

⁵ Whether or not the service is free for use.

11	www.sbla.com.cy	Limassol Sewage Board	Discover, View, Download	N	Y	Y
12	www.mcit.gov.cy	Ministry of Commerce Industry and Tourism	Discover, View, Download	N	Y	Y
13	www.moa.gov.cy/ms	Meteorological Service	Discover, View, Download	N	Y	Y
14	www.moa.gov.cy/dfmr	Department of Fisheries and Marine Research	Discover, View, Download	N	Y	Y
15	www.mcit.gov.cy	Ministry of Commerce Industry and Tourism - Energy Service	Discover, View, Download	N	Y	Y
16	www.moa.gov.cy	Cyprus Mines Service, Ministry of Agriculture	Discover, View, Download	N	Y	Y

2.6.1 Conclusions of Component 5

At the moment there is no national Geoportal in Cyprus but the Department of Lands and Surveys has already implemented a new web site under which useful information on DLS's functions and products can be found. Strictly speaking, there are no OGC type of services giving access to the metadata and data (this is also true for view and download).

Based on these conclusions we score the indicators as follows:

- There are one or more discovery services making it possible to search for data and services through metadata (Not so clear)
- There are one or more view services available for to visualise data from the themes of the INSPIRE annexes (Not so clear)
- There are one ore more on-line download services enabling (parts of) copies of datasets (Not so clear)
- There are one or more transformation services enabling spatial datasets to be transformed to achieve interoperability (No)
- There are middleware services allowing data services to be invoked (No information found (No))

2.7 Component 6: Thematic environmental data

The Environment Service operating under the Ministry of Agriculture is mainly responsible for the collection and maintenance of environmental data. The Ministry of Agriculture is working very closely with the Department of Lands and Surveys in the preparation of digital datasets and maps. CORINE land cover and Natura 2000 are examples of their common work.

2.7.1 Conclusions of Component 6

Based on the information provided on the previous paragraph we score the indicator as follows:

- Thematic environmental data are covered by the described SDI-initiative or there is an independent thematic environmental SDI (Partially)

2.8 Standards

The Department of Lands and Surveys has developed its own set of standards which are mainly based on the LIS data model adopted. Spatial datasets can be provided in GIS and RDBMS form using formats such as Arc/Info export (.E00), .shp, dxf, dwg, MapInfo tab and mif, Microstation dgn, dbf, georeferenced TIFF, geo TIFF, ecw, MrSID etc.

2.8.1 Conclusions of Component 7

The Department of Lands and Surveys has developed its own set of standards which are mainly based on the LIS data model adopted.

Based on these conclusions we score the indicator as follows:

- The SDI-initiative is devoting significant attention to standardisation issues (Partially)

2.9 Use and efficiency of the SDI

An example of use and efficiency would be the operation of CILIS. CILIS facilitates land transactions, improves and accelerates valuation assessments, reduces duplication of land administration work among government agencies, and increases the ability of government to effectively manage state lands and expedite acquisition and requisition orders.

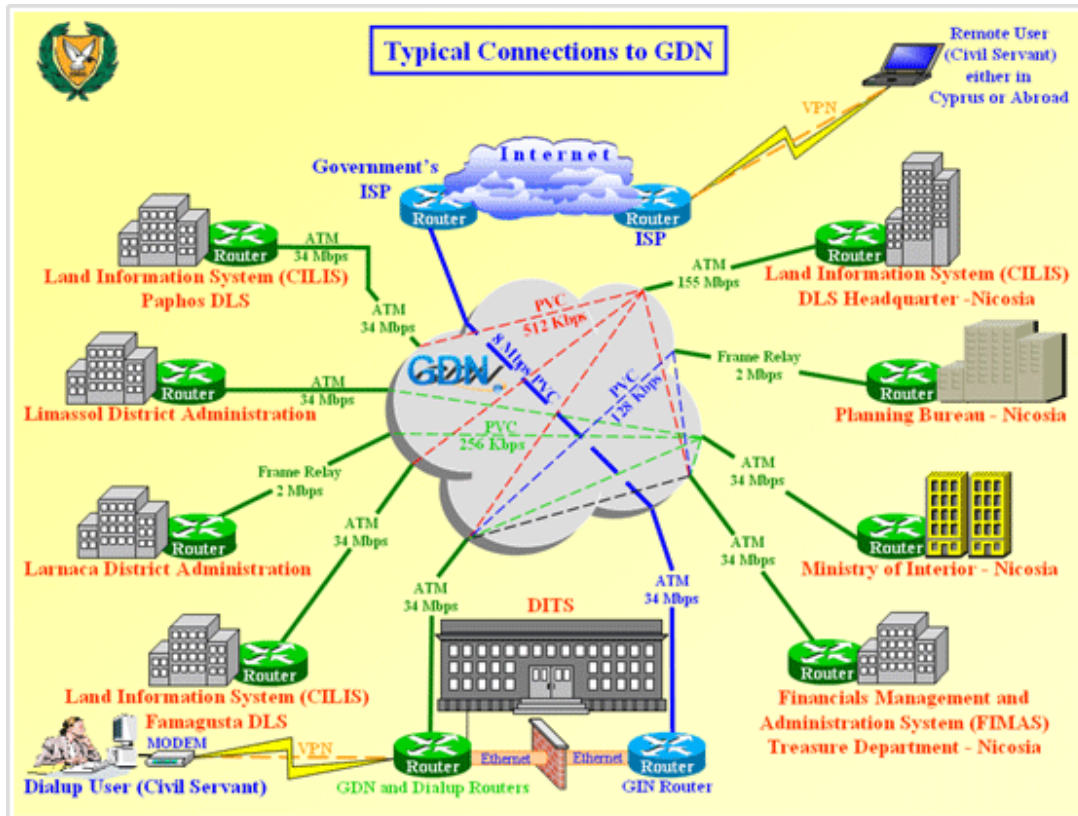
Furthermore, the Government Data Network (GDN) was the first infrastructure project implemented by the Department of Information Technology Services and was created in order to provide a secure and fast interconnection between the various Local Area Networks of the Civil Service (Intranet). It facilitates a secure and fast connection of the Government Organisations with the **Government Internet Node**, which is installed at the Department of Information Technology Services.

The first two Government Organisations had been connected to the GDN in 1998. These Organisations are the Department of Civil Registry and Migration and the Department of Lands and Surveys. Today, all Government Organisations are connected to the GDN, utilizing around 500 ATM/Frame Relay connections and more than 1.000 Private Virtual Circuits (PVCs).

The most significant benefits gained by the Government Organisations, as a result of their connection to the GDN, are:

- a Permanent, fast and secure connection with the Government Intranet (Connection of Local Area Networks on a private Wide Area Network).
- b Permanent, fast and secure interconnection of the various IT systems for data exchange.

- (c) Permanent, fast and secure connection to the Internet, via the **Government Internet Node**.
- c High Intranet/Internet availability and reliability.
- d High Intranet/Internet access speed, flexibility and expandability.
- e Speed tuning of PVC, in accordance with the needs of each individual Government Organisation.



(<http://www.mof.gov.cy/mof/DITS/DITS.nsf/All/1790F81FD41CE725C2257186002CF608?OpenDocument>)

3 Annexes

3.1 List of SDI addresses / contacts for Cyprus

Table: SDI contact list			
	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
National			
Statistical Service of Cyprus	Web: http://www.mof.gov.cy/mof/cystat	Michalakis Karaolis Str. 1444 Nicosia CYPRUS	Director: Mr P. Philippides Tel:+357-22-602102 General Enquiries: Tel:+357-22-602129 Fax: +357-22-661313 Email: enquiries@cystat.mof.gov.cy
Department of Lands and Surveys	The DLS web site: www.moi.gov.cy/dls Information about DLS can be found at: www.cyprus.gov.cy www.pio.gov.cy/	HQ Address: 29 Michalakopoulou Street 1075 Nicosia, Cyprus Cartography Branch Address 17 Alasia Street 1075 Nicosia	Headquarters Tel: +357-22-804900 Fax: +357-22-804881 Andreas Christodoulou (Director of DLS) director@dls.moi.gov.cy Cartography Branch: cartogr@dls.moi.gov.cy Contacts: 1. Mr Christos Zenonos Chief Cartographer Tel: +357-22-402890 Fax: +357-22-304858

			czenonos@dls.moi.gov.cy 2. Mr Andreas Hadjiraftis Manager of Cartography and GIS Section Tel: +357-22-304900 Fax: +357-22-767001 email:ahadjiraftis@dls.moi.gov.cy
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3.2 List of references for Cyprus

Table: list of references used to compile the Country Report	
Web sites:	http://egeols222.egeo.sai.jrc.it/Workshops/7ec-gis/papers/pdf/dallemand.pdf http://www.spatial.maine.edu/~onsrud/gsd/Cyprus.html http://www.eurogeographics.org/eng/Nma_cyprus.asp http://gmes.jrc.it/Map%20providers/Department%20of%20Lands%20and%20Surveys%20-%20Cyprus.htm [7] http://www.bev.gv.at/service/publikationen/un_englisch/cyprus_2f_main.htm [9] http://www.itc.nl/news_events/projects/cyprus.asp [10] http://www.ofj.admin.ch/themen/ri-ir/CJ-IT-colloquy/reports/cyprus-e.pdf [11] http://www.cyprus-eu.org.cy/eng/09_position_papers/chapter_05.htm [12] http://www.sclaw.com.cy/copyright.htm [13] http://www.mof.gov.cy/mof/DITS/DITS.nsf/All/1790F81FD41CE725C2257186002CF608?OpenDocument

Publications :	<p>Onrud, H., Department of Spatial Information Science and Engineering, University of Maine, Orono, Maine. GSDI - Survey of National and Regional Spatial Data Infrastructure Activities Around the Globe, Part I – National Spatial Data Infrastructure Initiatives. http://www.spatial.maine.edu/~onsrud/gsdi/Cyprus.html</p> <p>[14]</p>
	<p>M. Craglia and J. F. Dallemand: Geographic Information and the Enlargement of the European Union. EUROGI-European Commission Workshop. Brussels, 16-17/11/2000. Technical Report. EUR 19824 EN http://www.ec-gis.org:8080/wecgis/docs/F22346/IMPAGINATO.PDF</p> <p>[1]</p>
	<p>E. Dimopoulou, T. Labropoulos, V. Nikolaidou and P.Zentelis, 2nd FIG Regional Conference Marrakech, Morocco, December 2-5, 2003, TS2.5 Comparative Analysis of NSDI Policies in Greece & Cyprus – Two Different Systems within the EU. http://www.fig.net/pub/morocco/proceedings/TS2/TS2_5_dimoloulov_et_al.pdf</p> <p>[15]</p>
	<p>GIS for Cadastre Management, 2009. ESRI available at: (http://www.esri.com/library/brochures/pdfs/gis-for-cad-mgmt.pdf)</p>