

# **E-Government and E-Land Administration As an example: The Netherlands.**

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**Key words:** e-governance and e-land administration

## **SUMMARY**

### **NO E-GOVERNMENT WITHOUT LAND INFORMATION**

E-Government', defined as the use of information and communication technologies to improve the activities of public sector organisations, of course impacts on the strategy and operations of our Agency. This document explains how.

To realizing e-government, we believe three aspects are at stake.

1. If the government wants to safeguard the availability of, access to and use of land information for society, it should facilitate a (spatial) data infrastructure.
2. If the government wants people to use the facilities, it should facilitate electronic legal and economic transactions and participation.
3. If we, as data suppliers, want to respond to the needs of society, *i.c.* to deliver quality electronic information and services, we should better organize the availability of and access to our datasets.

So, the first bullet point: what is the government doing to create an infrastructural facility and to put digital datasets in place?

Here we can mention the following initiatives:

- a) Creating "authentic" or 'key' registers or 'base registers' in order to concentrate registrations and to avoid double work.
- b) Concentration of information about land;
- c) Digital datasets expand;
- d) Sound registration and information exchange of underground topography.

Our second bullet point regards what the government is putting in place to make the practical use the infrastructure possible. Here we can mention the following initiatives:

- a) Introduction of the Digital Identity Code (DigiD)
- b) Unique individual numbers for citizens;
- c) Creation of a government-wide Shared Service Organization for ICT ('GBO Overheid').

Third: what are we as datasuppliers doing to respond to all this? The most important points:

- a) Firstly, electronic submission of deeds (lodging);

- b) Centralizing our datasets;
- c) Complete renewal of the site that makes it possible to distribute data.
- d) Setting up of a national to safeguard efficient information exchange on the location and tracks of cables and pipelines.
- e) Having the possibility asking questions 24 hours a day.

Although many activities are undertaken, we sure know that there are many more to come. Professionally interesting; for customers better service. Isn't that win-win?

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## **1. INTRODUCTION: POLICY IS IMPORTANT, BUT IT IS THE PRACTICAL SOLUTION THAT COUNTS.**

The meaning of the concept of a ‘spatially enabled society’ in my view is twofold, namely:

- When the public administration, the private sector and citizens (the actors in ‘governance’) decide on issues where the spatial component is one of the determinants for those decisions, they need access to spatial information that is relevant and might contribute in a meaningful way to the process of making that decision.
- Decisions seldom need only one source of information; at the contrary they tend to require information from many sources, where integration and sharing transforms single source data into meaningful information and services. This cannot be pursued without a digital environment.

To realize a spatially enabled society, in my view three aspects are important.

- With the aim to safeguard the availability of, access to and use of spatial information for society, it is the responsibility of the government to facilitate a (spatial) data infrastructure.
- As society evolves through transactions between parties and participation of stakeholders in public decisions, the government should facilitate electronic legal and economic transactions and participation.
- Data suppliers bear responsibility to organize the availability of and access to information and services in such a way that it responds to the need of society, *i.c.* to deliver quality information and services.

Of course policy documents are important in providing the framework for operational activities. This paper however aims at identifying the practical attempts of a society to make progress on the last three aspects. We take as an example the Netherlands, one hand because we have easy access to relevant information, and on the other hand because the country is fairly representative for a wider range of European countries working on this issues.

## **2. ACTIONS OF THE GOVERNMENT TO FACILITATE AVAILABILITY OF AND ACCESS TO SPATIAL INFORMATION THROUGH A (SPATIAL) DATA INFRASTRUCTURE.**

### **Introduction**

This section addresses the practical results of government actions to create a NSDI.

## **Authentic ('Key') Registers and Concept of National Access Service**

Making government data available and accessible through information infrastructures creates the need for re-structuring the government information architecture. The problem that the same data are registered many times in different databases without knowing the quality and source of the data and without appropriate access to those data, has proven to create an inefficient and ineffective information-environment, resulting in a government that:

- inconveniences the public and the business community with requests for the same data many times
- does not offer citizens a rapid and good service
- is misled
- does not instill the public and the industrial community with confidence
- makes costs higher than strictly necessary

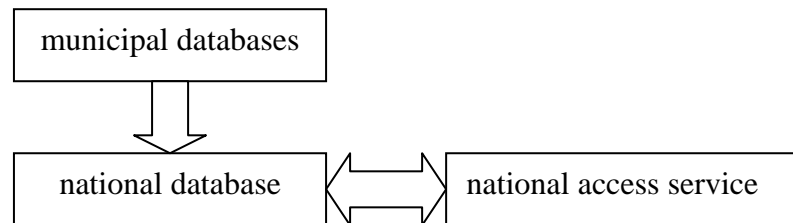
Therefore the government embarked in 2000 on a series of programmes regarding streamlining authentic registers, defined as 'a high quality database accompanied by explicit guarantees ensuring for its quality assurance that, in view of the entirety of statutory duties, contains essential and/or frequently-used data pertaining to persons, institutions, issues, activities or occurrences and which is designated by law as the sole officially recognised register of the relevant data to be used by all government agencies and, if possible, by private organisation's throughout the entire country, unless important reasons such as the protection of privacy explicitly preclude the use of the register'. One might also speak about 'key' registers or 'base registers' as done in other countries

Meanwhile 6 registers are assigned as the core of the system of authentic registers, namely (1) register of personal records ('census'), (2) trade register ('business entities'), (3) cadastre, (4) geographic information 1:10,000, (5) buildings and (6) addresses. For all six registers special legislation is submitted to the Parliament, providing state guarantees for quality specifications, compulsory use by all government bodies, the financial aspects, rules for liability, and compulsory feed back by users in case of mistakes. Laws for registers of personal records, cadastre, and geography are endorsed the Parliament early 2007. They will come into force during 2008 (by 1<sup>st</sup> January). The Law on the business register was also submitted. New in this family of six are the register of buildings and the register of addresses. The government decided 11<sup>th</sup> of June 2004 to develop these registers from scratch. Laws for the authentic registers of buildings and addresses will be submitted early 2007, and should come into force mid 2009.

Meanwhile 4 other registers are assigned as authentic registers, namely (7) register of car number plates, (8) register of wages, labour-relations and social allowances, (9) register of incomes, and (10) register taxation value of real estate 'WOZ'. The 'WOZ' is getting more and more useful, now the government took the decision that the re-valuations will be done every year, in stead of every 4 years. This annual re-assessment starts by 1<sup>st</sup> January 2007.

The WOZ can be authentic register by 1<sup>st</sup> January 2009. Still another three are under consideration, (11) register of citizens-non inhabitants, (12) large scale topographic base map of the Netherlands 'GBKN', and (13) register of geological- and soil data 'DINO'. The

problem of collecting and maintaining data at the appropriate source-level, while -at the same time- safeguarding access at all levels, is solved by introducing National Access Services. This is the solution to apply subsidiarity: collect and maintain data at the appropriate level, without losing access- facilities. For all authentic registers there will be this kind of service. It works as follows:



For the authentic registers of buildings, addresses, cadastre and geography it has already been decided that the Cadastre, Land Registry and Mapping Agency will manage the national access service. Also for the large scale topographic base maps this is intended.

All various national access services are to work within a sound framework, coordinated by the Government Wide Shared Service Organisation (see under 4).

### **Public Restriction Registers and National Access Service**

Compared with the availability of information on the legal status of land parcels from private law (e.g. ownership), the availability of information on the legal status from public law is up till now badly regulated. Fact is that many government bodies have the competence to impose restrictions on private owners: ministries, provinces, municipalities, waterboards etc. Already in the '70 notaries and real estate agents complained about the effort it took to collect and identify all relevant public restrictions on land, of which many restricted the right to dispose to a serious extent. Through the years, the need for a sound registration for those public restrictions ('public encumbrances', 'charges') became very manifest, and now –finally- a new law will come into force by 1<sup>st</sup> July 2007.

Municipalities are obliged to maintain an official register of restrictions imposed by the proper municipality: that means the creation of about 450 municipal registers. All other public restrictions, e.g. imposed by ministries ad provinces, are to be registered by the Cadastre, Land Registry and Mapping Agency (partly done already). To make all distributed data available at national level, the government developed here the concept of 'national access service' similar to the authentic registers. Therefore all municipalities generate a national database, maintained by the Agency, that is accessible through the Kadaster-on-line service. As all other restrictions, registered at the Agency, are already accessible through Kadaster-on-line, country coverage is achieved.

## **Digital Land Use Plans**

After the enforcement of the new Law on Spatial Planning (expected end of 2007), all spatial plans (emphasis on zoning plans) are compulsory in digital format and digitally exchangeable. Various pilot projects are currently under execution. The aim is better citizen's participation and integration-options with other datasets.

## **Digital Elevation Model**

Since 2003 the Ministry of Transport, Public Works and Water generated a digital elevation model of the country, based on airborne laser altimetry, replacing a height map which was on average 40 years old. In the new database every square of 4x4 meter has at least one altitude, with a standard deviation of 15 cm maximum with a systematical error of maximum 5 cm, using the national triangulation system for the co-ordinates and the national level reference for height data. Access to the database is available through a geo-portal,

## **Large Scale Topographic Base Map ('GBKN')**

The production of this digital map started in 1975 and came to full country coverage in 2000. Total costs are estimated at 230 million €. Since 2002 there exists a robust maintenance organisation, constituted by a national managing board and regional executive bodies ('National and Regional Foundations GBKN'). These are PPP's, existing of Kadaster, municipalities, provinces, waterboards, telecom -and utility companies, jointly financing all operations. One of the distribution channels is an on-line service ('Basiskaart-on-Line'), operating since January 2005 and in a successful way. GBKN is now nominated for authentic register, meaning legal fundament, compulsory use, and guaranteed financing. It is estimated that the costs to standardise the map will be another 19,5 million € and the annual maintenance costs 20 million. Currently it is under consideration within the government who will bear those costs.

## **Planning, Development and Control of Subsurface Topography**

By letter of 23rd November 2004 the government informed the Parliament about its worries regarding the lack of regulations on planning, development and control of subsurface space. In the letter the government recognises the growing importance of subsurface infrastructure for national economy, and proposes to treat subsurface space similar to space at surface level, so decent spatial planning, development and control. After all, increasingly different kinds of buildings are constructed below surface and it is estimated that about 1,7 million kilometers of cables is hidden in the ground. Zoning plans in the near future should compulsory include subsurface infrastructure. To develop experiences with the issue, 4 pilot projects are at stake currently. Already became clear that without relevant information about subsurface elements, planning will be a difficult exercise. Therefore this policy-issue teams up with another letter of the government to the Parliament, regarding sound registration and information exchange of underground topography (see under section 5).

## **Inspire**

On 21st of November 2006 the European Parliament and the Council of Europe agreed on the implementation of the INSPIRE directive, aiming at creating a European spatial data infrastructure to improve access to different kinds of data within the European member states. The directive must be applied in national laws within two years from now. Real implementation of the infrastructure will take some more years to get working (in the Netherlands 2007-2014). The infrastructure will comprise a variety of datasets, from meteorological data and topographic data, to cadastral parcels and land use. The main aim is to better support European policy making.

## **Stimulation programme Geoinformation**

On 28<sup>th</sup> of November 2003 the government decided to allocate 20 million € for a research programme called 'space for geoinformation'. A foundation, established 14<sup>th</sup> of September 2004, manages the programme. Two shifts of applications are now reviewed and subsidized. There are basically 4 different scopes, namely (1) Dutch NSDI, (2) spatial planning and design, (3) public order and safety, and (4) GIS for consumers and students. Some examples of the 72 projects are 'Virtual Netherlands', 'Frameworks for the review of NSDI's', '3D Topography', 'Fire brigade 100% digital', 'GIS for risk prevention', 'high water forecast based on satellite information', and 'How to start NSDI'.

## **Administration of NSDI**

Since many years ago, the mandate of the National Council for Geo-information RAVI has been to play a coordinating role in the field of geo-information in the country. The government only became active when the actors in the field were not able to solve their problems. Since a few years, responding to the growing importance of geo-information for decision making processes, the government took political responsibility. This resulted October 2006 in the establishment of a national council of high officials of various departments and other stakeholders ('GI Council'), to propose measures and to take initiatives. RAVI will be abolished. As a new executive body a foundation 'GeoNovum' is established, with a special emphasis on standards and access mechanisms. 'Geonovum' will also develop an implementation plan for Inspire and a related national access portal. The idea is that the portal will provide access to various services, search facilities, download options and electronic payments. 'Geonovum' starts January 2007.

### **3. ACTIONS OF THE GOVERNMENT TO FACILITATE ELECTRONIC LEGAL AND ECONOMIC TRANSACTIONS AND PARTICIPATION**

#### **Introduction**

This section addresses the practical actions of the government to facilitate e-society.

#### **Digital Identity for secure transactions**

Persons applying for a transaction with the government via internet should be digitally authenticated. The digital identity code ('DigiD') provides users with a personalized log-in code for the full spectrum of contacts with various governmental bodies. The number of participating bodies is rapidly increasing. Currently services are offered by the Tax Authorities, Centre for Work and Income ('labor office'), Social Insurance Institute ('social allowances'), the Employers' Insurance and Benefits Office ('social security'), Student Allowance Authority (states; fellowships), the Kadaster, provinces and municipalities. DigiD is available for all citizens.

#### **SMS authentication**

DigiD can add the DigiD-code with a transaction code by SMS, which provides extra authentication for specific transactions. So, various levels of authentication are possible.

#### **Public Key Infrastructure**

PKI-regulations provide for identification and authentication of individuals and parties necessary for message transfer, electronic signatures for legal transactions, and encryption for securing messages. Also websites can be protected.

#### **Personal- and Business Unique Numbers**

On 12<sup>th</sup> September 2006 the Parliament endorsed a Law providing for unique individual numbers for citizens and people who reside in the country on a long term base. This number will be the successor of the unique individual fiscal number issued by the Tax Authorities, already existing. The new Citizen Service Number ('BSN') will have a broader field of application, and will be a cornerstone in the e-service to citizens. Using the BSN, citizens don't need to submit their individual data again and again. The number will be issued by the Municipalities. Implementation is expected 1<sup>st</sup> April 2007. Similarly, the already existing Unique Company Number, issued by the Chambers of Commerce, will be succeeded by a Unique Legal entity Number ('BIN') which is currently under development.

#### **Information portal for citizens**

Under the national e-government program one of the objectives is that the citizens can obtain his information from and perform his transactions with the public service at large based on



the one-stop-shop principle. The programme called ‘personal internet page (PIP)’ is basically an event-based information and transaction service. An example is for example: ‘what should I do when I move?’. The Kadaster is one of the principal contributors to the theme ‘housing and living environment’ which will be deployed in the coming years.

### **Administration of key electronic government services**

Recently the government created a government-wide Shared Service Organization for ICT (‘GBO Overheid’). This organization will be responsible for tactical and operational management of generic shared key-services for e-government, like the administration of DigiD, PKI, security tasks, and portal facilities. GBO Overheid is a directorate of the Ministry of Home Affairs.

## **4. ACTIONS OF LAND ADMINISTRATION ORGANISATION TO DELIVER QUALITY INFORMATION AND SERVICES**

### **Introduction**

This section addresses some of the current activities of the Cadastre, Land Registry and Mapping Agency (in short the ‘Kadaster’) to catching up with e-society.

### **Electronic Conveyancing**

Electronic submission of deeds (lodging), is legally possible since September 2005. The process in the Kadaster offices continued with updating of cadastral databases, manually, although supported by IT in such a way that on the screen both the deed and the database was shown and updating was possible through hanging data from the deed in the database. Although at date more then 90% of the notaries have a subscription to the system and 75% of the deeds are already submitted in this way, the situation is experienced as not an optimal one. One of the difficulties to capitalize on electronic submission of deeds was the freedom of notaries to draw up a deed as they like. Although the Royal Netherlands Association of Notaries provides models for different type of deeds, the notaries apply their own style to the lay out of deeds. Last ten years the Kadaster did quite a lot of research how to electronically recognize the essential data in the deeds (like name of seller en buyer, description of sold object etc.) to make automatic updating of cadastral databases possible. Even with assistance of experts from all over the world this research turned out not to provide realistic practical solutions. The only solution appeared to be to convince notaries to deliver deeds in such a way that recognition of essential data was easy, so through standardized lay out and models.

15<sup>th</sup> December 2006 the Notaries and the Kadaster signed an agreement to further cooperate on this issue. The way forward now is that notaries will use model-deeds divided two parts. The first part, a strict model, will be registered once by the registrar and kept in electronic stock. In the ICT-world this concept is known as a style-sheet. The second part comprises space for texts specific for the case. When a notary submits a deed for registration, the first part accords to the model in stock and comprises all the essential data of the transfer while

the second part comprises texts specific to the case. The first part, through the style sheet, allows for automatic updating of cadastral databases. This solution pays respect to the notaries in their capacity to be appointed by the Queen to draw up deeds on hand, and allows the Kadaster to start the automated updating of cadastral databases.

### **Country wide deed register**

At times of the introduction of land registry and cadastre in the Netherlands, 1832, the deed-registers were limited to the districts of the local courts. Later they were extended, until 1974 when their jurisdiction became to coincide the territory of provinces. However, electronic submission includes collecting all deeds at one virtual point, so why not taking a chance to create a seamless deed register at country size? Notaries might benefit from that, because there would be no need any more to submit the same deed to various Kadaster-offices when real estate located in various provinces was involved in the transaction. This 'National' Deed Register, the successor of the existing 15 provincial deed registers was introduced on 12<sup>th</sup> June 2006.

### **Register of Names of Rightful Claimants (e.g. owners)**

Similar considerations regarded the name-register. Like the deed-registers also the register of names of rightful claimants (an important key register to the deed register) was structured province-wise. When a customer wished to know all the real estate in the whole country owned by a certain person, it was necessary to inquire all 15 databases before getting the complete overview. Especially mortgage banks complained a lot. Per March 2006 the 'National' Registers of Names became operational, after a huge conversion and cleaning operation to merge the existing 15 databases.

### **Kadaster-on-Line and MyKadaster**

On line distribution of land information is already getting traditional, since the introduction of the first version in 1993. Complete renewal of the site in 2004 gave another boost to these sales, right now more than 19 million information products are sold annually, while some ten years ago this was not more than about 5 million. Also the amount of subscribers is steady on growing, currently up to 17,000 customers. The next step (introduction beginning of 2007) is 'MyKadaster' which transforms the Kadaster-on-Line service into a individualized one, giving access to all Kadaster services in stead of the need to have various use id's and passwords, the option for users to maintain their own and employees' user-id's and passwords in stead of telephone calling to the helpdesk, and individualized newsletters and messages.

### **Making Authentic Registers work (the 'Veluwe' initiative)**

In 2006 some data-suppliers felt the need to demonstrate the benefits of a well-working spatial data infrastructure for a real life user, the regional emergency services. The Kadaster, 4 Municipalities, Large Scale Topographic Base Map GBKN, Draft-Authentic Register of

Addresses, Dataland ( a cooperation of many municipalities to organize portal-access to their data) undertook a project in the region Veluwe (centre of the country) to show efficient and effective use of authentic registers with the databases that are available right now, and to show the practical use of the infrastructure. The project appeared to be very successful, and will be used as input for national policy making

### **One stop shop for subsurface infrastructure information**

The government is worried about 40,000 incidents a year with digging ('excavations'). Cables and pipelines are damaged, sometimes causing danger. It appears that those incidents cost an enormous amount of money (40-75 million € annually), and to decrease the risk of digging-accidents, the government informed the Parliament by letter of 23rd of November 2004, that a national system will be set up to safeguard efficient information exchange on the location and tracks of cables and pipelines between construction companies (the 'diggers') and the owners of those subsurface elements (mainly telecom- and utility companies). To create such a system a law is submitted in 2006 and was endorsed by the lower chamber on 26 June 2007. On 13<sup>th</sup> of June 2006 the minister of Economic Affairs and the minister of Housing, Spatial Planning and Environment signed a covenant to agree on a future exchange of information on subsurface cables and pipelines. The covenant comprised the transfer of the information service from the existing Cable and Pipeline Information Centers (KLIC) to the Kadaster. This creates one stop shopping for construction companies which have to dig in earth's surface. The owners of subsurface infrastructure are to make their data accessible in the time-period 2008-2010. The intended way of operations is that (1) digger report the Kadaster that there will be digging using (2) The Kadaster routes the request to the network providers present in the requested area; (3) The Kadaster collects all information and provides the digger with all the information.

### **E-Services**

Customer used to e-government, also will ask questions through electronic means, and preferably 24 hours a day. Office hours are not relevant any more, say customer's surveys. Therefore the Kadaster will offer a new service, by 1<sup>st</sup> February 2007, by which customers can ask questions 24 hours a day, and will be answered by an expert database comprising many different topics of interest (hopefully all...). In case of very specific questions, an electronic contact-form is available.

### **24 hours presence**

What counts for electronic communication, still also counts for telephone conversation. Since December 2006 the Kadaster is now 24 hours a day accessible by telephone. Within office hours calls are answered by office employees, outside office hours by a specialized call centre, working with 'scripts' on how to answer a question.

## **e-mail billing**

What came out of customer surveys was again and again the topic of invoicing and billing: not clear enough, too late, not compatible with their own systems etc. Of course, in the e-governance era, customers require e-mail billing. Since 30<sup>th</sup> of October this became possible. Customers receive their e-mail invoice in such a format that it might be used as automated input in their own financial systems. The invoices are specified in a customer friendly way. Already 3500 customers are linked to the system. New customer surveys reveal satisfaction with the new system. Interesting for Kadaster is that because of avoiding costs of mail and printing, the pay back time is less then two years.

## **Top10NL database**

Top10NL is the successor of the Top10Vector, the national 1:10,000 topographic database, digitally available since 1997. Customer surveys revealed growing dissatisfaction with the lack of object-oriented structures. Top10NL has an object-oriented structure, uses unique id's, delivers change only data, is a seamless database, supports multiple representation and automatic generalization, and uses OpenGeospatial standards. GML will be used as the exchange-standard, because delivery of both content and structure is required these days. In the course of 2007 the new database will be launched.

## **Terz@ke**

The paper corporate magazine of the Kadaster, called 'Terzake' (meaning 'let's come to the point...') is now accompanied by a digital version, called 'Terz@ke', created of the assumption that in the e-customers would appreciate an e-magazine. Last 18<sup>th</sup> of October the 18<sup>th</sup> issues was disseminated. There are now already 3970 subscribers, and every month 100 to 200 new subscribers are welcomed. Customer survey shows satisfaction, and evidence for the expectation of the Kadaster that such an e-magazine provides good opportunity for profiling.

## **Administration of land administration activity**

Market pull and technology push don't leave the existing organisation unchanged. Electronic submission of deeds, automated updating of databases, on-line data dissemination, land surveyors working from home, make the necessity of regional offices obsolete. Theoretically all the work can be done in one and the same office. Less staff, less offices, will reduce the cost level and will improve cost efficiency. It makes funds available for investments in the developments mentioned earlier, but also in new ones, as there are the 3D Cadastre (incl. subsurface topography) and multi use of single change information for various map series. Activities of this kind are currently implemented in an incremental approach, under the Multi Year Policy Plan 2006-2010 approved by the Supervisory Board and the Minister.

## 5. CONCLUSIONS

Bit by bit e-governance is evolving, providing e-services and digital (spatial) information. In the Netherlands the creation of an NSDI was left to field-coordination earlier; since 2006 the government itself takes responsibility via a high level coordination committee for strategic GI-issues, and an executive body for operational issues, like standardization and organising easy access to datasets. Activities pursued by separate stakeholders (like land administration organisations) will become better embedded in principles of subsidiarity, where responsibilities are allocated at appropriate level, and still options for integration and sharing at any level are guaranteed. International literature and country reports reveal that this move is going on in many countries. The developments in the Netherlands are far from unique, however fairly representative for what is going on widely.

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## REFERENCES

The authors used various documents in Dutch language; list is available on request.

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