

# Infrastructure for Real Property Information – One Stop Shopping

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**Keywords:** Property Information, e-Service, Infrastructure, Property Transactions, Digital Cadaster.

## SUMMARY

The Danish government wants both to ease the process of buying and selling properties and to reduce associated costs. The DIADEM project was one of the means to achieve this goal. DIADEM was launched with objective to provide the public better digital access to property information via the Internet. Fortunately, an abundance of real property information is available at numerous public Danish registers. This information, spread across a wide range of data types, could have relevance to both potential and actual buyers of real properties.

Most of the information is recorded by the local municipal administration. Until 2012 real estate agents and lawyers requested, as a part of their sales preparations, a standard *property information sheets* from the municipal offices. The municipal officers compiled manually these sheets based on information extracted from various digital registers and analogue files. In November 2012, DIADEM offered an alternative to the manual/analogue property information sheet, namely the DIADEM digital *real property data report*. The *property information sheet* comprises 13 different types of property information with a delivery time of 5 – 10 days. DIADEM delivers within 2 – 3 minutes a *real property data report* with 50 types of property information.

Over the last 6-8 years the trend in Denmark has been to abandon the concept of multi-purpose registers. Instead data are maintained in domain specific registers and the integration across platforms is handled in an event driven and service based public infrastructure. The IT-system that compiles the Property Data Report is not hosting any property data. A comprehensive service-based infrastructure has been established to facilitate that all data for the reports could be gathered at 18 different data sources. Since the start of operations 200,000 reports have been delivered. There have been very few problems with identification of properties across the many registers and even less problems with identification of the right information on the properties.

This paper outlines content and infrastructure of The Property Data Report and discuss infrastructure for property information based on the experiences of operation.

# Infrastructure for Real Property Information – One Stop Shopping

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## 1. INTRODUCTION

### 1.1 Background to The Property Data Report

The Danish government wants to ease the process of buying and selling properties and reduce the associated costs. Therefore an initiative to create better digital access to property information via the Internet was launched in 2009. This was done through a project named DIADEM (Digital Access to Information about real properties). The objective was to establish an Internet based service that makes property data digital accessible to sellers and buyers of real property in a standardised way – one stop shopping.

The business goals of the DIADEM project were:

- Make it easier and more transparent for consumers and professionals during the transaction process to obtain property information
- Minimise time spending by public administrations in delivering property information for transactions
- Minimise time spending by consumers and professionals in requesting property information for transactions
- Building a scalable solution that over time can be modified to meet future users' needs
- Building an IT-solution in accordance to IT architecture principles of the Danish e-Gov strategy.

Based on preliminary technical and financial analysis – especially a business case – the Danish Parliament Finance Committee in 2009 approved the DIADEM concept. The financial framework was:

- DIADEM financed by a new non-fiscal fee over an 8-year balancing period - covers all expenses for development and operation.
- Project loan: 120 million DKR (16 million Euro)
- Users fee is 325 DKR (44 Euro) per requested property report

Due to a late start of operation the loan has been prolonged to 2019. The Property Data Report service went into operation in November 2012.

### 1.2 Property registers in Denmark

In Denmark there are four basic central registers of real properties:

- the Cadastre (Danish Geodata Agency)
- the Land Book (Ministry of Justice )
- the Common Municipal Property Data system - ESR
- the Building and Dwelling Register (Ministry of Housing, Urban and Rural Affairs)

In order to ensure more efficient, effective and coordinated maintenance and re-use of basic data, the Danish Government approved a comprehensive cross-institutional basic-data program 2013 - 2016. This impacts the Property Data Report that must be compliant with the updated property data structures. Meanwhile the infrastructure of the report is based on how the registers are today. These registers are described below.

### **1.2.1 Cadastre**

The Danish Cadastre is maintained by the Geodata Agency which is an agency within the Ministry of the Environment. The Danish Cadastre originally started as a system supporting the collection of land taxes. The main objective of the Danish Cadastre nowadays is to support an efficient land market, as well as to provide a basis for appropriate land management.

The Cadastre maintains information on parcels such as parcel identifier, area, area of road, separate land units of which a parcel consists, share in common parcel, some land use regulation. A real property could be a single parcel or multiple parcels with same owner. Since the parcels of a property are mortgaged jointly the parcels cannot individually be subject to transaction. A parcel may consist of several land units. Condominium and building on leased land are not registered in the cadastral system.

### **1.2.2 Land Book**

The land book registers real property rights. It contains legal data like titles, name of property owners, mortgages and easements. The state guarantees the contents of the land book. In 2000, the land book was fully digitized and from 2009 eConveyance was established. The land book and eConveyance is centralised at the Land Registration Court. The land book uses the identifications of real property established by the cadastre.

### **1.2.3 Common Municipal Property Data System (ESR)**

The Common Municipal Property Data System (ESR) was established in 1966. In 2003, the valuation task was handed over to Ministry of Taxation. ESR's basic purpose was therefore initially property valuation. ESR was the first Danish digital property register and is still the most complete and up-to-date register. Therefore it is used in a wide variety of other municipal registrations. ESR is a basic and very comprehensive property register with information about three main property types: cadastral property, condominium, and building on leased land. ESR contains furthermore very essential information for The Property Data Report information; namely ownership information.

#### **1.2.4 Building and Dwelling Register (BDR)**

The municipalities (98 in total) are responsible for the building and dwelling registration (BDR). The BDR contains information on several levels of registration: Plot, building, technical installations, dwelling or commercial unit, use unit, entrance, floor and room. A property (consisting of one or more land parcel(s)) may consist of one or several buildings; a building may be subdivided into units. The BDR is mainly updated as a part of the municipal approval of applications for permission to construct/build. Drawings and other detailed information of every single building is available in the municipal building archive. The BDR summarises information from this archive.

## **2. THE PROPERTY REPORT FOR TRANSACTIONS**

### **2.1 Property transaction in Denmark, in brief**

It is easy to get information on properties for sale in Denmark at the real estate agents websites. And for homes for sale all professional intermediaries working in the field of property transactions transfer property presentations and ads to the national wide website [www.boligsiden.dk](http://www.boligsiden.dk).

When a buyer has found the right property, he will as a potential buyer get a lot of information about the property from the seller's real estate agent or lawyer. The seller is obliged by law to provide some information and the buyer will get some information from public registers – The Property Data Report. In many cases it is advisable for the buyer to have a lawyer assessment of the property and the information about the property. If the buyer still wants to buy, the seller's real estate agent drafts a purchase agreement.

Once a contract has been drawn up, a deed of conveyance (in Danish skøde) is subsequently drawn up, normally by the buyer's lawyer. The "skøde" assures the buyer of clear title to the subject property once the deed has been recorded at the eConveyance (land book [www.tinglysning.dk](http://www.tinglysning.dk)). The real estate agent negotiates the sales price with the buyer and his lawyer, before the buyer and seller sign the final purchase agreement. The buyer's lawyer will assess and submit them on the buyer's behalf and issue the official owner document. The buyer has six days after signing the purchase agreement to nullify the deal by giving written notice, but the buyer is required to pay compensation, which is 1% of the nominal purchase price (i.e. the financed selling price), to the seller.

When the purchase agreement has been signed, the buyer's places a deposit, which is 5% of the cash price, with the real estate agent. The rest of the payment is deposited usually in seller's bank, or into a commercial escrow bank account once the transfer deed has been signed. The funds can be released only when the buyer has received unconditional title to the property. Escrow typically lasts between 60 to 120 days.

The central eConveyance started in 2009. Since then it has been possible to complete the legal procedures needed to buy, loan and to register ownership of a property in about two to three weeks.

## 2.2 Information in The Property Report

November 2012 The Property Report was launched. The report holds property information from public registers that is or can be relevant for a potential buyer. It includes facts about the property and about the property's condition and it includes public law regulations.

The report covers a total of approx. 50 types of property information:

<b>Buildings</b>	<b>Economics</b>	<b>Nature, forest agriculture</b>	<b>Protection lines and zones</b>
Building and Dwelling report	Property tax	Forest conservation areas	Forest protection lines
Energy label report	Property tax message	Continuous forests (majorat)	Lake and river protection lines
Building status report*	Property value, land value	Protected nature types	Church protection lines
Application for building permit	Valuation message	International nature protection areas	Dunes protection zone
Electricity installation report*	Rent board case	Properties with farming obligation	Coast protection zone
Construction casualty insurance*	Overdue preferential debt*	Nature gems	Certain stone and soil dykes
Fuel tanks	Windfall (financial aid)		
	Workers residence		
	Land rent		
<b>Soil pollution</b>	<b>Water</b>	<b>Plans</b>	<b>Others</b>
Soul pollution attestation	Drainage facilities	Municipality plans	Environmental case*
Lighter soil pollution	Water supply	Zone status	Property map
Mapped soil pollution	Sewage plans	Local plans	Property identifiable information
	Groundwater – interest areas of drinking water	Heat supply	
	Groundwater – nitrate vulnerable zones	Planned construction projects (municipal)	* Only displayed to property owner and professional adviser holding a consent
	Injunction/dispensation to water extraction	Access to road	
		Transport corridors	

**Table 1: Information in the Property Data Report (PDR)**

Some of the information is facts, numbers or yes/no (ja/nej) answers to questions:

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Østervej 288  
9881 Bindslev

Print 

# Resume

**Resume**  
Oversigt over alle oplysninger

**Ejendommen**  
Adresse, matrikelnummer, grundareal mv.

**Bygninger**  
Tilstandsrapport, energimærke og BBR oplysninger

**Økonomi**  
Ejendomsskat, ejendomsværdi mv.

**Planer**  
Lokalplaner, zonestatus, planer for varmeforsyning mv.

**Vand**  
Spildevand, vandforsyning og grundvand

**Jordforurening**  
Kortlagt og lettere jordforurening mv.

**Natur, skov og landbrug**  
Beskyttet natur, fredskov mv.

**Bygge- og beskyttelseslinjer**  
Skovbyggelinjer, sø- og åbeskyttelse, strandbeskyttelse mv.

**Miljøsag**  
Kommunale miljøsager

**Download eller del rapport** 

**Bygninger** 7 rapportdele hentet, 0 rapportdele afventer

[Se alle oplysninger om Bygninger](#)

**BBR-meddelelsen**  
Findes der en BBR-meddelelse for ejendommen? Ja

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**Energimærkning**  
Hvad er ejendommens energimærke? G

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**Tilstandsrapport**  
Findes der en tilstandsrapport for ejendommen? Ja

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**Elinstallationsrapport**  
Findes der en elinstallationsrapport for ejendommen? Nej

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**Byggesag**  
Er der igangværende byggesag for ejendommen? Nej

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**Byggeskadeforsikring**  
Er der bygninger på ejendommen, som er dækket af byggeskadeforsikring? Nej

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**Olietanke**  
Er der registreret oplysninger om olietanke på ejendommen? Nej

**Økonomi** 9 rapportdele hentet, 0 rapportdele afventer

[Se alle oplysninger om Økonomi](#)

**Ejendomsskat (grundskyld)**  
Hvad skal der betales i ejendomsskat for ejendommen? 10.274,88 kr.

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**Ejendomsskattebillet**  
Findes der en ejendomsskattebillet for ejendommen? Ja

**Figure 1: Screenshot, a part of the digital report's summary**

The full report comprises various annex with the details.

### 2.3 Requesting a property data report

The digital PDR is requested at the portal [www.boligejer.dk](http://www.boligejer.dk) ("propertyowner.dk"). The request process is:

- Search the property – by address, property number or parcel number
- Verify the property – by identifiable information
- Log on with private or employee digital signature – optional
- Perform the request
- Pay 325 DKR – by credit card or as a trusted customer with periodic payment
- Receive the report within two to three minutes

Then the report is ready for use. You get a digital report, which is accessible within "My site" at [boligejer.dk](http://boligejer.dk).

## **2.4 Digital features in the property data report**

During the development stages there was a constructive dialogue with key stakeholders such as The Danish Association of Chartered Estate Agents, The Association of Danish Law Firms and The Danish Bankers Association. It provided the project with useful insight into the work and processes of stakeholders in property transactions. And hereby new requirements were realised and formulated. Some of these requirements are described below.

### **2.4.1 Use of consent**

The professional users - for example real estate agents and property lawyers - also wanted the possibility that their clients could issue consent so they as advisers could request and read a report on their client's property. After some clarification with the Danish Data Protection Agency it was made possible. If the professional user has first obtained a consent statement that his client has offered in connection with "the marketing agreement", the adviser also has the opportunity to see confidential data for the given property.

The professional user is only entitled to seize this opportunity, if he declares under penalty of perjury that a statement of consent from the client exists and if he has previously signed a general regular customer agreement with the ministry. When the professionals are using this model, it is not necessary to obtain consent each time they must obtain information on their clients' behalf. The professional should always be able to demonstrate that they have a consent form from the property owner.

It has altogether lead to more flexible requesting procedures for all parties.

### **2.4.2 Grace period**

It soon became clear that professional advisers strongly need a "grace period" after delivery of the property data report. A grace period that would allow the user, without further payment or at a reduced fee, to download an updated report on a given property for a limited period of time. On this basis the fee model for the property report is:

- A fee for a report for one particular property
- The fee is payable when requesting the report
- The fee provides for a grace period of six months to refresh the data two times; i.e. is no extra payment for receiving report updates.

### **2.4.3 Sharing a report**

It's possible to share the digital report with the client or other advisers by emailing a unique link for the report in the trusted system environment. If the report contains confidential information like the ones marked in Table 1 it is the requester of the report who is responsible for complying with the consent of his client. The recipient of the shared report has to logon by his private or employee digital signature to be able to view the report.

Experiences so far indicate younger professionals use the feature of sharing, while older advisers like lawyers prefer analogue versions of the report. For paper versions it is possible from "My site" to print reports in an authoritative design in PDF.

#### 2.4.4 B2B use of data

The digital report has given the professional users the opportunity to create B2B-solutions where the property data report information is pulled into the companies' own systems, i.e. they can automatically include property information in sales presentations. The largest chain of estate agents (20% market share) has used the B2B service since the launch in November 2012. The Ministry has signed an agreement with the financial sector on a similar solution. It is expected to become operational in the spring this year.

#### 2.4.5 Metadata

50 types of property information piles up and for non-professionals users it may be difficult for them understand the meaning of the provided details; for instance, what is underlying legislation, which authority is in charge and whom to contact with questions. In order to clarify this, the development project strongly emphasised to make metadata descriptions on each information type available to the users.

The screenshot displays a web interface for a BDR report. On the left is a vertical navigation menu with categories: 'Resume' (Oversigt over alle oplysninger), 'Ejendommen' (Adresse, matrikelnummer, grundareal mv.), 'Bygninger' (Tilstandsrapport, energimærke og BBR oplysninger), 'Økonomi' (Ejendomsskat, ejendomsværdi mv.), 'Planer' (Lokalplaner, zonestatus, planer for varmeforsyning mv.), and 'Vand' (Spildevand, vandforsyning og grundvand). The main content area is titled 'BBR-meddelelsen' and contains the following information: a question 'Finde der en BBR-meddelelse for ejendommen?' with a 'Ja' button; a section 'BBR-meddelelsen' with explanatory text: 'BBR-meddelelsen viser de oplysninger, kommunen har registreret om en ejendom i Bygnings- og Boligregistret (BBR). Oplysningerne på BBR-meddelelsen er et udtryk for de faktiske forhold på ejendommen - også selvom de ikke nødvendigvis er lovlige. Ansvar for oplysningernes rigtighed på BBR-meddelelsen ligger hos ejeren af ejendommen.'; a link 'Mere info om BBR-meddelelsen'; a note 'Oplysninger vedr. BBR-meddelelsen er indhentet d. 08-03-2013'; a link 'Hent fil (PDF)'; and a section 'Kontaktoplysninger' with 'Administrativ myndighed' and 'Kommunen'.

Figure 2: Screenshot, basic metadata BDR report

Figure 3: Screenshot, expanded metadata BDR report

### 3. 2½ YEARS IN OPERATION - STATUS

After 2½ year in operation the status on March 2015 is:

- 200,000 reports requested and delivered
- Numbers of requested reports is increasing
- 20 % of the reports are requested via B2B-services
- 1,360 businesses and organisations have signed contracts with the ministry as frequent customers, e.g.:
  1. 800 real estate agent business
  2. 325 law firms
  3. 28 (of 98) municipalities
  4. 7 government bodies
- 4,600 users are registered at the regular customers
- The digital report at a cost of 325 DKR is less expensive than the previous analogue sheet from the municipality at a cost of 400 DKR
- The 48 actual types of information is much more than the 13 types include the analogue property information sheet
- There have been almost no challenges with the identification of the right properties in 18 databases, and no challenges with the identification of the ownerships
- Only once has the ministry as operation responsible paid compensation. It was due to a system delayed important piece of financial information. The compensation however was less than 0.1 per cent of annual operating costs.
- A subproject on registration of information about oil tanks related to individual heating of buildings has been successfully completed. Relevant oil tank details have

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been extracted from 6 shelf kilometres of documents. This is the second largest digitization project in Denmark so far.

- The project has devoted significant resources to assist in the digitization of analogue data in collaboration with municipalities
- The project has devoted significant resources to assist legislation authorities in preparing acts and orders on property regulation for digital applications

A user board for the professional users has been established and they are very pleased with the Property Data Report and the website for users. The business goals that it should be faster, easier and more transparent to obtain information, minimise time spending and have an adjustable solution to the professional users needs have all been met.

#### **4. THE APPLIED INFRASTRUCTURE**

The Property Data Report has been well implemented and the users and stakeholders are satisfied. Below the infrastructure for the report is outlined.

##### **4.1 The organisation - collaboration across the Danish public sector driven by stakeholder demands**

The Property Data Report is the result of extensive collaboration between several organisations in the public sector: Local Government Denmark, Danish Tax and Customs Administration, The Nature Agency, The Danish Nature & Environment Portal, The Danish Road Directorate, Danish Geodata Agency and The Danish Court Administration. Initially the Danish Enterprise and Construction Authority was responsible for the project 2009-2011. Following a new government in 2011 the department in charge of the project and the project was reassigned to The Ministry of Housing, Urban and Rural Affairs. These authorities formed the steering committee for the project. Their main task was to secure the framework for data gathering from the different authorities and service providers. It was required that the relevant authorities contributed by:

- providing the necessary legal and regulatory basis for the responsible ministry to establish provisions on the registration, updating and digital access of a new digital property information
- identifying which specific information must be digitally available
- identifying register destination and digital infrastructure to access information
- contributing actively to the development, implementation and future operation of the selected solutions.

A need for extensive technical clarifications, regulation changes, technical coordination etc., was identified as a prerequisite for being able to make the many pieces of property information fully digital accessible. The direction of the collaboration and formulating of solutions were in many ways driven by the demands from the private stakeholders in property transactions.

From the beginning of the project there was great interest from the stakeholders and future users. The following stakeholders were members of a reference group: The Danish Association of Chartered Estate Agents, The Association of Danish Law Firms, The Danish Consumer Council, The Danish Bankers Association, The Association of Danish Mortgage Banks, Danish Mortgage Banks' Federation, The Danish Property Federation and Danish House Owners' Federation.

In the development project the reference group worked on optimizing the report to the use profiles of the various users. As a basis for this the project carried out comprehensive business and user studies. These studies and the results of quantitative and qualitative analyses were being reviewed and discussed by the reference group.

After implantation the primary stakeholders i.e. the real estate agents and lawyers continued on a user board. The task of the user board is to optimise the report concerning adding possible new pieces of information and improving user functionality. One outcome has been a short improved overview of the many pieces of information in the report.

#### **4.2 The legal framework**

One of the project goals was:

1. *Data recording and updating should be ensured by introducing the necessary legal basis by amending the relevant acts and orders*

The following acts and orders have been amended to ensure legal basis for recording, updating and use of pieces of property information:

- Act amending the Act on Heat Supply Act, Act on water supply, Act on Environmental Protection and Act on contaminated soil (Digital access to information relating to real property)
- Act No. 1276 of 16.12.2009 on amending the Act on Building and Dwelling recording
- Order no. 690 of 21.06.2011 on the connection etc. for district heating systems (connection order).
- Order No. 1010 of 10.24.2012 on updating the Building and Dwelling Registry (BDR)
- Order no. 1321 of 21.12.2011 on the arrangement, establishment and operation of fuel storage tanks, piping and pipelines
- Order no. 454 of 23.05.2012 on road and path register. Provisions on road registers for public roads and paths and private roads and paths in towns and urban areas
- Letter No. 9474 of 27.08.2012 on statistical returns from rent and tenants' complaints board
- Order No. 1448 of 11.12.2007 on wastewater permits, etc. after Environmental Protection Act, Chapters 3 and 4
- Order No. 658 of 18.06.2014 on reporting and recording of soil pollution data
- Order No. 1003 of 23.10.2012 on digital access to real property information
- Order No. nnn of 03.03.2015 on amending the Order on wastewater permits, etc. Environmental Protection Act, Chapters 3 and 4

Although collaboration with other authorities has been smooth, the effort to ensure the necessary amending of acts and orders proved to be the biggest challenge to planned entry into service.

### 4.3 The technology

The almost instant availability of information for the users of the report is possible due to a serviced-based architecture, high quality property identification and high quality in the identification of the types of property information. For the users it is also significant that the registered property ownerships and the corresponding digital signatures are consistent. Furthermore the data is accessible due to good quality in the different types of property information in 18 different central databases containing the information.

#### 4.3.1 Service-based architecture

From the start of the project in 2009 alternatives to service-based architecture were never questioned. The basic idea was to gather information by online queries of the many different key registers and databases at the regulation authorities. The Property Data Report interrogates property information from the following 18 data sources:

Abbreviation or short name	Name	Responsible authority
ESR	The Common Municipal Property Data System	Local Government Denmark and 98 Municipalities
Cadastre	The Cadastre	Danish Geodata Agency
OIS	The Public Information Server	Ministry of Housing, Urban and Rural Affairs
BDR	Building and Dwelling Register	Ministry of Housing, Urban and Rural Affairs
VUR	Valuation Registry	Danish Tax and Customs Administration
Plansystemet	PlansystemDK	The Nature Agency
DAI	Denmark Area Information	The Danish Natural Environment Portal
Fingerplan2013	Environment GIS	The Nature Agency
CVF	The Central Road and Path List	The Danish Road Directorate
DKjord	The common public land contamination database	The Danish Natural Environment Portal
Jupiter:	Denmark's geological and hydrological database	Geological Survey of Denmark and Greenland
DEA	Danish Energy Agency's system for energy label reports	Danish Energy Agency
Debitor	Municipalities' debtor systems	Local Government Denmark and 98 Municipalities
Eweb	System for electricity installation report	Danish Safety Technology Authority
BSFS	System for construction casualty insurance	Danish Energy Agency
NævnsDB	Database for rent board cases	Ministry of Housing, Urban

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		and Rural Affairs
FBB	Database for protected and preserved buildings	Danish Agency for Culture
Heweb	System for building status reports	Ministry of Housing, Urban and Rural Affairs

**Table 2: Data sources used for the Property Data Report**

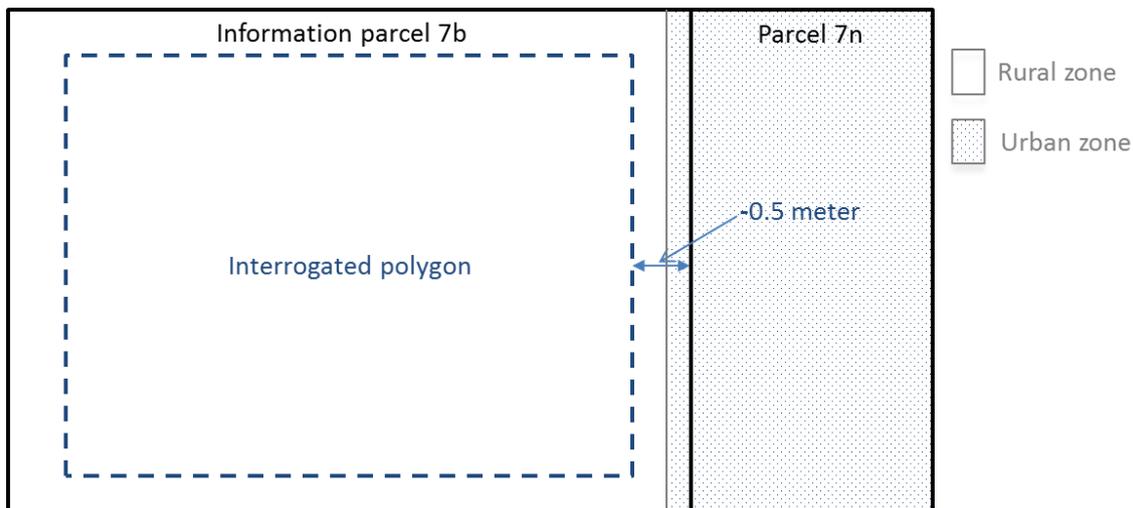
Most of the web services to gather the information from the data sources are open web services that other systems use. Only a few are dedicated services, e.g. one used by three different suppliers of debtor systems to the municipalities.

#### 4.3.2 Property identification and property information identification

The property of interest is searched by address, property number or parcel number. The basic register for addresses is BDR, for property numbers ESR is basic register and parcel numbers are the keys of the Cadastre. There is a transactional consistency across the three databases which makes it possible to use their search keys in conjunction. The most frequently used search key is the address.

In most data sources the information is recorded based on the property as a well-defined object. For these items the property information is interrogated primarily by the property number. Other information, and land use regulations in particular, are recorded geographically by polygons and line features with varying accuracy. In the interrogation of these regulations, the system for the Property Data Report does not know what the production method of the registration has been. Different measurement methods and map scales each contribute to the inaccuracy.

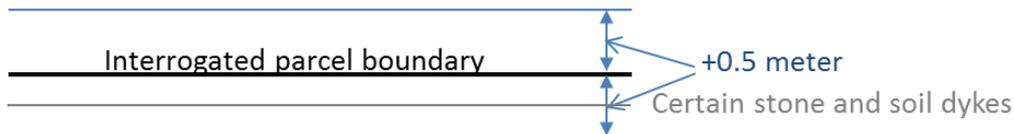
The Property Data Report use buffer zones to compensate for possible lacking spatial accuracy in digitising the feature.



**Figure 4: Geographical identification with polygon object negative buffer 0.5 meter**

Some of the land use regulations are defined by a polygon. Due to the inaccuracy in the information of these polygons the regulations are interrogated by a negative buffer of 0.5 meter. It means that a zonary regulation barely overlapping ( $< 0,5$  meter) the parcel boundary is not considered as a regulation relevant to the searched parcel, e.g. in Figure 4 the Property Data Report will display only rural zone for parcel 7b.

Other land use regulation is defined by a line. A positive buffer of 0.5 meter is used for these regulations, e.g. in Figure 5 the Property Data Report will display Certain stone and soil dykes for the interrogated parcel and property.



**Figure 5: Geographical identification with line object positive 0.5 meter buffer**

The use of these kinds of buffers might be controversial and it is debatable if it should be for example 0.05 meters or 0.5 meters buffers. The chosen buffers are first and foremost a pragmatic solution. Experiences so far have showed, it is also an operationally reliable solution.

#### **4.3.3 Identification of users and property owners**

Ownership details of a property are obtained from ESR. The ownership is identified with a civil registration number for citizens or with a business number for business. All citizens in Denmark are registered with their civil registration number in the Central Population Register. All companies are registered with their business number in the Central Business Register.

4.5 million Danes (80% of the population) have the digital signature. The signature is linked to the civil registration number. All professional users of The Property Data Report have employee digital signatures. Their signatures are connected to the business number. There is very fine transactional consistency across the registers. It supports a good basis for ensuring who is given ability to see confidential property information.

## **5. PERSPECTIVES**

The Property Data Report may be used for other applications. The report is the most comprehensive and instantly available property information in Denmark. New user groups may be chartered surveyors for their cadastral work, banks for lending and perhaps most likely municipalities for their land administration.

In an analogue age it is reasonable and possible to work in a small closed domain. In a digital era the supply chain is almost infinite whereas it is necessary to bring in a broader range of stakeholders. For a governmental body proposing new legislation and pursuing associated infrastructural goals it is important to be aware of this “supply chain of stakeholders” and carefully consider whom to collaborate with and how.

## **6. CONCLUSIONS**

The goal of the Property Data Report was to provide the public with better digital access to property information via the Internet. 2½ years of experience and 200,000 reports have demonstrated that much property information can be gathered swiftly and with ease by digital means, even if it is not registered in a central registry like the Cadastre or similar.

The information being immediately available is possible due to high quality property identification data from the Cadastre, high quality ownership data from the common municipality property system and high quality digital signatures of citizens, of private businesses and of the public sector. Furthermore the data is accessible due to good quality in the different types of property information in 18 different central databases containing the information.

The success is based on the fact, that the collaboration across the Danish public sector was driven by the private stakeholders’ demands. The demands made the objectives for the project clear. And on that basis it was possible to be focused and pragmatic and to establish an infrastructure fit for purpose.

## **ACKNOWLEDGMENTS**

I am grateful for the support of my colleagues in The Ministry of Housing, Urban and Rural Affairs. Especially I want to thank Mrs Kirsten Elbo, Mr Peter Lindbo Larsen and Mr Bent Hermannsen for their fruitful collaboration.

## REFERENCES

- Danish Parliament Finance Committee, 2009, Legal Document 163
- Galland, Enemark, 2012, The Reorientation of Spatial Planning Systems and Policies: The Case of Denmark, 2012, 8th FIG Regional Conference 2012
- National Survey and Cadastre Denmark, 2006, Property formation in the Nordic countries, ISBN 87-7866-410-1
- Reeberg Nielsen, Kristiansen, 2008, Reorganising Land Registration in Denmark, FIG Working Week 2008
- Skrubbeltrang, J, 2004, Danish Multipurpose Cadastre – experiences so far, FIG Working Week 2004
- Skrubbeltrang, J, 2005, Multipurpose Cadastre - a host for land use planning data? UNECE WPLA
- Storgaard, Lars Erik, 2012, INSPIRE in Denmark and its impact on the Danish eGovernment, FIG Working Week 2012
- Williamson, Enemark, Wallace, Rajabifard, 2010, Land Administration Systems for Sustainable Development, San Diego, ESRI Press

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