

Developing SDI's for sustainable development: highlighting issues and influencing factors.

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SUMMARY

Europe's history resulted in a variety of nations, with various policies regarding the land issue and with a diversity of land administration systems. The organisation of the public administration reflects different views on the role of the State and the division of power between central and local government. Despite all differences however, these nations also have something in common: land policies are in place and so have systems of land administration. A fundamental re-thinking of information flows was necessary for supporting the exertion of public functions, and it revealed the need for an infrastructural approach to data-acquisition and information-supply. This means that the information function in the public administration is pursued in an orchestrated manner. This approach has two drivers. The first is the need for quality information for decision support. The second is the optimisation of the return on investments in public information availability. To capitalise on a better information-process certain problems and barriers are to be razed, which in some cases is not possible without political attention and decisiveness.

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1. INTRODUCTION

The purpose of this paper is to address the question of how the information-function in a society should work to appropriately support decision-making processes, and what the role is of land information. In Europe, not to be confused with the member-states of the European Union only, in the course of time independent states were formed. They developed in an autonomous way their own legal frameworks, public administration and mechanisms of exerting state power. A brief explanation of history aims at providing understanding of the context in which the subject of the paper is looked at. Then the paper reviews, in a general way, the existence of land policies, land administration, and the role of land information in society. It becomes clear that a well operating broad information function requires decisions at high political level.

2. EUROPE AS A CONTEXT

About 2000 BC the main civilisation was Greek. The rest of Europe was inhabited by all kinds of nomadic peoples, from Teutonic, Celtic, and Slavonic origin. From Italy developed the Roman Empire, which -around the year 0- existed of almost the whole of Europe, in a reasonable peaceful way (Pax Romana, by Emperor Augustus). Those days the Empire was split in two parts, an eastern part that existed until about 1400, and a western part, that was captured by Teutonic kings in 476. They established the Frankish Kingdom, that was extended by Charlemagne to almost the whole of western Europe. After his death, in 768, the Kingdom was split in three parts, of which the western part developed into France, and the middle and eastern part into Germany and Italy (1250). At the Iberic peninsula the Visigothic Kingdoms developed via Castile, into Spain. Around 1500 Charles the Great, inherited Spain, parts of France, Bohemia and the Netherlands. After a 80-year war, the Netherlands became independent in 1648. After Napoleon, the Congress of Vienna in 1825 decided on new territorial boundaries in Europe. The basis for the current lay out was laid after the first world war, modified after the second one, and finalised through the developments in central, eastern Europe and the Balkans after the collapse of communism (1989).

Thus the forming of nations took in many cases hundreds of years. This is important information, as it explains how norms and values in society could be shared in the course of time, resulting in jurisdictions that -at a certain moment- give raise to codification. In this way, the concept of property as such and property rights are vested in society and constitute in many cases transparent and homogeneous arrangements. Legal pluralism, that is so well spread over countries with a younger history, is not so much a hindrance for good governance.

3. A VARIETY OF INSTITUTIONAL ARRANGEMENTS

In the literature you may find that at least three topics are determining the way of public administration, namely the opinion on how to govern a society, secondly the way of management and organisation of the administration, and thirdly the civil service culture.

The first, the *administration*, is very much external oriented, since it aims for the making and creation of society, or to say it more sophisticated, it aims for guidance, control and evaluation of society. Administrative reform in the United Kingdom was very much based on the opinion that the administration was too ineffective, money wasting, not able to govern, in the grip of all kind of social institutions and pressure groups. So the governmental reform aimed for restoring the primacy of politics, reducing the tasks of the ministries to their core business, and improving the output of the public institutions by steering them at distance. Governmental reform in France was very much based on the dissatisfaction of the citizens with the extent, the inertia, and inflexibility of the civil service. Improvements were searched for in decentralisation and deconcentration of institutions, and improving their output by quality assurance programmes and special service projects. The step back of the government in Germany took place mainly by deregulation and reducing bureaucracy, together with a revitalisation of the social middle level and the private initiative. In the Netherlands after the centrally planned and established welfare state in the seventies, the economic draw back and the need for decreasing the government's budget, the administrative reforms were based on the experience that it seemed to be impossible to control the developments in society from a central level. A lot of centrally performed tasks were decentralised (like social welfare, housing, urban renewal, regional economic policy, environment), and deregulated (like education, building regulations, intergovernmental relationships). Other tasks were moved so that they were at arms length in order to manage at a distance from the operators of the tasks. In many countries in middle and eastern Europe administrative reforms were very much based on the great political changes in the last 10 years, which means that a lot of governmental attention first of all has been paid to restoring democracy, and re-establishing the constitutional state. My conclusion is however, that we see a lot of common movements and developments, we may even speak of trends, in the reform of the public administration.

Considering the second issue, *the management and organisation of the public sector*, it is to say that this issue is more internal oriented, because it addresses the problem how an administration can perform best, in terms of effectiveness, efficiency, legitimacy and legality. Here again three issues are important, namely the capability to develop policies at a strategic level, the integration of policymaking and implementation, and the quality of the implementation and the service to the public. In an attempt to improve the capability to develop adequate strategies, it was decided in many countries to reform the ministries, to make them smaller, and to concentrate their tasks on the real political core business. Back to basics. The measure to reach that situation is privatisation and making large operational units more independent. The second aspect, the integration of policymaking and implementation, is important because laws and regulations are to be implemented, and there are too many examples warning of insufficient possibilities to implementing governmental regulations in an effective and efficient way, which results in dissatisfaction by citizens and private businesses. Here we see that making operational units more independent, more autonomous, causes at the same time a necessity for the policymakers to be aware of the operational effects of their policies,

since they will face big problems in establishing a service level agreement with the independent implementing institution. In the Netherlands we observe much more political attention for the operational aspects of e.g. health care, public study grants, agricultural information services, housing, transport, even for land registration and cadastre.

The third aspect, is the *organisational culture of the civil service*. The demand of the citizens and private business for a better service, low prices, good quality of products and service, value for money, defines requirements to the institutions in order to be met. The traditional orientation of governmental organisations towards internal affairs, towards the internal aspects of products and services, changes more and more towards an external orientation. More market- and customer oriented approach is needed here.

The impact of these developments might also be observed regarding land administration organisations, for example in the Netherlands ('Cadastre, Land Registry and Mapping Agency'), Sweden ('Landmäteriet'), England and Wales (Her Majesty's Land Registry'), Scotland ('Registers of Scotland'), Lithuania ('State Centre of Registers'), Czech Republic (Czech Office of Surveying, Mapping and Cadastre'). These organisations are highly independent public bodies, however operating under the political responsibility of a minister (UN, 2000). In all cases the main rationale is that if these organisations are expected to meet the requirements of customer-satisfaction and cost-recovery as desired by their governments, they need to have certain managerial degrees of freedom, which are not possible within the traditional government structures. These organisations have a lot in common, although they operate in different countries. They all have much attention to formulating keen strategic objectives, strategic use of information technology, appropriate IT-infrastructures and systems, workflow management, and re-training of staff, embedded in regular customer surveys, quality assurance, and cost-benefit monitoring. In all cases the new goals impacted heavily on organisational structure and management principles (van der Molen, 2003a).

Another item is the relationship between the land registry and cadastre. The existing institutional arrangements stem from historic developments: in for example France, the Scandinavian countries, Poland, Russia, Slovenia, Croatia, Estonia and Bulgaria land registration is the responsibility of the courts, which are supervised by the Ministry of Justice, while the cadastre is under another ministry or under the municipalities. In countries like Germany, Austria, Latvia, Switzerland land registration is done by special Land Book Offices ('Grundbuch') while the cadastre is elsewhere in the public administration.

In Spain and Portugal land registration is carried out by private registrars (e.g. 'Registeradores de Espagna'), which are supervised by the Ministry of Justice, while the cadastre is a fiscal cadastre under the Ministry of Finance. In countries like Albania, Armenia, Czech Republic, Greece, Hungary, the Netherlands, Italy, Lithuania, Luxembourg, Slovakia, England & Wales, Scotland, the land registration and cadastre function are within one single organisation (UN, 2000) (UN, 2001). The advantage is that the process of registration of land and updating the cadastral registers and maps can be executed in one run without problems of continuous mutual transfer of relevant data. Also the Worldbank recognises efficiency benefits (Deiniger, 2003), although countries where the situation is not 'unified' normally have good arrangements to cope with the transfer of data.

A related issue is the financial regime. Land registration is a true public monopoly, as it is only the government that is entitled to provide security of a property right through registration. As parties on the land market are interested to acquire secure transfer of real rights, they are willing to pay a good price for land registration. In many European countries the cost-benefit ratio of land registration is therefore considerably positive. However cadastres, on their turn, face high costs because land surveying and maintaining maps is expensive, not to mention the costs of migration from analogue maps into digital databases. In short: title offices are money- makers and cadastres are big spenders. If there are no financial arrangements to cover the expenses of the cadastre with the surplus of title offices, the benefit of the system as a whole is difficult to materialise (van der Molen, 2001) (van der Molen, 1998).

4. LAND POLICIES TO ADMINISTER THE LAND

A 'land policy' can be defined as all the whole complex of socio-economic and legal prescriptions that dictate how the land and the benefits from the land are to be allocated (UN/ECE, 1996).

The function of having access to information regarding the ownership, value and use of land becomes manifest if we consider the implementation of a land policy. In the European countries governments face that execution of public power when it regards to land issues, interferes with private property rights. In fact it is an intervention of the government in the right to dispose, which is the substantial and fundamental characteristic of a property right. The justification of that intervention is provided by public law, and the democratic decision making process that enforces the law.

As societies tend to be more complex on one hand and the people expect the government to govern on the other hand, the extent and substance of public law steadily is growing. This might be observed in all European countries. It results in a growing amount of options for the government to impose restrictions on property rights to land. The existence of public rights on land however limits the use that can be made of the land, which might affect the marketability of the property. As we know from North (1990), access to relevant information controls the transaction costs that shape human interaction. A solution for that is the registration of public rights to land and providing access to this public part of the legal status of land.

5. LAND INFORMATION WITHIN AN INFRASTRUCTURE

Information acquisition, storage and dissemination constitute a substantial cost for society. Not much is known about the actual figures (van der Molen, 2003b). However, the specific costs for a relatively narrow description of the specific costs of creating and maintaining a spatial data infrastructure in the US amount to some 5 billion US\$ to 6 billion US\$ per annum at a first approximation.. Taking a wider scope, and including the business dependent on the infrastructure, the total expenditure seems not to be less than 15 billion US \$ per annum. 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 US \$ (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 cost 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 to invest 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 collecting the same data by themselves. In fact this is in my view 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 the encompassment of 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).

Last ten years countries in Europe embarked on the development of such infrastructures (Inspire, 2004)(www.eurogi.org),. Data-sharing issues take a prominent place. A good example can be found in Germany (Brüggemann, 2003) and (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 as 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 survey organisations, 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 that everybody knows are 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 in 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 such, that -based on these framework data-sets- users can add their specific information regarding, for example, forestry, property management, environmental preservation and industrial development.

In order to cope with the demand for framework data-sets, governments in Europe develop the so called authentic registers or base-registers. Base registers, such as census data, cadastres, legal entities, vehicles, addresses, topographical databases, are guaranteed by the government regarding the availability, access, continuity, up-to-date-ness, quality, and price. In the Netherlands the Ministries of Home Affairs, Economic Affairs, Agriculture & Nature, Housing & Spatial Planning & Environment, Transport & Water, Social Affairs together with the Association of Municipalities embarked on a common programme to develop –so called- authentic base-registers (Schravendeel,

2002). 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, 2003). In Germany 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-suppliers work together in data-sharing and shared service provision 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, 1999) (FIG Innsbruck, 2004)

6. FUNCTION OF LAND ADMINISTRATION IN SOCIETY

The definition of 'land administration' as 'the process of determining, recording and disseminating information about ownership, value and use of land, when implementing land management policies' has proven to be a guiding principle in policy documents, research programmes, and education and training (UN/ECE, 1996). Although other definitions are used (e.g. Dale & McLaughlin, 1999), and also the definition is challenged (e.g. Fourie, Groot & van der Molen, 2002), the definition still stands firmly especially when the concepts of 'ownership', 'value', and 'use' are interpreted in a broad sense.

The concept of '*ownership*' should -in my view- be understood as a relationship between people concerning land within any jurisdiction, thus the mode in which rights to land are held, and therefore based on *statutory law, common law, and customary traditions*.

'*Value*' should be understood as all the values that could be assigned to land, depending on the purpose of the value, the use of the land, and the method of valuation.

'*Land use*' should be understood as both the use to which the land can be put, depending on the purpose and nature of the land, classification, methodology, and land cover according to defined classification systems (e.g. FAO Land Classification System, 2000).

The concept of '*land*' should be understood as the surface of the earth, the materials beneath the surface, the air above the surface, and everything attached to the surface – i.e. it should be perceived as more than just the 'land' as such.

The definition reveals that land administration is a process, which brings application of process-modelling and related topics (e.g. workflow management, process re-design, and system-support), within the scope of land administration.

Finally, the definition makes very clear that the land administration activity is not an end in itself, but that it facilitates the implementation of land management policies. So, the way land administration should work depends on the requirements defined by the various instruments, which are at the disposal of governments in order to allow appropriate implementation of its land policy.

Unlike many other geographic information systems, which provide information about geographical objects and their attributes, land administration systems reflect in principle the social relationship recognised by a community or a state between people concerning

land. Therefore such a system is in no way just a 'GIS'. Data recorded in a land administration system have a social and legal meaning, and are based on accepted social concepts. That concerns both owners, rights and land objects. It is not relevant whether these concepts are laid down in the law or in unwritten customs. In both cases the way the individual people understand rights to land, the right-holders and the land itself determine the content and meaning of the land administration system. These rules, constituting the basic principles for the system and justifying its existence, form the institutional context for land administration. Without rules land administration is not possible, as it will be without a societal and legal meaning. By consequence it will be a meaningless activity, not worth to put any effort in.

Institutional aspects are therefore of paramount importance. The legal framework for land issues, and the mandates and tasks entrusted to public administration to allow the performance of the land administration function, determine how the system should function. Other institutional measures also do, although they might be more specific and down to earth, like a requirement to the financial conditions that the government wants to apply on the land administration activity: for example that the work should be executed under a cost recovery regime. Rules for investments in the system, the way it should operate, the way the government wants to keep control, all of these can form operational constraints.

Land administration serves various functions in a society. Documents like Agenda21, Habitat etc. relate the land issue very much to poverty reduction, sustainable housing, sustainable agriculture and the strengthening of the role of vulnerable groups in society, like women, farmers, indigenous groups. A land administration system is –as said earlier- not a purpose in itself. They are part of such a broader land policy.

Land policy reflects the way governments want to deal with the land issue in sustainable development, or as the Guidelines say 'land policy consist of the whole complex of socio-economic and legal prescriptions that dictate how the land and the benefits from the land are to be allocated'. That of course depends on the culture, history and attitude of a people. It is worthwhile to draw up a picture of the support land administration systems give to the implementation of (the most important) land policy instruments, as there are -at least- (GTZ, 1998):

1 improvement of land tenure security

2 regulation of the land markets

3 implementation of urban and rural land use planning, development and maintenance

4 provision of a base for land taxation

Concerning the *improvement of land tenure security*, the legal framework of land administration systems (related to the registration or recording of rights and interest in land) is determining the nature of the security provided. Within the context of the definition of these rights 'in rem' (as an institutional prerequisite), deed-systems provide a different (in casu: less) security compared with title systems. The combination of a strong notary-system (e.g. *Latin Notary*) and a deed registration might however provide as much security as the combination of non-authentic (underhand) documents with a title registration (strong role of the registrar).

Concerning the regulations for the *land market*, land administration systems provide transfer procedures of a different nature. On one hand there are plain procedures of

submission of a transfer document and a recording after a minimum of formalities (e.g. *simple deed registration*). On the other hand there are more complex procedures regarding investigations prior to the approval of the legal impact of the transfer (e.g. *issuing of a title certificate*). Some countries require approval by a chief surveyor, a chief planner or another authority. Advantage is that e.g. a building permit is granted together with the title, while in the first case the procedure for planning- and building permits starts just after the transfer. The process-time necessary for the transfer procedure (for example from the obligatory agreement to the official recording or registration, that is often used as a benchmark) therefore might result in a different 'value' for the applicant.

Concerning *urban and rural land use planning, development and control*, the support of land administration systems lies foremost in the phase of development and control of a given land use. This activity is to be seen as an intervention by the government in private rights to dispose. Without knowledge about who owns what and where (also in *customary areas*) land management will be hardly possible for the government. From the landowner's point of view, intervention by the government specifically limits his private right to dispose on the actual parcel, being the legal object of his private rights. The intervention takes an ultimate form in the execution of pre-emptive rights and expropriation. Regarding protection of third parties in good faith, pre-emptive rights and expropriation decisions should therefore be recorded in the land administration system.

Concerning the support of *land taxation*, the fact is that land tax is an outstanding example of local tax. Without knowledge about taxable persons, taxable objects and land values (all data to be provided by the land administration system), the generated revenue can not be high. Land taxation in many countries is based on land administration systems.

The *management of environmental resources* is of increasing importance. The measures a government can take, are in many cases executed by imposing restrictions on the use of land. A good example is soil sanitation, where governments can impose on owners of land a compulsory soil cleaning, and can give such measures the status of real right, which means that these orders have legal power against third parties (e.g. new owners). Therefore these public encumbrances are eligible for registration.

Focusing on land taxation, a study on European Land Tax Systems in 23 countries (Brown & Hepworth, 2000) revealed that they all levy some sort of land tax. In the majority of cases the countries have a cadastral system for the recording of property related information. As said earlier, the nature and implementation of such systems varies considerably from being a series of different registers often administrated at various levels of government on one hand to a single register administered at national level on the other hand. Even in those countries such as Macedonia and Moldavia, which have adopted a self assessment system, central information systems are used to ensure that the information given by the taxpayer is appropriate.

7. PROBLEMS AND BARRIERS OF THE SITUATION IN EUROPE

Obstacles and barriers in the development of good land administration within an information infrastructure might have different aspects as shown earlier.

Regarding *the legal frameworks* of the European countries, rather large changes are necessary to include digital lodgement of legal documents and electronic signatures. Normally land laws are focused on analogue working processes which exclude legal validity for other forms e.g. digital ones. In Finland, a new Act on Electronic Service in the Administration was endorsed in 2000 (Kokkonen, 2004). In Poland, a new set of laws is in place that constitute a solid body for e-governance and e-commerce (Sambura, 2004). In England and Wales, a new Land Registration Act passed the Parliament, introducing specific powers to facilitate the introduction of a system of e-conveyancing (Beardsall, 2004). In the Netherlands, an adaptation of the Cadastre Act is still pending (Louwman, 2004).

Another legal issue concerns copyright and pricing of electronic data. Whilst these aspects are often rather clear in an analogue situation, digital data flowing around on the internet appears to be unprotected and available for free. Not many countries have effectively solved these problems yet. The same applies to the enforcement of standards that establish interoperability.

Regarding *institutional arrangements* the role of the courts in the land registration process is under review in the Scandinavian countries. For example Norway and Finland recognise the difficulty of creating efficient land administration in an infrastructure environment, when local courts are to take part in it. Trend is -in any case- to concentrate the land registration work in 5 may be 6 larger courts, and even to transfer the task as a whole to the Cadastre (Statens Kartverk Norway, National Land Survey Finland).

Regarding *operational issues* the fact that in many European land administration organisations the information systems have been in place now for 10-20 years and are to be qualified as good-working but old fashioned, while the maintenance is getting more and more complex, and the costs are getting more and more expensive, places a heavy burden on IT-capacity and budget. These organisations now are increasingly faced with rapid developments in the technology, a technology push: internet, geodatabases, modelling standards, open systems, GIS as well as a growing demand for new services, a market pull: enhanced user requirements, e-governance, sustainable development, electronic conveyance, integration of public data and systems. The strategy to renew those informationsystems while the 'shop stays open' varies from country to country, however there are two main options: a big bang approach, where systems are replaced at a certain fixed date, and the more evolutionary approach, where step by step system re-engineering is carried out (FIG Commission 7, 2003). Apart from that, the impact of these developments on organisational structures and skills of staff are not always well understood (van der Molen, 2004).

At the *information level* the main reasons for lack of data availability are that data is too expensive, data is not usable, lack of market transparency, too high expectations of hard- and software, too limited user rights, too high expectations of personnel, and too

complicated ordering, delivering, and paying. This leads in NordRhein Westfalia (Germany) to the estimation of a information market worth 8020 million euro, from which only 15% is actually exploited (Brüggemann, 2004).

8. ISSUES FOR CONSIDERATION

There are actually three issues at least, that deserve political attention.

Firstly this pertains to the *political decision* to embark on a coordinated information management within the government, in order to reap the economic benefits of data sharing and data integration. A system of well coordinated base registers is beneficial for the government, but might also lead to added value activities by the information industry that contributes to economic growth.

Secondly this concerns the development of *laws* that facilitate the use of electronic signatures and recognise the legal authenticity of electronic documents.

Thirdly *the implementation* of all this depends on how active the leadership of involved organisations is in pursuing change-management, in order to cope with the necessary changes. Politically responsible ministers should make this necessary change high on the agenda.

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NOTE

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BIOGRAPHICAL NOTES

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