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Title:

What next after the LIS is completed in the Netherlands

Cadastral, Land Registry and Mapping Agency the Netherlands

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1. Introduction

The Netherlands is a country located in Western Europe, bordering the North Sea, between Belgium and Germany. It is located at the delta of three major European rivers (Rhine, Maas, Schelde). The area of land is 33.883 km² and of water 7.643 km². The geographical coordinates are 52 30 N, and 5 45 E. The terrain consists of mostly coastal lowland and reclaimed land (polders), with some hills in the southeast. The lowest point is -7 m (Zuidplaspolder) and the highest point +322 m (Vaalserberg). It is estimated that 8 % is urban land, 58% is agricultural land, 7 % is forest, 3% is natural reserve, and the rest is various. There are 6,6 million buildings.

The population of the Netherlands is over 16 million people. The GDP is over 500 billion \$, the growth rate 2,8 % (2006). The GDP by composition is agriculture 3%, industry 26% and services 71%.

2. History of land administration in the Netherlands

The Republic of the Netherlands was formed after defeat of the Spanish occupancy in 1648, with the Peace Treaty of Muenster. In 1795 the Republic was occupied by the French Napoleon, and during 1810-1813 it was annexed and became part of France. In 1815, after defeat of Napoleon in the Waterloo battle, the Kingdom of the Netherlands was formed. The territory included southern parts, now Belgium. In 1830 Belgium seceded and formed a separate kingdom. The Netherlands remained neutral during World War I, but suffered invasion and occupation by Germany in World War II. After World War II it lost its major colony Indonesia. The Netherlands was a founding member of NATO and EC.

3. Current Political and Administrative Structures

The Netherlands is a constitutional monarchy and a parliamentary democracy with free elections every 4 years. The Government is formed by Queen and Council of Ministers. The Queen is privileged (can do 'no wrong'), the ministers are responsible. The Queen is head of state (Kingdom of the Netherlands, including overseas territories). Overseas territories have a kind of separate status with a governor and local parliament and reporting to the 'Minister of Home and Overseas Affairs'; as such the Kingdom occurs to be a kind of federation. The Prime Minister is chair of the cabinet and has a *primus inter paris* status. The government is

verifiable by the parliament at any time and at any matter. The parliament consists of a second (lower) chamber and a first chamber (senate). The second chamber has most political power. The first chamber has limited powers, its main task is to perform a second opinion on bills before becoming law. The members of the Second Chamber are directly elected by popular vote to serve four-year term. The members of the First Chamber are indirectly elected by the country's 12 provincial councils for four-years term

At national level there are about 15 ministries, headed by a Minister and (occasionally) a vice Minister, responsible for a specific mandate (e.g. 'environment', 'European affairs'). The second level of administration are the 12 provinces, which have certain mandates on regional policies (e.g. planning, economy, environment), and regional implementation of national policy. Third and lowest level are about 400 municipalities, with extensive powers regarding local matters (zoning, social welfare, development control) and implementation of all kinds of national and regional regulations and relevant subsidy schemes. The system of provinces and municipalities are considered as territorial decentralisation. A special case are the about 30 waterboards, which have extensive powers pertaining to water management, both quantity and quality. The waterboards are considered as functional decentralisation, with specific general elections for board members, and an own tax regime

4. Historical Outline of Cadastre

In 1810 the introduction of a fiscal cadastre became actual after the earlier mentioned annexation of the Kingdom of the Netherlands by France. The French legislation became into power. Some years before, in 1808, Napoleon Bonaparte, who needed money to finance his activities, decided to establish a system of land taxation, based on a accurate inventory of land use and land ownership, with precise land survey of land parcels: a fiscal cadastre. In 1811 it was decided that also in the occupied Netherlands such a system of land taxation should be introduced. As a consequence, in 1812 the work started to survey the land, and to list users and owners of the land parcels.

The administrative structure in the cadastre was as follows. The country was divided in municipalities, and these were divided into cadastral sections, and these on their turn into cadastral land parcels. First the land surveyors, together with the municipal executives, determined the precise boundary of a municipality. Then he surveyed the parcels.

In the archives are still present:

- the official minutes of the boundaries of the municipalities;
- an overview map of the triangulation points;
- the original cadastral maps;
- the original land register.

After the fall of Napoleon, when the Netherlands became independent again, King William I adopted the system of land and building taxation based on a fiscal cadastre, and the work was continued. In 1838 the work was finally done and a country covering fiscal cadastre was ready.

Tax was levied on the value of land and buildings in terms of the revenue one could gain with it (the rental value). This rental value was assessed during the process of land surveying. The rental value was registered in the land registers and was fixed.

The regulations didn't have any provisions for updating rental values. Only if land parcels were divided or joined together, the rental values were divided and joined together according to the extent of the new surface area. With this respect the cadastre always showed a more or less actual situation. New erected buildings were appraised by comparing them with similar existing buildings, so they were put on the original scale.

The amount of the tax itself was based on a so called repartition-system. First it was decided by the national government which part of the national budget should be provided by the land and building tax (at that time this tax was a state level tax). The resulting amount was split up to the provinces, then to the municipalities and finally to the individual land parcels. It could happen that the amount of tax was different from one province to another. Anyway, at that time the rate was about 10% to 12% of the rental value.

The updating of the cadastre was based on changes in the legal situation of land and buildings. It was a major effort to have knowledge of these changes. Legal documents could be recorded at the local courts. The clerk of the court acted as a kind of land registrar. However, as an other Napoleonic rule, in 1811 it was decided that these legal documents, mainly deeds of transfer and of mortgage, should be recorded at the local office of the national tax department, in order to levy transfer taxes. Such a recording became compulsory in 1824.

Thus there were some sources for investigating the changes in the legal status of land. It became much easier however, when in 1825 it was decided to join together the legal land registers and the cadastre as a special department within the national tax department, the Ministry of Finance. It was a decision by the King himself, aiming at efficiency reasons only. Actually there was quite an oppositional movement by lawyers at that time, however without result.

Here lie the roots of the Netherlands Cadastre and Land Registry Agency, in which -unlike many other countries- the land registration and the cadastre are combined in one organisation. The cadastre became a key to the public registers, even more when in 1838 a new Civil Code came into power, that ordered the inclusion of the cadastral land parcel number in notarial deeds of transfer and deeds of mortgage. The fiscal cadastre also became a juridical or legal cadastre, a situation which is still a benefit at date.

A major revision of the Civil Code became in power in 1992 (symbolically called the 'new' Civil Code), together with the Cadastre Act as a specific elaboration of the parts pertaining to the system of property rights (to a *thing*), and its aspects of registration and cadastre. This constituted the land registers and cadastral maps as a multi purpose system aimed at providing legal security of tenure, facilitating the land market, and supporting many government activities like physical planning, development control, public acquisition of land, land taxation, management of natural resources.

The land registers and cadastre serve a multi purpose aim. First of all the Civil Code prescribes 4 requirements for a legal transfer of rights '*in rem*', namely right of disposal of the seller, agreement between buyer and seller, obligatory title (notarial deed), and recording in the public registers hold by the Agency.

5. Present situation of the Agency

The main challenge of the Agency is the ICT renewal of legacy systems that currently is going on, in order to meet the current and future customer requirements on one hand, and to adopt modern ICT opportunities on the other hand. This is a complicated and expensive process, because the renewal must take place within a going concern environment.

The public notary can submit notarial deeds as a digital file. The concept is that notary public keeps a paper deed in his/her office as the authentic one, sends a certified true copy electronically to the Agency, which records the document in a digital work process.

IT driven workflow management, new technology for integrated data supply, multi use of data, data sharing with other data suppliers will result in still more efficiency and still more affectivity. The future is the development towards a more centrally managed organisation, where employees can work quite independently from the location where the land transfer takes place.

The Cadastre and Land Registry Agency in the Netherlands fulfills its mission as an independent public organisation, under the principle of 100% cost recovery. During the last ten years organisation development took place in which:

- the Agency became 100% cost recovering
- the Agency was split in a front 'shop' and a 'factory'
- a flat hierarchical structure was implemented
- a transparent financial and personnel management was introduced
- ISO certificate was awarded
- customer surveys show good client satisfaction
- merger with Topographic Service of the Ministry of Defense as per 1-1-2004
- Number of staff dropped from 3700 to 2100

Nevertheless it is expected that changes will not stop. The introduction of electronic registration, IT driven workflow management, new technology for integrated data supply, multi use of data, data sharing with other data suppliers will result in still more efficiency and more effectivity. The future is the development towards a more centrally managed organisation, where employees can work quite independent from the location where the land transfer takes place.

In the Netherlands the fully electronic land administration comes in its final stages. This opens completely new possibilities for the Dutch Kadaster. These new developments will be described in the next chapters.

6. What next after completion of Land information system

The land information system reached a high standard of quality and meets by the time largely what is asked for in society: a reliable, transparent and internet-based cadastral information system. Because of the level reached new opportunities for delivering services to the society emerge. The opportunities concentrate on the delivery of services to third parties. The “selling point” is the fact that the cadastral registration has favorable characteristics for third parties:

- nation-wide coverage of data
- high quality registrations
- state of the art web-portal
- centrally organised IT-infrastructure

Last but not least: Dutch Kadaster has the name to be a very reliable and stable organization.

The present IT-infrastructure and available information in the various registrations allows for different kind of new services, which are not (closely) related to the traditional cadastral activities.

One example is the use of the internet portal for dissemination of information for third parties (e.g. the information on cables, pipes, networks etc. and information on energy performance certificates). In these cases Kadaster provides a service, through its infrastructure, which has proven to be a high quality, state of the art platform for supporting such services.

A second example is a service that allows third parties to register information in the cadastral database and to provide information through the web-portal. Recording of all public encumbrances on land is anticipated. There are about 80 of this kind of public rights to land, of which 20 are indeed recorded yet. Law has been imposed in the Parliament recording of public encumbrances, issued by whatever body of government, either in the registers of Dutch Kadaster or at the municipalities.

The third example is to provide information on the authentic registers and other basic information. Since Kadaster stores large datasets on persons, addresses, as well as information related to the cadastral information. One concrete example is an application service for mortgage banks. Banks include application services in their primary process, where as part of due diligence research, automatically a report is generated on the value of the house or apartment. This Kadaster service is fully imbedded in the banks automated process.

7. Dissemination of information on behalf third parties: locations of cables and pipes

This opportunities concentrate on the delivery of services to third parties. A recent development concerns the information supply to cable and pipeline operators on behalf of KLIC (Cable and Pipeline Information Centre). In 2008 KLIC become an integral part of Dutch Kadaster.

KLIC is a nationwide corporation to prevent damage to cables and pipelines. KLIC is taking care that the cable and pipeline operators inform the excavators about the exact location of cables and pipelines. Nevertheless each year about 40.000 incident are reported.



Photo 1: example of an incident: contractor has pinched the water pipeline

At the moment there are a little less than 1.000 cable and pipeline operators who collaborate within KLIC. On a yearly basis KLIC handles about 160.000 applications and sends more than 1.000.000 information messages to the participating companies.

An excavator notifies KLIC that he is going to work at a certain location in the Netherlands. KLIC reports this to the cable and pipeline operator involved. On their turn these operators will report to the excavators where the cables and pipelines are located in that specific working area. On the basis of this information (mostly drawings) the excavator will be able to take into account the existence of these cables and pipelines and will in this way be able to prevent damage due to his excavation activities.



Photo 2 and 3: examples of cables and pipes in the subsurface

Every contractor or contracting firm, but also a private person, that is going to dig must report this to KLIC in order to verify if these activities could lead to damage to a cable or a pipeline. With this sort of ground works one has to think of trench ploughing, draining,

deep ploughing, equalising, putting cables or pipelines into the ground, boring, planting trees, placing underground refuse containers, placing signs etc.

Notification

Whenever a constructor plans to do excavation works in the Netherlands one has to report this at least three days prior (but not more than 20 days) to the excavation by telephone, fax, e-mail or the Internet. The KLIC employee records the notification and lays the excavation site down in a plane (polygon). The KLIC message with the notification will be send to all cable and pipeline operators that have interests in the surroundings of the excavation site. The reporter will also receive a message from KLIC for confirmation and checking. The interested cable and pipeline operators will give you the information about the location of the cables and pipelines (They will send drawings or they will contact you). To make your notification, see KLIC-notification.

KLIC-message service

The KLIC message service is only available to KLIC participants. The participants themselves are able to check through serial numbers or notification numbers which messages have been sent. Missing messages can be send again to their own notification address (e-mail or fax). Notifying with a username and access code is mandatory. This service is provided by Kadaster WEB-portal “My Kadaster”. This messages provides information on the administrative data like type of cable (telephone, electricity) or pipe (gas, water, sewage), ownership and of course the exact location of the facilities on a cadastral base map. Innovation like 3-D presentation of pipes and cables projected on the large scale base map will become available by the year 2008. Figure 1 shows a basic scheme of the exchange of information and the specific ITC-modules which will be maintained by Kadaster

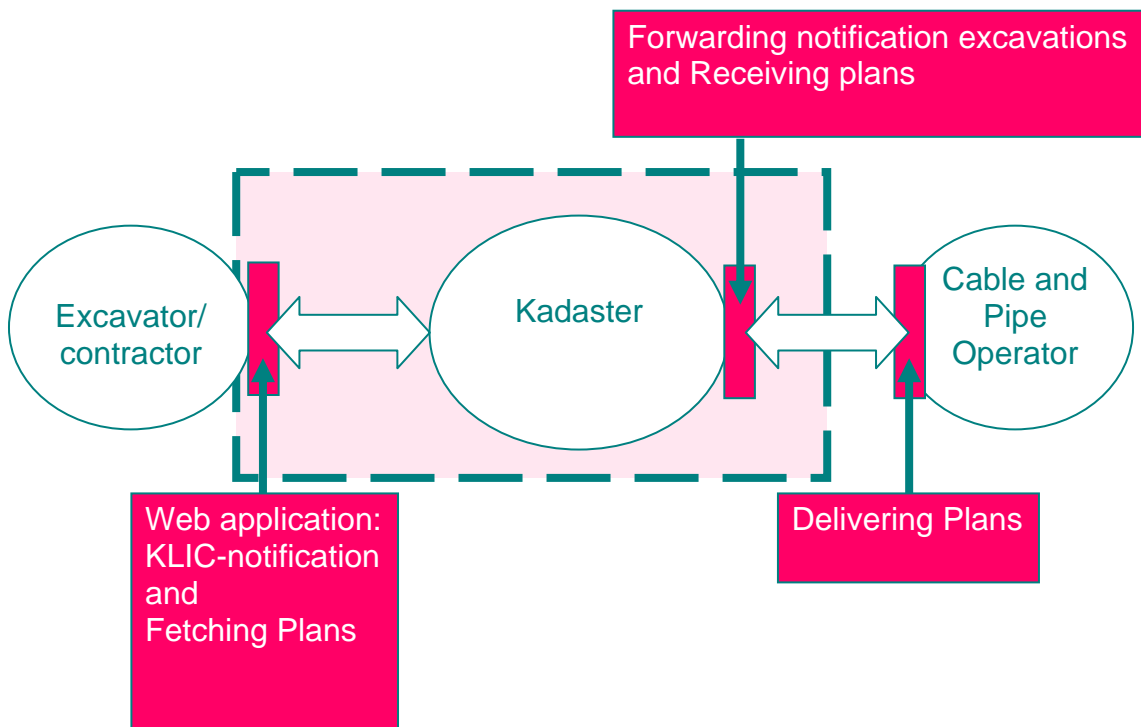


Figure 1. Basic concept for exchange of data

The figure is largely simplified, and depicts only the basic process. Notification of damages, obsolete pipes and cables, errors in the registration, etcetera are not depicted, but are of course important elements of the primary process.

Conclusion

To summarize the role of Dutch Kadaster after merger of KLIC, the following tasks are vital:

- provide WEB-application by which contractors can register notifications of excavation
- forwarding notification to operators
- forwarding plans of pipes and cables to contractors by WEB-application

8. Dissemination of information on behalf third parties: Energy performance certificates

Introduction

In 2006, the Ministry of housing, Physical Planning and Environment (VROM) has requested Kadaster to take up responsibility for the information supply concerning energy performance certificates (EP's). An EP is issued by a certified consultants. The consultant conveys the new or modified EP to Senter Novem (research institute for energy, climate and environment). The certified consultants provide centrally their data at the National Registration Office. SenterNovem will arrange and later on manage the National Registration Office on behalf of the ministry of VROM. A "certificate recording EPBD" includes the National Registration Office in which the data concerning issued certificates are registered. The real estate agent and the public notary are obliged to mention an EP in the notarial deed, unless the purchaser in the certificate testifies that he opposes against it. The real estate agent and the public notary can obtain information on issued certificates through the internet portal of Dutch Kadaster: Kadaster-on-line. Based upon the task of the ZIP-code and house number can subscribed users of Kadaster-on-line verify if a EP exists and inquire the data of a certificate. SenterNovem will put for that the certificate data available to the land register. Senter Novem is responsible for the registration of data and the correctness of it. The Dutch Kadaster is responsible for the information supply of those data.

Requirements new situation

The following describes the requirements of VROM and the wishes of Kadaster pertaining to the new system:

- a. Because of their legal obligation it is necessary that notaries and real estate agents can check via the internet portal of Dutch Kadaster, if an EP concerning a certain ZIP-code has been registered, and if so, which relevant data are registered (requirement VROM)
- b. Except the notary and the real estate agent, also the private customer will ask incidentally the EP of a certain ZIP-code. The EP is a kind of mark for a house or a building, concerning the energy efficiency and costs. Therefore the certificate can play a role in the purchase of a house, or concerning the attractiveness to hire a specific house (requirement VROM).
- c. A third customer group has a need for a tailor-made aggregated information of several addresses at the same time. For example to make or review housing policy, or to map market developments. This information will be frequently combined with other

information, synoptically presented on for example a cadastral card or digitally to process further. For that purpose municipalities, provinces, other governmental bodies, house construction corporations, project developers, construction companies, utility companies and environment organisations belong (wish Dutch Kadaster)

d. A last customer group will need an automated information of EP's. One can think of Internet sites such as “www.funda.nl” and “www.zoekallemhuisen.nl”, but also of customers who will update data automatically through Kadaster-on-line interactively (wish Dutch Kadaster).

Conceptual model

Certificates are issued or are withdrawn by certified companies (the so-called certificate holders). For the recording of the issued certificates, SenterNovem's National Registration Office is installed. A certificate recording determines component of this system. Data concerning issued certificates are available through Dutch Kadaster on-line portal. The portal allows the public notary to check at the transfer of a building if a certificate is registered. Also through the on-line system, SenterNovem can add additional information to a certificate that has already been registered in the EP-registration at Dutch Kadaster.

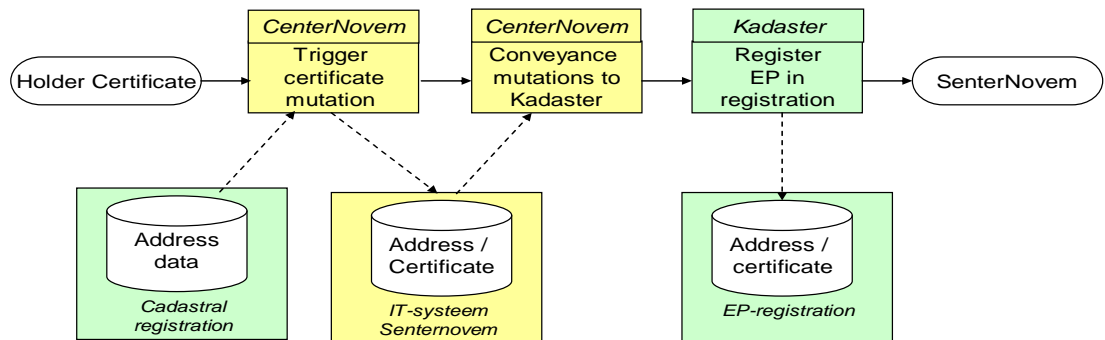


Figure 2. Process flow EP's and specific role of Dutch Kadaster

9. New service on behalf of third parties: registration of public encumbrance

Introduction

The Dutch Kadaster registers all kinds of public encumbrances (PB's) on the basis of its legal tasks for many years. Moreover the Kadaster has registered a limited number of non-legal public encumbrances since end 1996 on the basis of a temporary regulation. On the basis of this temporary regulation public encumbrances are recorded, which is meant as preparation of future legal task. Kadaster pilot registration has been set. incl municipalities supply the data

concerning the public encumbrances at Kadaster. Kadaster introduces only a remark in its registers and on relevant cadastral information products, with indication of the presence of a public encumbrance with reference to the registering agency. With respect to the data concerning PB's, registered at Kadaster distinction is made in the following categories:

1. PB's for which registration happens on the basis of a legal obligation;
2. PB's for which recording happens on the basis of the temporary regulation "Registration PB's".

New service

From 2007 onwards the Dutch Kadaster is responsible, in accordance with the new law WKPB "wet kenbaarheid publiek rechtelijke beperkingen op onroerende zaken" (law on notification public encumbrances on real estate), to arrange for the registration and information supply concerning public encumbrances both from municipality and other governmental and non-governmental bodies.

The Dutch Kadaster fetches the information at the registering municipality and presents this information in the relevant cadastral information products. In the central registration (national support service) PB's affecting about 125.000 parcels are already registered.

PB's of the remaining bodies like governmental bodies, provinces, waterboards, institutions (like "Monumentenzorg" etc) are registered in the Cadastral registration! In the registration a number of PB's has been registered already, affecting some 150.000 parcels. Nevertheless also here the majority of PB's is to be registered affecting some 7.000.000 parcels. Bulk information on all PB's is supplied to primary stakeholders as depicted in figure 3.

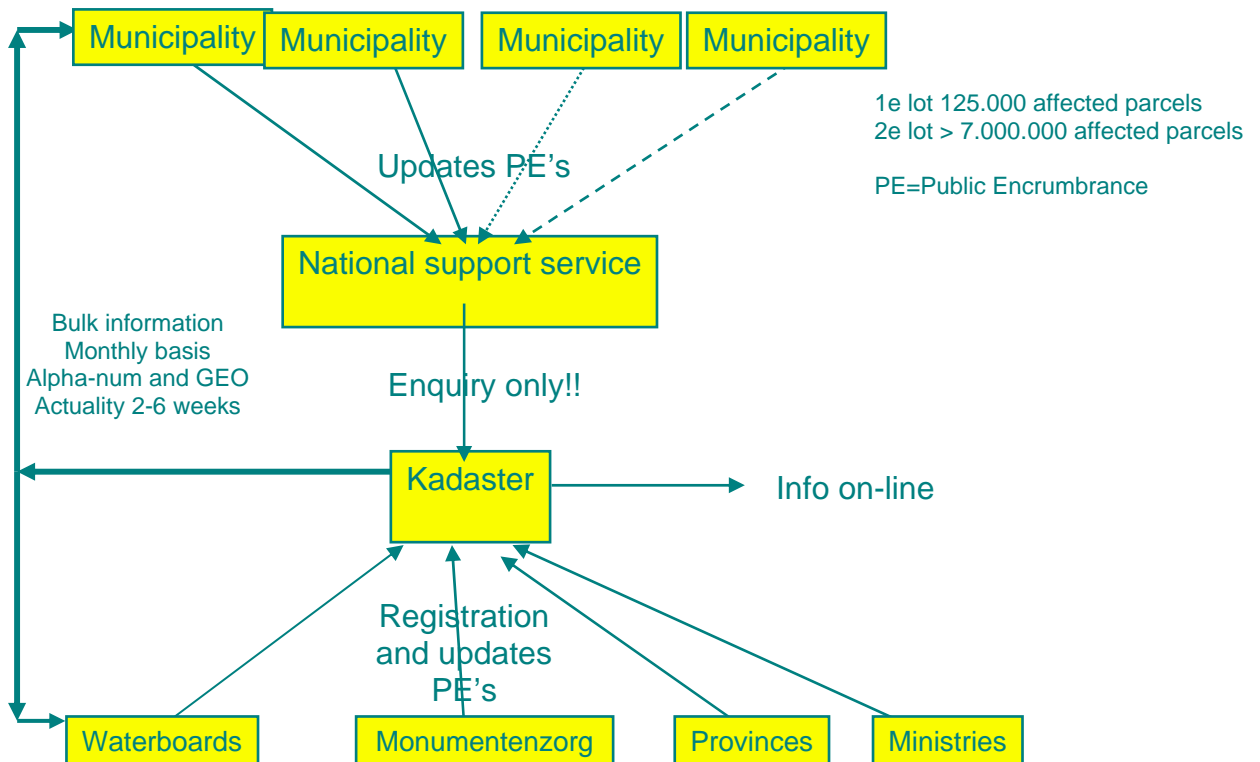


Figure 3: Basic scheme information exchange Dutch Kadaster and stakeholders

Conclusions

Dutch Kadaster will be responsible as per 2007 for the systematic registration and maintenance of the public encumbrances for all governmental and non-governmental bodies in the Netherlands except for those encumbrances which are imposed by municipalities.

As far as the online information supply is concerned, Dutch Kadaster provides registered data both from the municipalities and other bodies. This supply of data is not confined to the mentioned institutions but also to other interested parties like public notaries, real estate agents, researchers and private persons. Bulk information is only supply to institutions imposing public encumbrances..

10. New legal tasks for Kadaster: Authentic registration

Last decade it became obvious that the government in the Netherlands suffered serious problems with respect to consistency of data in several 100.000 databases. Traditionally the Dutch government agencies collected and stored information that they needed for the fulfillment of their mandate, irrespective the availability of the same data elsewhere in the administration and without awareness of providing access to their data for other users.

The shift from information systems in isolation towards an infrastructural attitude took place in the mid nineties, caused by a number of factors (van Duivenbode & de Vries, 2003), namely:

- The modernisation of the government's provision of services, which – in comparison with the innovations being introduced within the business community- was implemented at only a very slow pace, and certainly not across the board.
- The increasing appeals that were made for a reduction of the administrative burden the government imposed on the public and the business community.
- The regular inability of the government agencies to co-operate in an effective approach to growing social problems such as fraud, petty crime, organised crime, outbreaks outbreak of epidemics amongst cattle, etc.
- Frequent bickering between the authorities during a wide variety of policy discussions as to the extent to which the data was complete, correct, and up to date

Analysis of these and other problems consistently came to the same conclusion. Time and again one of the first causes of these problems cited in the above analysis was the government's increasing difficulties with the main in which it organised its information infrastructure (van Duivenbode & de Vries, 2003).

Improvement of the quality of the public administrative organisation by consequence is the major driven behind the government's ambition to rethink its information infrastructure, so the improvement of the effectiveness, not so much the efficiency gain. Of course reduction of investments in information collection and storage are important (see also GAO, 2004) as the government should not waist any taxpayers money.

In 2000 the Dutch government embarked on a three year program (2000-2003) called 'Streamlining Key Data', a program designed to impart a targeted impetus to the

irreversible restructuring of the government's information infrastructure. The program is a co-operation between the Ministries of Home Affairs, Economic Affairs, Finance, Justice, Agriculture & Nature, Social Affairs, Spatial Planning & Environment, Transport & Water management, the Associations of Netherlands Municipalities, the Dutch Data Protection Authority. A second phase of the Program started recently (2004-2007).

It should be noticed that the rationale behind the Program is to create a better government. The creation of a data infrastructure as such is not the aim. It is rather the case that the developments of data infrastructures is used as a vehicle to radically reorganise the information infrastructure of the government. The approach is different: the question is not how to get access to distributed databases, but which distributed databases should be in place to have access to! An inverted rationale!

The role of base registers

Although there is a vast amount of literature about data infrastructures, the subject of development of the data component in a data infrastructure seems to be a little bit underexposed. Many conference papers pertain to legal issues (commercialisation, copyright, privacy), standards, technologies, architecture, geo-spatial descriptions, data acquisition techniques, and pricing policies.

The assumption seems to be that data is available as a basic condition, that infrastructures provide access to and sharing of distributed databases, and that the standards and legal prescriptions encourage use of data without problems.

Nevertheless developments are going on regarding the creation of so-called base registers. The concept of base registers, such as census data, cadastres, legal entities, vehicles, addresses, topographical databases, is that they are guaranteed by the government regarding the availability, accessibility, continuity, actuality, quality, and price.

Authentic registers in the Netherlands

The impetus that the Program 'Streamlining Key Data' concentrates on two goals, namely

- The communal use of data: in principle data would be collected on one occasion, and repeatedly used for the implementation of series of laws.
- The joint use of data: data from different records required for the performance of a specific government duty would be combined in one database.

An authentic register is defined in the Program 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 organisations throughout the entire country, unless important reasons such as the protection of privacy explicitly preclude the use of the register'. (van Duivenbode & de Vries, 2004)

Based on this definition, the government decided on a set of requirements that should be met for registers that would become "authentic" registers (PSB, 2002)

It is self-evident that perhaps hundreds of registers within the government's information infrastructure could fall under this definition. Therefore, and in connection with this definition, the Program proposes to develop the system of authentic registers in a strict phasing of implementation and to start with the designation of 6 'key'-register that could form the core of the system.

These 'key'-registers, hereafter called 'base-registers' consists of the data that is considered as the true identifying data, such as persons, addresses, buildings, land cadastral parcels, businesses and base geography.

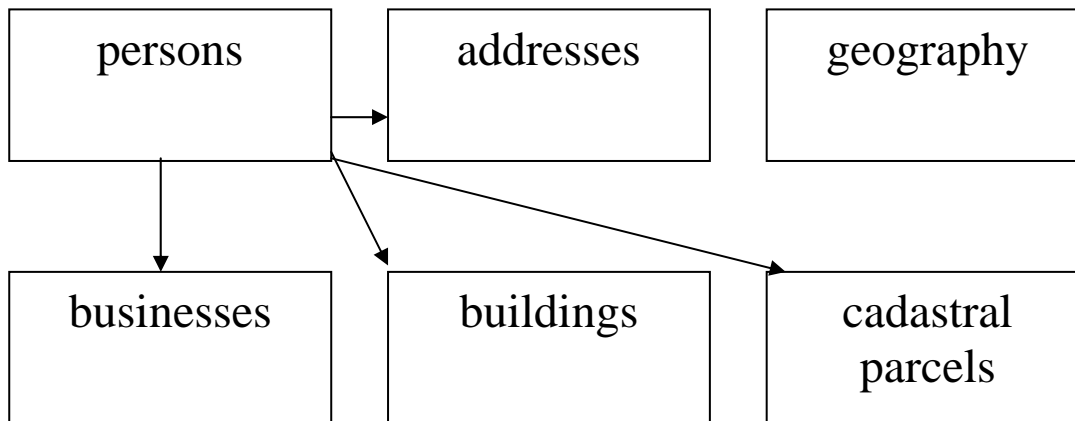


Figure 4. The 6 nominated key registers and the interrelations

Partly these registers are already in existence:

- Municipal personal records database GBA, 'owned' by the municipalities
- Cadastral parcel (property information), 'owned' by the Cadastre, Land Registry and Mapping Agency (hereafter called the 'Agency')

Partly these registers are under development:

- Key geography (Topographical database 1:10,000), 'owned' by the Cadastre, Land Registry and Mapping Agency.
- Key Business Register, 'owned' by Chambers of Commerce

Partly these registers are under preparation:

- Key Buildings Register, in pilot phase
- Key Address Register, feasibility study finished

This status reveals a typical example of the former way of thinking. There are indeed building registers, business registers and address registers, however of each obviously more than one. The challenge now is to create one sole authentic data set out of these existing registers, which is expected to be a substantial effort.

In 2002 the Council of Ministers formally designated these 6 key registers as official 'base registers' as core of a system of authentic registers.

The Program Streamlining Key Data aims at:

- reduction of the administrative burden to citizen and companies.

- improvement of government services
- efficiency gain
- effective combat of fraud
- improvement of policy analysis and monitoring of policy implementation
- improvement of fundamentals for accountability; more transparent and predictable, reliable and legitimate government operations

The most substantial benefit will occur at the side of the users. They have easy access to reliable information, and save time and money for investigating and checking of data, and making data compatible. The question arises if the benefits at the user side justify investments in authentic registers and the related data infrastructure.

Real Property registration as a base register

The previous chapters reveal that parcel based property information belongs to the core of the system of authentic registers. The Program recognises that the Cadastre, Land Registry and Mapping Agency is since long time the only source for property information. The reason is that a robust legal framework already exists, in the form of the Civil Code and the Cadastre Act, and many related regulations and prescriptions. An essential part of the legislation regards to the strict regulation of the land market, in which the use of a notary public is compulsory, as is the recording of the notarial deed of transfer (or mortgage) in the registers of the Agency. Without a notarial deed and without registration ownership cannot be transferred in a legal way in the Netherlands. This mechanism guarantees the actuality of the land registers and the cadastral registers and -maps. Registration as such does not provide for a state guaranteed title, as the system is based on the Napoleonic system of deedsregistration. However in practical life a *de facto* security of title is experienced. A matter of effective quality management at the notaries offices and at the Agency. By and large the databases of the Agency meet their role as authentic registers. Looking at the requirements stipulated by the Program the situation is as follows:

1. Transparent legislation

- The register is governed by law: The land registers, cadastral registers and cadastral maps and the auxiliary registers are regulated by the Cadastre Act, which is an elaboration of the Civil Code.
- The users are under the obligation to notify the owner of the register of any errors or shortcomings: The Act prescribes that all changes made in the registers and on the maps are under public inspection and open for appeal.
- Use of authentic registers is mandatory for the entire government apparatus: This is compulsory in many cases (for example by the notaries for their deeds, land consolidation projects, building permits, expropriation procedures).
- Liability issues are rendered explicit: The Cadastre Act makes the Agency liable for mistakes.

2. Transparent finances

- The implementation and operations are effected at reasonable costs, and there are explicit specifications of the apportionment of the costs: the Agency pursues a cost benefit bookkeeping, that needs annual auditors' approval and public accountability through annual reports and annual accounts.

3. Explicit content and structure

- The content and scope of the register has been rendered explicit: The Act defines exactly the purpose and the content of the registers and maps, however does not deal with explicit quality indicators. These are developed by the Agency in the framework of the quality management system under auspices of the User Council.

4. Explicit responsibilities and procedures

- Exhaustive agreements and procedures have been drawn up with respect to the owner of the register and the suppliers and users of the data: The terms under which registration takes place, and how property information is distributed, is exactly described in the Act and its affiliated regulations. In addition, all users of electronic services sign an individual contract including technical specifications and user-restrictions. Tailor made products are always under contract.
- Explicit procedures have been drawn up governing the accessibility of the authentic register: Accessibility is regulated in the Act. In addition the Agency -in cooperation with the User Council- applies innovative channels of distribution, like web services.
- A stringent quality-assurance scheme has been implemented: The Agency is ISO certified, and manages the quality in relation to the annual planning- and control cycle.
- Specification have been laid down stipulating that users of the data shall be involved in the decision making about the register, the manner in which this involvement has been effected, and that this involvement is not without obligation: The Agency exploits a professional front office where relation management is a continuous activity. At national level the Act prescribes the existence of a User Council, consisting of representatives of the umbrella organisations of the users, for example the National Professional Organisation of Notaries, the National Association of Banks.

5. Part of the system

- The position of the authentic register within the system of authentic registers has been rendered explicit, and the relation with the key registers have been specified: The land registers, cadastral registers and cadastral maps are adopted as base register, by decision of the Council of Ministers in 2002.
- The control of the authentic register rests with an administrative body, and a minister has been assigned the responsibility for the implementation and operation of the register: The Agency is the administrative body (although a so-called 'independent public body') that controls the registers, under the political responsibility of the Minister of Housing, Spatial Planning and Environment.

Prior to the Program Streamlining Key Data, the Agency was involved in the creation of effective links between registers which are now either assigned as base registers, or belonging to the list of potential authentic registers in the near future. The aim was similar to the aims of the Program nowadays namely data sharing, avoiding data duplication, and improving the quality of data. This took place under the aegis of the National Council for Geoinformation (RAVI), which published in 1992 a so-called Structure Plan for Geo Information (RAVI, 1992) in which the following basic structure was proposed:

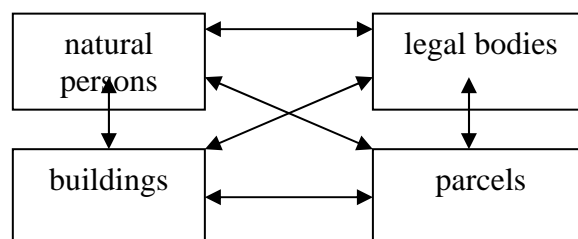


Figure 5: Basic structure GEO-information

Meanwhile the link between the natural persons (municipal person records database GBA) is operational, using a personal identification number, and legally based on bilateral contract. Every night all address data in the databases of the Agency are updated by sharing address data from the databases of the municipal records GBA, based on identification data of natural persons. Similar bilateral agreements exist between the Agency and the Chambers of Commerce, which are responsible for the newly to be created Key Business Register, that should evolve from four existing registers of legal entities of the Chambers of Commerce, the Ministry of Economic Affairs (Central Bureau of Statistics), the Social Security Offices and the Ministry of Finance. This development is still going on. The data sharing should take place based on a business identification number.

The link with geometry, is provided for by the 1:10,000 topographical key database and the 1:1,000 Topographical Base Map. The existing cadastral maps and this large scale topographical map share all data regarding buildings, and are stored in one GIS (namely the cartographic databases of the Agency LKI).

To follow up on the new assignment of authentic status (see section 5), the Agency prepares legislation to codify the authentic status of both the land registers, cadastral registers and cadastral maps and the 1:10,000 Key Topographical Database, which legislation should be submitted to the Parliament per 1-1-2006, and be ready for implementation per 1-1-2007 (Kadaster, 2004)

Conclusions authentic registration

The Dutch government tries to capitalise on the opportunities of data infrastructures by implementing a policy of data sharing and data integration of government data in such a way that there will occur:

- reduction of administrative burden
- improvement of government services
- efficiency gain
- effective combat of fraud
- improvement of policy analysis and implementation
- improvement of legitimacy of government operations

The approach is one of creating awareness and understanding on one hand, but top down legislation on the other hand. The assignment of authentic registers means assigning responsibilities and liabilities to the administrative body that controls the authentic register, and compulsory use of the data of the authentic register to the users. The government will not accept data from other sources, and will not provide funds to users for collecting data themselves, unless this is strictly needed for (e.g.) meeting privacy regulations.

The databases of the Agency: land registers, cadastral registers and cadastral maps, and topographical maps 1:10,000 are assigned authentic status in 2002 by decision of the Council of Ministers, as (key) base registers within a broader system of authentic registers.

The crux of this paper therefore is that data infrastructures, although discussed many times from the perspective of standards, technology and regulations and presuming the existence of data stored in distributed databases, offer considerable opportunities for

restructuring government databases through the introduction of authentic registers (or base data, key data, framework data & foundation data & application data, infrastructure data and business system data, or whatever name is given in the international literature) in order to create an efficient, effective and legitimate government. With other words: for better governance.

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