Moving Focus from Organisation to Information

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SUMMARY

The public sector is not taking full advantage of IT. The public sector is busy in maintaining existing processes, systems and legal framework, so it is protecting its business, avoiding big changes. IT is used to support existing processes and not as tool to change these processes and move the business forward. In this field the public sector is far behind the private sector e.g. the industry and the financial sector. Money is the driving force in the private sector, there is no such driving force in the public sector. The public sector should introduce the concept of Best Practice in the same way as the private sector.

As a first step systems should be built on a national basis covering the whole sector for land administration, users should not have to turn to a number of systems for getting a complete picture. Co-operation between ministries has been a driving force for building a Common Cadastral Dataset. In Sweden, in what is called the Swedish Approach, co-operation between ministries and other interested parties can't be done without standardisation. Standards are important!

In the next step it is important to exchange data between systems within Europe in such a way that data can be 'understood' by the customer. Coming that far a lot has been achieved; but doing business concerning land in the same way throughout Europe, using similar processes, is the ultimate and may be unreachable step. However for the citizen it would be of great interest as the transaction costs will be much lower.
Data concerning land are of two different types: attribute data and geometric data. The processes for updating and maintaining the geometric are less complicated and more similar but the data itself are a problem. The main reason for this problem is not the complicated model, it is the organisation of the data in the systems that causes the problem. Most of the systems keeping information have to be converted from being organised under data models for producing maps to objects reflecting objects for land administration. Object-orientation is here to stay and a huge task is ahead for coming years.

1. INTRODUCTION

Too much money is wasted on developments in the land administration sector, too many systems are built to preserve existing organisations and processes. Officers in charge of or working with a certain process or function are in general not capable to implement changes. It

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is related to the human way of thinking that the own job, or area of responsibility, cannot be automated.

Too many authorities (governmental or municipal) have an old-fashioned hymn saying**:**

IT should support our business processes

Already a long time ago that mantra has been changed in the industry and the private sector to:

IT should be a tool for changing our business processes

If IT is only used to support the existing business processes the business will not move forward and the IT will in many cases be an additional cost instead of an investment. The reader couldsay now: 'oh, this is not happening in my organisation' and may be you are right. It is a big difference in obtaining new technology to really introduce the technology in really automated the processes, and not just supporting existing processes. Before going into some examples let us look upon the need for standards in system development.

1.2 The Need for Standards in System Development

System development can be divided in three important components:

1. Technology
2. Data
3. Processes

This seminar will focus on the need for standardisation of data. This is without any doubt important, as data will be interchanged a lot as systems will be more integrated. Technically it is more correct to talk about interoperability than integration, as integration is by default synchronous computing. Interoperability opens the possibility for asynchronous computing and this provides better possibilities for flexible solutions. In general too much efforts are made on standardisation too early in IT-projects. It is common that standardisation and modelling activities start even before the requirements on the system are set A consequense could be that non-required data will be modelled.

On the technical a lot of recent developmentshave taken down the costs of system development. Concepts like www, Internet readers, IP-communication, J2EE, .NET etc are very important.

The third component is both developed and undeveloped. On the private side, within the industrial sector and the financial sector, standardisation of processes is well developed. There are many providers for External Resources Planning (ERP) softwares on the market; using ERP software means that only systems with unique business logic have to be developed, the remaining part will handled by standard systems. Organisations and processes will be changed to suit the system.

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In the public sector the use of this type of standard systems is minimal, because of unwillingness to introduce changes. In the following a couple of examples will illustrate what is meant here.

1.2.1 Introduction of Monitoring Systems

In my job as a consultant on the international field for nearly twenty years I have seen a number of systems that have burdened the organisation instead of improving it. One organisation had problems with the long time for registration of dealingsat the land registry, the average turnaround time for a registration was more than one month, sometimes even up to three months. The system was manual, paper based, with a central lodgement desk, an enormous archive and registrars approving the dealings. The legal people did not rely on IT and claimed that their job could not at all be automated, not even by a simple work-flow system. The long period of time between the incoming request and the approval made it difficult to serve the search process and this was taken as the reason to build a system to keep track of movements of dealings within the office. Instead of building a system with demand and goal that a dealing should be registered within one to three days, the tracking system was built.

The tracking or monitoring system, called Unregistered Dealings System (URDS), should keep control on where in the process-chain a dealing was. Consequences of the URDS were extra steps in the process, just to inform that the dealing had left one sub-process and arrived at next sub-process. No value at all was added to speed up the registration process and the URDS did not at all improve the situation. A slower process was created for the office. A registration system will automatically tell the status of a transaction.

The organisation got a system that supported the existing business. The problem here is not about good data-models and standardisation on the data, the system should never have been built.

1.2.2 Introduction of Digital Signatures

Nearly every organisation around the world is busy with the introduction of the concept of digital signatures. In many countries this is a part of e-government or 24/7. I have seen systems being designed with digital signatures combined with support to the existing work-flow, this means just changing the status of the document from paper to digital but maintaining all other steps. The concept of digital signatures includes a secure validation of who has signed the document and a completed logging of the whole transaction i.e. there is a minimum of need for a manual checking and the process can be fully automated in many cases. Keeping the manual process is following the concept of 'IT supporting the existing business process'.

1.2.3 The European Market

The next example will be limited to Europe but it is also applicable outside Europe. If you look at a picture of a house it is more or less impossible to see from which country the picture is taken. If you look at the information about land (translated into English) that is available in the registers it is difficult to see from which country the information comes. If you look at a map it is still difficult to see from which country the information comes. Of course I don't

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take into account that the language can give you some information. The information looks the same and it is more or less structured in the same way. Try to buy the property and you will recognise the difference. Why is it still so that different processes support land transactions in different countries? The question is very relevant as international organisations like FIG, WPLA, Eurographics etc have been in place for so many years.

A big step has been made by EULIS, the European Land Information Service, information from the involved countries can now be retrieved and explained in a prototype environment; but it has taken a long time and the idea was not at all accepted from the beginning. The initial idea about EULIS was drawn up May 1997 in Sweden, and the idea was communicated to a number of other countries. The answers were both positive and negative, from "What a great idea, we will take part" to "Not interested, the information is for internal use", one answer was "Good but only interested as long as it stays with the data and not looking into the processes". EULIS is up running after a very long time-to-market, it has gone through a lot of compromising and it is only about data.

1.3 The Concept of Best Practice

In the IT-sector, which is very young compared to the land administration sector, we have worked with the concept of **Best Practice** for the last thirty years. If you as a consultant don't follow that concept you are out of business. The industry has adopted the concept and a comprehensive system concept has been introduced in big companies operating world wide. Systems like SAP, Baan take care of all processes within a company, the organisation of the company has to change to follow the system. In the same way the processes have to be changed, taken away the existing ones and new ones being implemented. The system is built with a focus on information and not with a focus to the organisation. The process from an order to delivery and payment looks the same independant of the business.

The driving force for the private sector is money and efficiency. If information concerning land looks the same in different countries, who is protecting the processes for land transactions? What is the driving force for any change? The legal system can't be changed over one night, not even over a year is the normal answer, but on the other hand there is the question: are you interested of any change that will jeopardise your position? It is an establishment of organisations that depends on existing processes for land transactions that is protected and the normal citizens just have to pay.

2. A SMALL STEP

In every country I have looked into, a number of ministries is responsible for different areas when it comes to land administration. The consequence of that situation is that a number of systems have been developed within one country serving just a part of the total business of land administration and the external users have to use a number of systems to get a complete overview. Sweden has an approach of a comprehensive system built with information in focus and giving the external users one single point of information provision.

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3. THE SWEDISH APPROACH

All land in Sweden is divided into property units. Changes to the division of property units is a continuous process - lots are amalgamated or sub-divided and other cadastral procedures are carried out. Lantmäteriet (National Land Survey of Sweden) is responsible for guaranteeing legal security for individual property owners and also participates in measures to improve and formulate legislation in this field. Lantmäteriet is also responsible for the register and for land registration system which shows ownership, mortgages, encumbrances etc, the custodian for that system is the National Court Administration. These two registers are the basis in the Swedish Land Data Bank System (SLDBS).

The development of the SLDBS started in beginning of the 1970s as a common system for the management of the 'textual part' of property- and land-information. It started as an internal system, developed in-house, with internal demands and serving internal users but the SLDBS has over time grown to an open system used in land administration and in the financial sector throughout Sweden with more than 25.000 users connected. The number of users might look not too big; but it has to be remembered that Sweden has a population of nine million and around three million properties.

In Sweden, like in many other countries, different ministries have responsibilities for different data on land. To facilitate design and construction of a common system for the land register and the property register a project was set up by the involved ministries, at that time the Ministry of Justice and the Ministry of Housing. The project was formed as a governmental authority: The Central Board for Real Estate Data (CFD) with its own huge task to build a common automated system for information regarding land and property. Of course CFD also got the responsibility for the data collection and operation of the system. When the last area was completed, the task given to CFD was completed, it disappeared as independent organisation and merged with Lantmäteriet.

One of the success factors in the Swedish approach by the formation of a separate organisation was to built an organisation that could fully concentrate on its task. Another big advantage was the balance between the demands on the system from the two Ministries: the Ministry of Justice (National Court Administration), responsible for the land register, and Ministry of Housing (National Land Survey), responsible for the property information system.

3.1 External User Demands

The SLDBS was, from the beginning of its perations, an open system being met with big interest from external users, as the private sector (banks, financial institutes, brokers etc.), municipalities and other governmental authorities, i.e. everybody dealing with information on land. The external users soon started to put demands on the system, they were not fully satisfied with what they got and wanted more information . A good thing can easily be improved while a poor system can seldom meet new demands. The customers were satisfied with having one single point of access to get information on land and property, but still the had to turn to the municipalities for information on buildings and addresses, to the National Taxation Authority to get information on taxation and valuation. CFD took the initiative to add a number of additional registers to the SLDBS and made proposals to its Ministry.

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CFD got approval to go ahead and a number of additional registers have been added as time went on and today the comprehensive register is named The Real Property Register, including:

- Address Register
- Building Register
- Co-ordinate Register
- Plan Register
- Property Assessment Register
- Sales Price Register
- Owner Associations Register
- Housing Credit Guaranties Register

CFD and Lantmäteriet merged when the task to collect and convert all information from the land and property register was completed 1996. From that date Lantmäteriet is responsible for running The Real Property System and from that date the integration of two other big registers begun:

- The Geodata Bank System, including digital maps of different scales and for different usage, and:
- The Digital Archive, including digitised documents on dealings and historical maps.

In the role of being responsible for operations, maintenance and enhancement of a comprehensive system concerning land information Lantmäteriet had to do a lot of co-ordination, as many other organisations are responsible for the their data and standardisation on data became even more important.

Integration of registers with geometric and descriptive information is complex, from technical perspective there is a big difference between interoperability and integration. The systems have been working on an interoperability basis for a number of years now and applications have been in place just for performing the conversion. The main problem is that almost every geometric or geographic database today is stored under a data model suitable for the noble art of map production. Until recently every tool in the market worked with moving lines, drawing arcs, connecting information to dots etc. just for the purpose of producing a map.

The databases for the descriptive part of the information are stored under a data model with objects like properties, owners, rights, encumbrances, plans etc. It is obvious that there are different identifiers in the two databases and the databases containing geometric data has to be changed following the principle that reflects the business of land administration.

The management tool for property formation has also been using the tools for drawing maps e.g. in a subdivision the surveyor has to draw lines and do a lot of checking. Lantmäteriet has together with ESRI developed a new software called ArcCadastre. This software puts the information in focus and a work-flow engine guides the user through any process. ArcCadastre will work against a data model based on the business of land administration, the users will have checks built into the work-flow.

Lantmäteriet is going to be fully object-oriented for all information in the Integrated Cadastral System. The objects will contain information from all databases regardless if it is descriptive or geometric information. A huge task is ahead to convert the geometric models from mapping objects to land administration objects. XML is used for handling the formats.
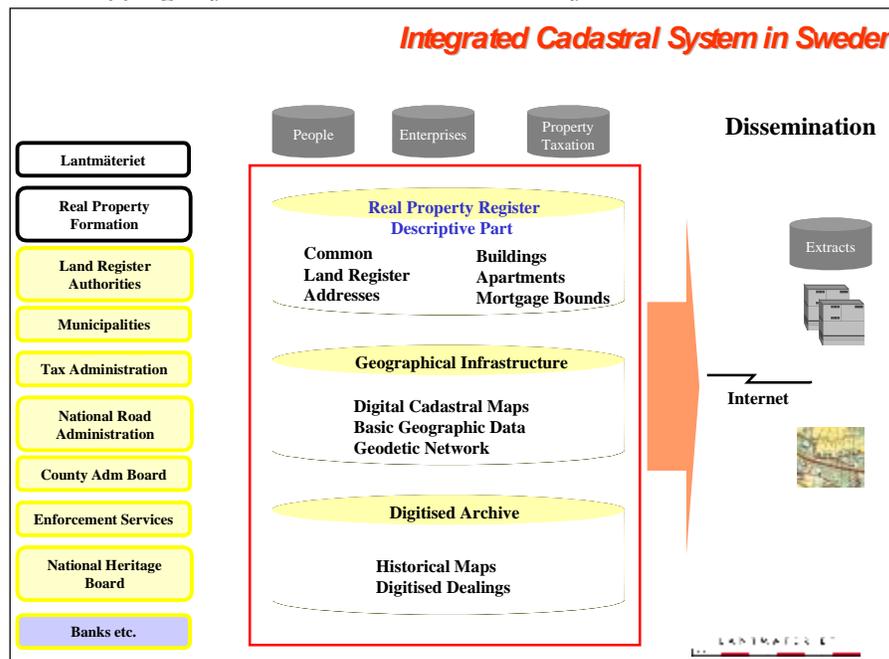
3.2 Lantmäteriet (The National Land Survey of Sweden)

The task of Lantmäteriet is to contribute to an efficient and sustainable use of Sweden's real estate, land and water. The organisation has three divisions:

1. The Division Land and Geographic Information is responsible for the generation, management, development and distribution of geographic and real property information.
   Real property information comprises information from the Real Property Register, including the digital cadastral index map, the Land Register and the central registers for buildings, apartments, addresses, mortgage certificates and real property prices. Geographic information comprises basic geographic data such as co-ordinates, terrain elevation data, aerial photographs, vegetation cover data and place names. The Division is also responsible for standardisation questions and for R&D in the fields of geodesy, cartography and geographic information systems.
   The Division's main clients are credit institutions and banks, public administrations, municipalities, estate agents and property management companies.
2. The Division Cadastral Services is responsible for Lantmäteriet's cadastral activities including decisions concerning the formation of new properties, changes to existing properties, joint-properties, easements, utilities and common facilities. Land ownership rights are determined and registered in the Real Property Register. Our clients include private property owners, forest companies and companies and organisations in the energy, telecommunications, road and railway sectors and the municipalities.
   The main activities are carried out within 21 Cadastral Authorities, one in each county. At the headquarters there are units for development, marketing and management. The

division has a total staff of approximately 850 of whom 800 are working at the Cadastral Autorities and 50 at the central level.In 38 of the municipalities there are also Cadastral Authorities within the local administration.

3. The Division Metria carries out a broad programme of repayment services in the land survey sector and also produces basic landscape information for the Division of Land and Geographic Information. Other services and products supplied by Metria include consultancy services in surveying and mapping and geographic information techniques. Through Kartcentrum Metria is responsible for the publication of the national map series and other map products, as well as a comprehensive cartographic work on a contract basis. Metria's clients are to be found in both the private sector, such as forestry and telecommunications companies, and in the public sector.

As Lantmäteriet is one organisation all needs for co-operative functions are managed in one Department called Co-operative Functions. The biggest department within Co-operative Functions is the IT-Department, with of 85 system developers and 65 staff responsible for Computer Services. Around twenty consultants are contracted for system development.

4. CONCLUSION

Lantmäteriet is a governmental authority responsible for a number of registers including all basic relevant information concerning land in Sweden: descriptive information, maps and archived instrument, dealings and historical maps. The information in the registers is open for use and can easily be accessed if you are authorised. The use of the information is regulated in two laws, the Swedish Data Protection Act and a special law about the Swedish Real Property Register. It is up to Lantmäteriet to look after the customers and how they fulfil these laws.

The registers are structured as one common database but with many suppliers, there are a number of different technical solutions but they are transparent for the users. The users have one single interface for accessing the database. Comprehensive standardisation and data modelling exercises have accomplished a single database concept. The most important factor is the use of common identifiers and definitions in each register throughout the database, e.g. a building is described in the same way, regardless if it is on a map or in a register for ownership.

The information in the database is updated and maintained by the organisation that is responsible for the data, which means that municipalities update e.g. property addresses, banks update mortgagors, the National Tax Board updates the assessment value etc.

The openness and accessibility of basic land information leaves the field for application open for competition, Lantmäteriet does not have a monopoly on applications for land information. However Lantmäteriet is responsible for the contents, the maintenance and the dissemination. As noticed from the examples above, Lantmäteriet does have relevant and essential knowledge in the business so they are the natural partner for co-operation, also for applications.

The concept of object-oriented databases is fundamental in future developments, we cannot go-on treating the geometric information as just being important for map production.

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The Swedish system is built with the information in focus. Systems built with organisations in focus will not facilitate for the external users, as they have to turn to a number of systems to get a clear picture of land information. The external users are the real users as they are representing the society, internal users are just concerned about support to internal processes.

Even if the Swedish system is built with information in focus it is still a long way to go to have a system based on the model of best practice to facilitate for doing transactions in land between countries. The willingness to improve existing law is maybe a bit better in Sweden compared to other European countries, but still it is a long way to go. As systems for land administration will continue to protect its own business area full advantage of IT is not taken.

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