Authentic Registers and Good Governance

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Summary

The basic idea behind data infrastructures is that it provides for tools giving easy access to distributed databases to people who need those data for their own decision making processes. Although data infrastructures have a substantial component of information technology, the most fundamental asset is the data itself, because without data there is nothing to have access to, to be shared or to be integrated. Last decade it was understood that the development of data infrastructures not only provided easy access to distributed databases, but also gave good opportunities for re-thinking the role of information supply for the performance of governments. Based on this starting point, the 'Streamlining Key Data' Programme of the Netherlands' government took the lead in the development and implementation of a strategy for restructuring government information in such a way that an electronic government evolves that:
- inconveniences the public and the business community with request for data only when this is absolutely necessary
- offers them a rapid and good service
- can not be misled
- instills the public and the industrial community with confidence
- is provided at a cost that is not higher than strictly necessary

Jointly with 5 other government registers, the property registers & cadastral maps & topographic maps of the Netherlands' Cadastre, Land Registry and Mapping Agency are formally appointed in 2002 as 'base registers' of the governmental information infrastructure. The baseregisters will be the core of a system of so-called authentic registers, which might be any register that is maintained by a single government body and used by many others as the authentic source of certain data. If a register is formally designated as an authentic register, all other government organisations are strictly forbidden to collect the same data by themselves. In their budget allocation they will not find any money for data collection at this point.

1.   INTRODUCTION

This paper is about using opportunities of data infrastructures to reorganise the information infrastructure of the government, aiming at an efficient, effective and legitimate government. For short: for better governance. Section 2 deals with the relation between the way governments organise their information supply, and their performance. Because data infrastructures form the main vehicle for datasharing and data-integration, section 3 provides some general considerations about data infrastructures. Data infrastructures aim at easy access to distributed databases. Section 4 therefore deals with the role of base registers within such an infrastructure in general. To create a realistic perspective, the policy development on authentic registers in the Netherlands is described in section 5. Because embarking on a system of authentic registers requires substantial investments, cost and benefits are crucial. Section 6 reports on the expectations in the Netherlands on this. The real property administration (land registers, cadastral registers and cadastral maps) are a key register (one of 6) within the whole system of authentic registers. The same counts -by the way- for the 1:10,000 key topographical database, that is under the jurisdiction of the Agency since the merger with the Topographical Service per 1-1-2004, but this is not the subject of this paper. Section 7 goes deeper into the requirements to authentic registers and how these are met by the real property administration. Finally Section 8 draws some conclusions.

2.   PERFORMANCE OF THE DUTCH GOVERNMENT

Last decade it became obvious that the government in the Netherlands suffered serious problems. Traditionally the Dutch government agencies collected and stored information that they needed for the fulfilment 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 programme (2000-2003) called 'Streamlining Key Data', a programme designed to impart a targeted impetus to the irreversible restructuring of the government's information infrastructure. The programme is a co-operation between the Ministries of Home Affairs, Economic Affairs, Finance, Justice, Agriculture & Nature, Social Affairs, Spatial Planning & Environment, Transport & Watermanagement, the Associations of Netherlands Municipalities, the Dutch Data Protection Authority. A second phase of the Programme started recently (2004-2007).

It should be noticed that the rationale behind the Programme 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!

3.   SOME GENERAL CONSIDERATIONS ON DATA INFRASTRUCTURES

Information acquisition, storage and dissemination constitute a substantial cost for society. Not much is known about the actual figures (van der Molen, 2003). However, it is estimated that in the US a first order approximation amount to some 5 billion USD to 6 billion USD per annum for a relatively narrow description of the specific costs of creating and maintaining a spatial data infrastructure. Taking a wider scope, and including the businesses dependent on the infrastructure, the total expenditure seems not to be less than 15 billion USD per annum (Rhind, 2000). The US Mapping Sciences Committee of the National Academy of Science reported in 1994 that the annual Federal spending on spatial data only was in the order of 4,4 billion USD (Groot, 2000).

Regarding the nature of the tasks of government bodies, many tasks have a substantial element of collecting, processing, and disseminating information as part of their decision making process: about persons, legal entities, vehicles, ownership, house rent, leases, land use, housing, constructions etc. Government bodies, as they need information for good execution of their given tasks, pursue these informational activities for their own purposes. In fact it is a matter of duplication of efforts. Data about persons are collected by departments of the municipalities, e.g. for their welfare policies, employment policies, land use planning, land use control, social housing, local taxes, and land market control. Departments in Districts and provinces collect the same, e.g. for overall spatial planning, environmental policies, water-management. Central government bodies do the same e.g. for national taxes, construction of transport infrastructure, census, land consolidation, land reform. In fact this is an ongoing duplication of efforts, that creates high costs for the government on one hand, and a financial and administrative burden to citizens on the other hand. In macroeconomic terms this results in unnecessary high government budgets, which is at the expense of economic growth and GDP. In microeconomic terms this results in costs for households, and less return on investment for the business sector.

From a foreign investment point of view, too high financial and administrative burdens put investors off. They might prefer investments elsewhere.

In order to combat the negative effects of multiple data collection, storage and dissemination, data sharing is a solution. This means that government bodies at all levels use data that is collected by one of them and that they don't spend money on collection the same data by themselves. In fact this is the main challenge of the concept of data infrastructures. Regarding the spatial component of data, this concept is specified as a 'geo-spatial data infrastructure', that is defined as to encompass networked spatial databases and data handling facilities, the complex of institutional, organisational, technological, human and economic resources which interact with one another and underpin the design, implementation, and maintenance of mechanisms facilitating the sharing, access to, and responsible use of geospatial data at an affordable cost for a specific application domain or enterprise (Groot, 2000).

Countries in Europe embarked last ten years on the development of such infrastructures (Inspire, 2004), in which efforts the data- sharing issue is prominent. A good example can be found in Germany (Brüggemann, 2003) (Brüggemann, 2004).

At the level of the European Union, the three Commissioners of Environment, Statistics, and Research signed a memorandum on the creation of an Infrastructure for Spatial Information in Europe (INSPIRE). The INSPIRE initiative aims at making available relevant, harmonised, and quality geographic information to support formulation, implementation, monitoring, and evaluation of Community policies with a territorial dimension or impact. The INSPIRE expert group focuses on a stepwise approach: through standardisation, harmonisation towards integration (INSPIRE, 2004)

The question is: who has to take the lead when a country desires to embark on a co-ordinated management of government-information. There are many examples that governmental data-suppliers join together in some form of national council. In Europe these national councils are associated in the EUROGI, the umbrella organisation for national GI bodies, which acts ads the contact-body to the European Union. Somebody should however take the initiative to create such a national council. Big data-suppliers, like national mapping agencies, cadastres, and geological surveys, which have a nation wide coverage, are the obvious organisations to provide leadership. This happens for example in the Netherlands, Germany, UK and Sweden.

While working on infrastructures, practice reveals that the impact of the concept of information infrastructures develops along two lines. Namely on one hand the need for what is called interoperability, thus the ability to combine and integrate data-sets from different origin, and on the other hand the need for the government to re-organise government data-sets from which everybody knows they or of a fundamental importance. The first need, interoperability, is normally divided in three forms, the interoperability of data, software, and information (Pichler, 2004). Data-interoperability is to a large extent provided by generic intermediate data-formats, which are commonly used (such as DXF, TIFF, GML). Software interoperability is provided by servers, that can communicate. At the moment the openGIS© consortium works hard to generate industry standards. Information operability means that systems know that what is called a street in one information-system, is the same object that is called highway in another system. Without national agreements on how to deal with this issue, data-sharing and integration of data will be difficult. From a political point of view it means that if data-suppliers in a country do not succeed in solving the problem by themselves

('self-regulation') , they should be forced by political decisions. It might be observed that a major activity of all national councils for geo-information in Europe concerns the development of such standards.

The second need looks after governmental data-sets that are of vital importance for many users. If these fundamental data-sets are not available, it appears difficult to reap the financial and intangible benefits of data-sharing. (Groot, 2000) speaks with this respect of 'framework-data', such as
• geodetic control network ('national triangulation')
• digital terrain models ('height')
• topographical maps
• geographical names
• administrative boundaries
• hydrography
• cadastral data
• land use/cover

The concept is that based on these framework data-sets users can add their specific information regarding for example forestry, property management, environmental preservation and industrial development.

Grant and Williamson, in (Williamson & Rajabifard & Feeney, 2004), speak with this respect of infrastructural datasets which support business systems. Infrastructural datasets are to be distinguished in core datasets (geodetic network, cadastre, topography, roads, addresses, name), and thematic datasets (soil, vegetation, minerals, fauna, hydrography). Business systems –in his view- are to be distinguished into government datasets (electoral, valuation, education, agriculture, trading, etc.) and non-government datasets (utilities, transportation, finance etc.).

4.   THE ROLE OF BASE REGISTERS IN GENERAL

Although there is a waste 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, access, continuity, up-to-dateness, quality, and price. For example in Finland, following the Policy Decision of the Council of State of 5 February 1998, 'base-registers' are under development regarding persons, enterprises, corporations, buildings, and real estate (Kokkonen, 2004). In Lithuania similar developments take place, even further because these registers are brought under the authority of one single government agency, the State Enterprise of Registers (Sabaliauskas, 2004). The same happened in Scotland in the 'Registers of Scotland' (Blaikie, 2002). In Germany (Nordrhein Westphalia) a large pilot project called

GEOBASIS.NRW was started in 1999 under the aegis of the Ministry of Interior (Brüggemann, 2004). In the UK several governmental data-supplier work together in data-sharing and shared service in the pilot project National Land Information System NLIS in Bristol in which Her Majesty's Land Registry HMLR and the Ordnance Survey take a prominent role (Smith, 1998). Also in other parts of the world these developments might be observed (Groot, 2000) (FIG Innsbruck, 2004).

5.   AUTHENTIC REGISTERS IN THE NETHERLANDS

The impetus that the Programme '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 Programme 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)

1.   **Transparent legislation**
   - The register is governed by law
   - The users are under the obligation to notify the owner of the register of any errors or shortcomings
   - Use of authentic registers is mandatory for the entire government apparatus
   - Liability issues are rendered explicit

2.   **Transparent finances**
   - The implementation and operations are effected at reasonable costs, and there are explicit specifications of the apportionment of the costs

3.   **Explicit content and structure**
   - The content and scope of the register has been rendered explicit.

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
   - Explicit procedures have been drawn up governing the accessibility of the authentic register
   - A stringent quality-assurance scheme has been implemented

- Specification have been laid down stipulating that users of the data shall be involved in the decisionmaking about the register, the manner in which this involvement has been effected, and that this involvement is not without obligation.

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 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.

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 Programme 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.
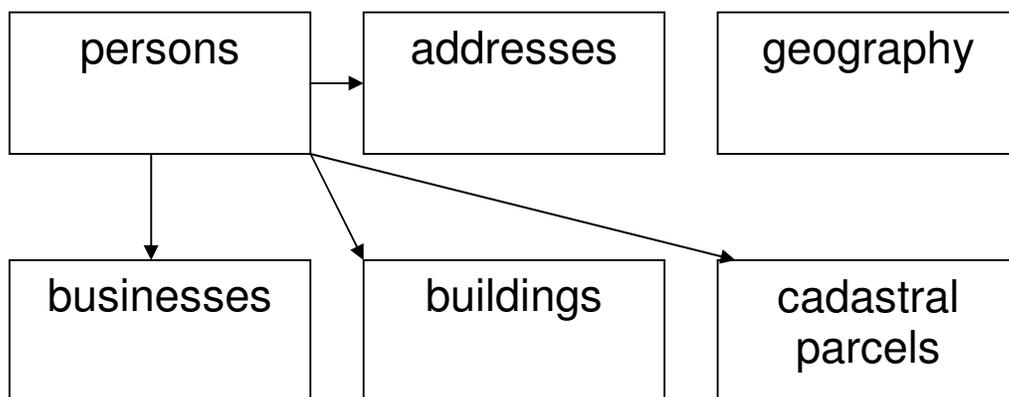
The philosophy is indicated for a person:
- A person works in a business
- A person lives in a building
- A person lives at a certain address
- A person is located on a cadastral parcel (property, use)

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 'baseregisters' as core of a system of authentic registers.

In a next phase, all kind of other relevant data sets will be investigated on their potential to become a authentic register, for example in the field of health care, nature management and fisheries, police and justice, fraud, social security, transport, public works and water management, housing, spatial planning and environment.

As the second phase the Programme mentions:
- Number plate registers
- Social security insurances
- Income register Tax Offices
- Large scale topographic map (1:1,000)
- Subsurface register

6. COST BENEFIT RATIO OF A SYSTEM OF AUTHENTIC REGISTERS

The Programme 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 fundaments 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 justifiy investments in authentic registers and the related data infrastructure.

During the Programme an analysis was pursued, aiming at getting a clear picture of costs and benefits (ECORYS-NEI, 2002). The analysis concerned the so-calles baseregisters (see section 5): personal records, cadastre, key business register, key geography, key buidlings and key addresses. Although the municipal personal records and the cadastre are in place (let alone small adaptations), the others need substantial investments.

The analysis reveals that the level of investment is about 446 million euro (cash value prices 2002). On the other hands there are benefits. Benefits might be drect, indirect, and externally.

These are only partly to quantify.the rest is regards to qualitative benefits. The analysis shows as follows:

- efficiency gain at the users side through easy access: 149 million euro
- less fraud: 346 million euro
- efficiency gain informationmanagers:11 million euro
- efficiency gain citizens for submitting data only once: 73 million euro
- need for less acquisition of data: 1 million euro
- new applications business sector: 11 million euro

So in total the benefits that are quantifiable amount for 591 million euro (cash value prices 2002). The analysis concerns a period of 20 years, the return on investment is then 9%, while the costs and benefit break even after 12 years.

Benefits that aren't quantifiable are for example the effects of higher quality of the data, less appeal procedures, less time needed for permits, better service, less white gaps in (tax) registers, increasing tax revenues, better disaster management.

7.   REAL PROPERTY ADMINISTRATION AS A BASE REGISTER

The previous chapters reveal that parcel based property information belongs to the core of the system of authentic registers. The Programme 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 pratical 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 Programme 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 auspicies 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 dictributed, 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. Tailormade 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 webservices.
- *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 decisionmaking 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 Programma Streamlining Key Data, the Agency was involved in the creation of effective links between registers which are now either assigned as baseregisters, or belonging to the list of potential authentic registers in the near future. The aim was similar to the aims of the Programme nowadays namely datasharing, avoiding dataduplication, 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:

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 ┌──────────┐              ┌──────────┐
 │ natural  │ ←──────────→ │  legal   │
 │ persons  │   ╲      ╱   │  bodies  │
 └──────────┘    ╲    ╱    └──────────┘
      ↕            ╲  ╱          ↕
 ┌──────────┐      ╳       ┌──────────┐
 │buildings │ ←──────────→ │ parcels  │
 └──────────┘              └──────────┘
```
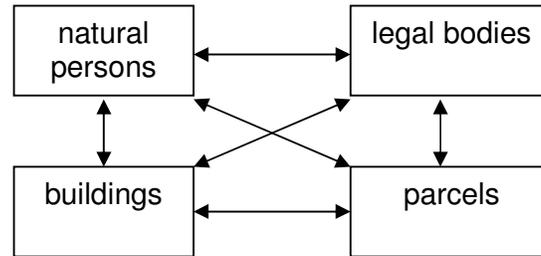
Meanwhile the link between the natural persons (municipal person records database GBA) is operational, using a personal identification number, and legally based on bilateral contract. Every night all address data in the databases of the Agency are updated by sharing address data from the databases of 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 datasharing 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)

8. CONCLUSIONS

The Dutch government tries to capitalise on the opportunities of data infrastructures by implementing a policy of datasharing 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 complusory 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 legitmate government. With other words: for better governance.

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