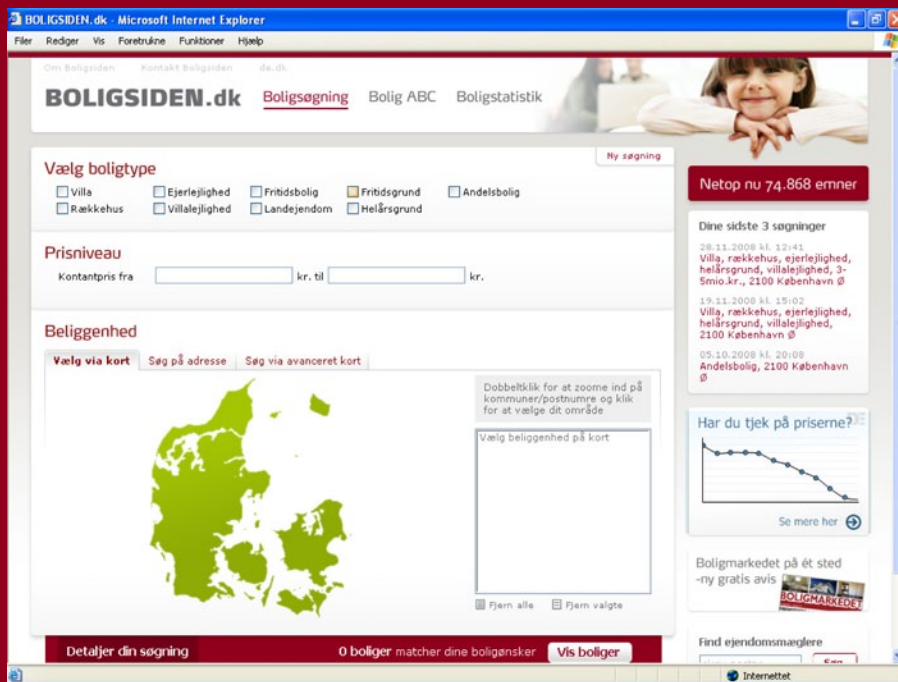


# Benchmarking Private Housing

Search engines at estate agents

CREDIT Case DK05





**CREDIT**<sup>©</sup>

Construction and Real Estate -  
Developing Indicators for Transparency



# Benchmarking Private Housing

Search engines at estate agents

CREDIT case DK05

Kim Haugbølle  
Niels Haldor Bertelsen



Title Benchmarking Private Housing  
Subtitle Search engines at estate agents. CREDIT case DK05  
Serial title SBI 2010:24  
Edition 1 edition  
Year 2010  
Authors Kim Haugbølle & Niels Haldor Bertelsen  
Language English  
Pages 43  
References Page 42  
Key words Benchmarking, key performance indicators, assessment, housing, estate agent

ISBN 978-87-563-1434-3

Photos/drawings C&B Systemer (p. 21), [www.home.dk](http://www.home.dk) (p. 22, 23, 24, 25 & 26), [www.boligsiden.dk](http://www.boligsiden.dk) (p. 31, 32 & 33) & Home, Niels Haldor Bertelsen (p. 11)  
Cover Screen dump from [www.boligsiden.dk](http://www.boligsiden.dk) Home

Publisher Statens Byggeforskningsinstitut  
Danish Building Research Institute, Aalborg University  
Dr. Neergaards Vej 15, DK-2970 Hørsholm  
E-mail [sbi@sbi.dk](mailto:sbi@sbi.dk)  
[www.sbi.dk](http://www.sbi.dk)

Extracts may be reproduced but only with reference to source: *Haugbølle, K., Bertelsen, N. H. (2010). Benchmarking Private Housing. Search engines at estate agents. CREDIT case DK05. (SBI 2010:24). Hørsholm: Danish Building Research Institute, Aalborg University.*

# Contents

Contents .....	3
Preface .....	4
Summary .....	5
1. Introduction and objectives.....	7
1.1 Objectives and work packages of CREDIT .....	7
1.2 Background, purpose and focus of the case study .....	8
1.3 Research design and methods applied in the case study .....	8
1.4 Reading instruction .....	10
2. Buildings – assessments in construction or real estate processes.....	12
2.1 The actual building, building parts and processes .....	12
2.2 The applied assessments and tools in the processes.....	12
2.3 Cost and performance indicators applied in the assessments.....	15
2.4 Relation to different enterprises and national benchmarking .....	16
2.5 Innovation and visions for future improvements .....	17
3. Enterprises – assessments and indicators internally applied .....	19
3.1 The actual enterprise, company and firm .....	19
3.2 Assessments methods and tools applied in the enterprise .....	20
3.3 Costs and performance indicators applied in the enterprise .....	21
3.4 Relation to building cases and benchmarking organisations .....	25
3.5 Innovation and visions for future improvements .....	26
4. National benchmarking – indicators, assessment and organisation .....	27
4.1 The actual benchmarking organisation and its purpose .....	27
4.2 Assessment applied in the benchmarking organisation .....	29
4.3 Cost and performance indicators applied in benchmarking .....	29
4.4 Relation to enterprises, building project and real estate .....	34
4.5 Innovation and visions for future improvements .....	34
5. Discussions and conclusions .....	36
5.1 Buildings – lessons learned and recommendations .....	36
5.2 Enterprises – lessons learned and recommendations .....	37
5.3 National benchmarking – lessons learned and recommendations.....	38
References .....	41

# Preface

This report describes the results of a case study undertaken as part of the Nordic/Baltic project *CREDIT: Construction and Real Estate – Developing Indicators for Transparency*. The case study is part of the work in work package 4-6 with respect to project assessment tools, application in firms and national benchmarking systems.

CREDIT includes the most prominent research institutes within benchmarking and performance indicators in construction and real estate, namely SBI/AAU (Denmark), VTT (Finland), Lund University (Sweden) and SINTEF (Norway). Further, three associated partners have joined CREDIT. The three associated partners are the Icelandic Center for Innovation (Iceland), Tallinn University of Technology (Estonia) and Vilnius Gediminas Technical University (Lithuania).

The project has been managed by a steering committee consisting of the following persons:

- Kim Haugbølle, SBI/AAU (project owner).
- Niels Haldor Bertelsen, SBI/AAU (project coordinator)
- Pekka Huovila, VTT.
- Päivi Hietanen, Senate Properties
- Ole Jørgen Karud, SINTEF.
- Magnus Hvam, SKANSKA.
- Bengt Hansson, Lund University.
- Kristian Widén, Lund University.

The project group wishes to thank our industrial partners and all the contributors to the case studies. In particular, the project group wishes to thank the four Nordic funding agencies that sponsored the project as part of the ERABUILD collaborative research funding scheme: The Nordic Innovation Centre (NICe), TEKES in Finland, FORMAS in Sweden and the Danish Enterprise and Construction Authority (Erhvervs- og Byggestyrelsen) in Denmark.

Danish Building Research Institute, Aalborg University  
Department of Construction and Health  
August 2010

*Niels-Jørgen Aagaard*  
Research director

# Summary

This report describes the case study of search engines and related assessment methods and tools for private housing. The study was undertaken as part of the Nordic and Baltic project CREDIT: Construction and Real Estate – Developing Indicators for Transparency.

The analysis aims at three levels: the project or building, the firm and the national benchmarking system.

## *Buildings (WP4) summary*

At the *project or building level*, the assessments employed serves two main purposes: transparency and consumer safety in the marketing and sales process of private housing. The assessment methods and tools applied in the marketing and sales process include three sets of methods and tools:

- Estate agent's sheet of information.
- Energy label.
- Condition report.

The three assessment methods are effectively being applied in practice by estate agents, sellers and buyers in almost all sales of private housing, which amount to some 60-80,000 sales per year.

One of the main lessons to be learned is that a wide range of information is already available through these three assessment methods and tools. The assessments cover a number of the key performance indicators discussed in CREDIT like price, size, location, energy performance and building performance (however, only visible defects).

## *Enterprises (WP5) summary*

At the *firm level*, the analysis focuses on the leading Danish chain of estate agents called home a/s. The study analyses the use of estate information management systems internally in the firm and externally on the web-based features and services at the website of the firm.

The estate information management system is effectively building a communication bridge between the building level, the firm level and the national system level at the estate agents. Thus, the information management system is the core system binding together the three levels in the daily practices of estate agents by input and import of data as well as export of data to external systems. There is no doubt that these systems are an integral part of the daily management and are being used extensively across the estate market to provide data in a structured, consistent and comparative form for buyers and sellers.

One of the lessons to be learned by the study of home a/s in relation to CREDIT is that the focus and scope of assessments of private housing is more about compliance with public regulation and transparency – open access to a wide variety of information – than on comparing benchmarks in a very strict sense. Nevertheless, the dynamic character of the search facilities along with the bulk of data available makes it an inspiring approach to pursue in CREDIT.

### *National benchmarking (WP6) summary*

At the *systemic level*, the analysis focuses on national search engines for private homes, which can be used to benchmark private housing. The starting point is the website [www.boligsiden.dk](http://www.boligsiden.dk), since this has been a very prominent search engine for private housing along with [www.boliga.dk](http://www.boliga.dk).

The content of the portal (as of November 2008) is divided into three focus areas:

- Search for housing: Data on all houses for sale in Denmark in order to give a comprehensive overview of the housing market.
- The ABC of housing: Information on the sale process step-by-step including guidelines, tools and documents.
- Housing statistics: The recent update of the site includes various statistics on the housing market in general and with search options for your specific neighbourhood.

In the simplest version at the front page, the user can specify a search for housing using only three criteria. These three criteria have not emerged as a result of in-depth user studies, but rather as a pragmatic response to practical experience by estate agents. One of the main lessons to be learned is that the three main search criteria or indicators for private housing constitute relevant CREDIT indicators. The three main search criteria are:

- Type of housing.
- Price level. Minimum and/or maximum values can be specified to limit search results.
- Location: Choices can be made using the interactive map, specifying an address (or zip code etc.) or by using the advanced mapping functionality.

Each of the two search engines successfully attracts some 3-400,000 unique users every month. Both search engines are ranked among the top 50 websites in Denmark judged by their number of visitors according to FDIM – the Danish association of interactive internet media.

In summary, the study concludes that search engines include a number of indicators, assessments and search facilities that can be applicable in CREDIT. Further, search engines represent a highly valuable approach to setting up an international benchmarking system that is dynamic in nature, user-oriented and cost-effective.

# 1. Introduction and objectives

This chapter describes the objectives of the CREDIT project, the background, scope and purpose of the case study of search engines for private homes, and the research design of the study.

## 1.1 Objectives and work packages of CREDIT

Sir Winston Churchill once said, “We shape our buildings, afterwards our buildings shape us” (28<sup>th</sup> Oct 1943). This quotation underlines how strong a building can influence an occupier or a user. Providing complex public facilities for example hospitals, schools, universities and libraries that are able to meet both the internal and external stakeholders’ needs and requirements is not without complications. The aims and demands of different stakeholders within a project can sometimes create conflict with each other’s interest. Understanding the needs and requirements of these stakeholders are essential to remain competitive in today’s market. A client that pays attention to the needs of the end-users will be rewarded with a high-performance property. Simultaneously, this shift seeks to solve many ills associated with inadequate building conditions and resulting in poor building function.

Due to the amount of both public and private money being invested in delivering public and private facilities, strong actions must be adopted. Collaboration with the relevant stakeholders will help building owners in identifying the required performance indicators to create high-performance facilities. The project aims to define a model for the implementation of performance requirements, which ensure the fulfilment of the various types of users’ and stakeholders’ needs and demands. The model shall also allow for the continuous measuring of the effectiveness of the used requirements and the model as such so that it may be improved as more knowledge and experience of it is achieved.

Following the themes of the ERABUILD call closely, the aim of CREDIT is to improve transparency on value creation in real estate and construction.

Thus, the objectives of CREDIT are:

- To capture end user needs and requirements in order to identify and quantify – where possible – value creation in real estate and construction.
- To develop compliance assessment and verification methods.
- To define and develop benchmarking methods and building performance indicators in real estate and construction.
- To set out recommendations for benchmarking internationally key building performance indicators.

Consequently, the deliverables of CREDIT are:

- 1. The establishment of a network of Nordic and Baltic researchers for benchmarking and performance indicators through frequent interactions in workshops across the Nordic and Baltic countries.
- 2. A State-of-the-Art report, that will identify and critically examine a number of existing tools, databases, mandatory reporting, approaches and benchmarking schemes to capture and measure end-user needs, client and public requirements on performance and value creation.

- 3. A strategic management and decision making tool to guide the definition and development of benchmarking methods and building performance indicators in different business cases.
- 4. A comprehensive performance assessment and management tool with associated key performance indicators to capture end-user requirements and to continuously measure and verify the compliance of performance throughout the lifecycle of an actual building project and linked to building information models.
- 5. Recommendations as to how sectoral and/or national indexes for performance indicators can be designed in order to allow for international benchmarking of construction and real estate.
- 6. Dissemination of the lessons learned and tools developed through news articles, press releases, workshops with actors in the real estate and construction cluster etc.

## 1.2 Background, purpose and focus of the case study

The purpose of this case study of the use of search engines at estate agents for benchmarking privately owned homes is:

- To map how cost and value are assessed and made transparent in this type of search engines (performance management and cost/value assessment).
- To explore how these search engines are continuously adapted to accommodate for users' needs (innovation process).
- To analyse the implications of implementing benchmarking by using a commercially driven search engine (implementation – state/market, public policies, intention vs. result).

The study will focus on three different search engines:

- The search engine of the largest estate agent in Denmark namely the company home a/s: [www.home.dk](http://www.home.dk).
- The common search engine for all professional estate agents in Denmark [www.boligsiden.dk](http://www.boligsiden.dk).
- The alternative search engine [www.boliga.dk](http://www.boliga.dk), which provides a range of additional information to the other two search engines.

The actual building being displayed in this study is merely an example to illustrate how a search engine works. The chosen example is a common type of single-family house of 140 m<sup>2</sup> located in Hørsholm, north of Copenhagen. The size of the house represents the typical standard size used by the mortgage institutions etc. to make illustrative calculations of changes in housing costs. Further, the presentation is taken from the website of the largest Danish real estate agent home a/s, which represents state-of-the-art as one of the most advanced search engines on the web. The presentation and information displayed on the websites of other real estate agents may differ on some parts.

## 1.3 Research design and methods applied in the case study

### Theoretical framework

In the past decades a number of new management theories like total quality management, business process reengineering, supply chain management, and benchmarking have emerged within the building and construction industry (see e.g. McGeorge et al. 2002 for an introduction). Often these management concepts and theories have been adopted from writers associated

with mass-production. Adopting benchmarking in construction is no exception.

In the wake of quality assurance, benchmarking and key performance indicators have been emphasised as an effective strategy to improve productivity and stimulate innovation. Over the past decade much work has been done to establish key performance indicators for the performance of both buildings and companies within the construction and real estate cluster.

Benchmarking was introduced by Camp (1989) in his pioneering work at Xerox Corporation. The story of an American company being superseded by its Japanese counterparts and regaining its competitive edge through systematic comparisons with its Japanese sub-company Fuji-Xerox and a mail order firm on sports equipment L. L. Bean has become a famous classic example in the benchmarking literature.

Turning our attention towards the construction and real estate cluster will reveal an increased and wide-ranging interest in benchmarking internationally. Three trends can be identified. First, studies have been conducted within a wide range of subjects like property development indices in the Commonwealth countries (Newell & Webb 1998; Lum 2004) the performance of building authorities in Northern Ireland (McAdam & O'Neill 2002); and methodologies (Massheder & Finch 1998) and priority issues within facility management (McDougall & Hinks 2000). Other studies have focused on various aspects of the building process like the selection of contractors (Palaneeswaran & Kumaraswamy 2000); the performance of contractors (Xiao & Proverbs 2002); and the effect of the use of key performance indicators in the construction industry in Great Britain (Beatham et al. 2004).

Second, several models for benchmarking has been developed within the construction and real estate cluster. Kaka (1999) uses historical data for monitoring the progress of current construction projects in a stochastic benchmarking model. Chan & Chan (2004) uses data from 56 high-rise building projects in Hong Kong to develop a benchmarking model to predict construction times. Li et al. (2001) introduce the COBAP model as a cooperative benchmarking approach to partnering. Sommerville & Robertson (2000) uses a case study of Morrison Construction Group plc to show how construction companies can adopt the excellence model of European Foundation of Quality Management (EFQM).

Third, a number of benchmarking schemes have been implemented around the world. A world-wide search conducted in relation to the Dutch PSIBouw programme identified some 25 examples of construction benchmarking schemes excluding environmental performance schemes established as 'national' benchmarking schemes to improve performance in the construction sector (Bakens, Vries & Courtney 2005).

Adopting benchmarking in the construction and real estate cluster has not occurred without critical notice. As Bresnen & Marshall (2001: 335) points out, the construction industry tends to ignore the problems of transferring theoretical as well as practical knowledge on new management principles from other industries to the construction industry. Garnett & Pickrell (2000: 57) argues that the literature on benchmarking tend to focus on the benchmarks and the design of the benchmarking schemes, but not the theoretically or epistemological underpinnings of benchmarking. As these observers have pointed out, we need to reflect on some of the fundamentals or institutional settings in which benchmarking schemes operate.

### **Research design: Case study**

Search engines for private homes are primarily selected as a case for CREDIT because search engines constitute a paradigmatic case when it comes to performance indicators for private homes (Flyvbjerg 1991). A number of reasons justify the selection of search engines on private homes as a paradigmatic case for CREDIT:

- The search engines are examples of the business model (private/profit) for benchmarking private homes as defined by Haugbølle & Hansen (2006), which allow buyers and sellers to search for and compare private homes.
- The search engines have a very high market share with almost full market coverage, and they are widely used by buyers and sellers.
- The search engines represent the de facto standard on performance indicators when it comes to private homes.
- The search engines are simple and easy to use. They can be used by users with just basic computer and web search skills.
- The search engines may serve as exemplars for how to create a user-driven benchmarking system.
- The case of search engines covers the marketing and sales process of homes, which is not explicitly included in the carpenter model (Pemsel et al. 2009) otherwise being employed in the CREDIT project. Thus, it may challenge the adequateness of the carpenter model.

### **Data and methods**

This case study primarily uses two types of data:

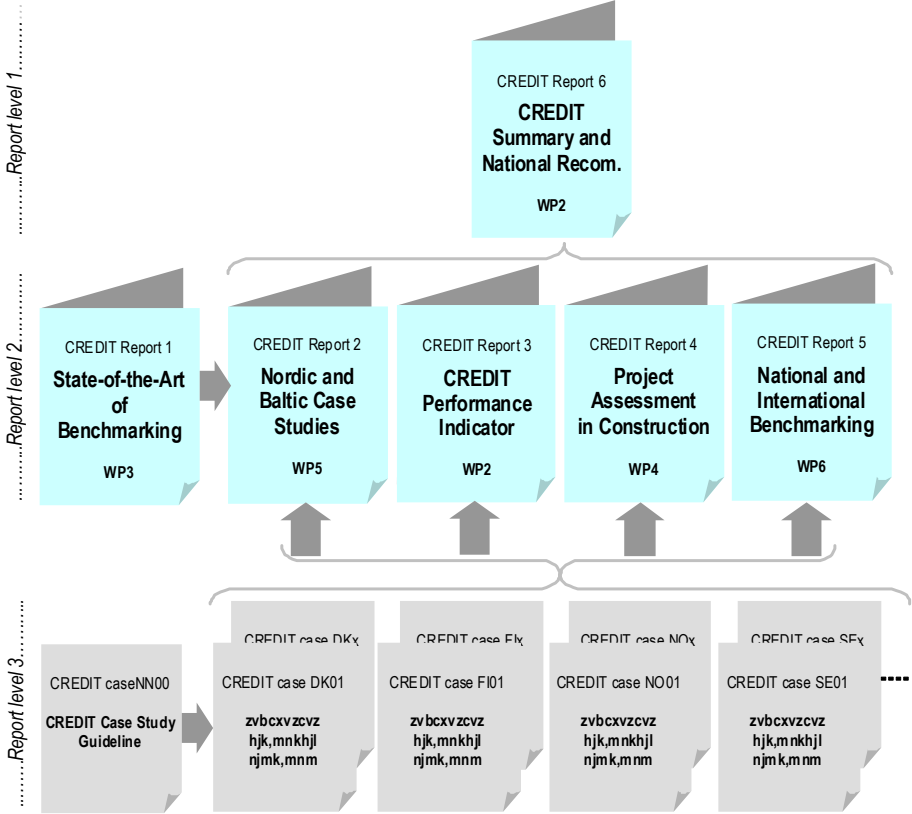
- Documentary material, in particular downloadable material from the three websites in question.
- Qualitative research interviews with 3 individuals representing the three sites or search engines in question: IT manager Hanne Brandt (home a/s), project manager Henrik Thorning (Boligsiden A/S, previously Danish Association of Chartered Estate Agents) and managing director Ricco Zuschlag ([www.boliga.dk](http://www.boliga.dk)).

## **1.4 Reading instruction**

This report summarises the case study of search engines as input to work package 4-6 of the CREDIT project. Chapter 2 in this report addresses issues relevant to WP4 on assessments at project level. Chapter 3 addresses issues relevant to WP5 on the application of assessments in firms. Chapter 4 addresses issues relevant to WP6 on sectoral, national or international benchmarking systems. Chapter 5 discusses and concludes on the lessons learned with respect to the three levels of projects, firms and systems.

The work of each work package (WP) is documented in various other reports, articles etc. Below, a graphical illustration of the hierarchy and linkages between the individual reports is given.

Figure 1. Graphical illustration of the hierarchy of CREDIT reports.



Source: Illustration by Niels Haldor Bertelsen.

## 2. Buildings – assessments in construction or real estate processes

This chapter is particularly relevant for WP4 and CREDIT Report 2 and focuses on the sales process of a specific private building. It addresses questions related to how data and information about the sales process and the building is collected, managed, evaluated and used. Further, the chapter deals with which assessments and indicators are applied in the sales process.

### 2.1 The actual building, building parts and processes

#### **Time and location of building**

The search engines cover the whole country. Principally, there are no restrictions as to the time of erection of the buildings included in the search engines.

The information provided on the individual homes will in principle cover the actual state of the complete building. Thus, as part of the marketing and sales process the real estate agent will gather up-to-date information from the owner, land registry, tax office, utilities etc.

#### **Type of building**

The search engines include existing buildings as well as new buildings (typically project development).

The types of buildings and building sites covered by the search engines include (note that types are defined not only by building type but also by owner status):

- Single-family house/(small) detached house.
- Owner/occupier dwelling.
- Summer cottage.
- Vacant building site for summer cottage.
- Tenants-owner housing.
- Terrace house/Non-detached town house.
- Dwelling in detached house (in Danish: Villalejlighed).
- Farm house.
- Vacant building site for permanent housing.

### 2.2 The applied assessments and tools in the processes

The assessment methods and tools applied in the marketing and sales process include three sets of methods and tools:

- The estate agent's sheet of information (in Danish: Salgsopstilling).
- An energy label.
- A condition report.

#### **The estate agent's sheet of information**

The sheet of information is a presentation of the building for sale in writing according to '*Bekendtgørelse af lov om omsætning af fast ejendom*' and '*Be-*

*kendtgørelse om formidling, udbud og rådgivning ved omsætning af fast ejendom (Formidlingsbekendtgørelsen)*'. The sheet of information serves two purposes: 1) sell the property, and 2) fulfil the governmental requirements for information to the buyer.

The sheet of information shall contain information on e.g. a detailed description of the property, the cash price, gross/net costs, loans and land registry data.

A sheet of information is not mandatory if you sell your property by yourself (which seldom happens). However, documentation of information provided to the buyer is important. If a professional real estate agent undertakes the marketing and sales process for the seller, it is mandatory to provide a sheet of information. The sheet of information is part of the purchasing contract. In any case, correct information to the buyer is essential, since incorrect information can make the seller liable to compensation to the buyer.

Clearly, setting the price of the property is an essential part of the sheet of information. According to an estate agent ([www.home.dk](http://www.home.dk)), the valuation of the taxable value of a property follows four steps:

- Before making the survey, the estate agent will check average prices per m<sup>2</sup> in the neighbourhood and potential district plans.
- On the day of making the survey, the estate agent will take a ride in the neighbourhood to assess the location of the property.
- During the survey, the estate agent will inspect and assess the property with respect to factors affecting the value of the property like level of maintenance, technical installations, floor space, building layout etc. Furthermore the documents of the property will be looked through together with the seller.
- After making the survey, the estate agent will make a further analysis of the documents, price expectations etc. will be discussed with the seller, the case in question will be discussed the colleagues at the estate agent, and the final assessment of taxable value will be presented to the seller.

### **Energy label**

The second type of assessment being employed is the energy label. The energy label scheme (in its present form) was established in 2006 as part of the EU directive on buildings' energy performance. The objective is to save energy. The new energy label scheme substituted two previous schemes for energy labelling of single-family houses and energy management of larger buildings (>1,500 m<sup>2</sup>), which were established 1 January 1997. Further, the energy management scheme of larger buildings had replaced the heating audit scheme (VKO – Varmekontrolordningen) established in 1986.

The energy label scheme is mandatory for all new buildings and existing buildings with a few exemptions like industrial and agricultural buildings. In relation to a sale of a single-family home, it is mandatory for the building owner to have an energy consultant issue an energy label to inform potential buyers of the energy performance of the building.

The energy label is issued to the building owner by a certified energy consultant. There are approximately 1,000 energy consultants in Denmark distributed on ca. 60 % certified for single-family houses and 40 % certified for multi-storey apartment buildings, commercial buildings, administrative buildings and public buildings.

The energy label is calculated using various types of calculation tools – all of which is mandatorily based on a core algorithm developed by the Danish

Building Research Institute/Aalborg University. The algorithm is closely described in SBI Direction 213.

The salary to an energy consultant for issuing an energy label depends on the size of the building. The salary is restricted by a maximum limit of ca. 5-6,000 DKK for certain types of buildings, notably homes regardless of building type and summer cottages.

### **The condition report**

The house inspection system was established in 1996 and has gone a number of revisions during its lifetime. The objective is to ensure consumer protection and information in conjunction with purchase and sale of houses.

The house inspection system applies to single-family houses only. The purpose of the scheme is to secure seller's exemption from his 10-year (previously 20-year) responsibility for hidden faults and defects towards buyer by:

- Producing a valid condition report.
- By offering the buyer a change-of-ownership insurance before the purchase agreement is signed.
- By offering to pay half of the insurance premium.

The change-of-ownership insurance is offered by private insurance companies. The price is typically around 10,000 DKK. The seller is obliged to pay half of the insurance premium, the buyer the other half. The buyer is not obliged to accept the insurance, but declining incurs the transformation of liability for hidden faults and defects to the buyer.

Although the house inspection system is voluntary, some 60-80,000 reports are produced each year. In 2004, effectively more than 95 % of all sales of single-family homes involve the house inspection system. The figures are somewhat lower when it comes to summer cottages, namely 62 %. Only 8 % of sales of flats involve a condition report. The number of change-of-ownership insurances issued has increased to 65 % of all sales in 2004 following a number of significant changes over time (Public Affairs & IBM, 2006).

The condition report is worked out by a building expert appointed by the Danish Enterprise and Construction Authority. Around 600 building experts are appointed. Each building expert has to fulfil certain professional qualifications and must successfully participate in a four-day access course. Effectively the secretariat of the scheme is outsourced to the FEM Secretariat responsible for this scheme along with the energy label and three other schemes.

The condition report describes *visible* faults and defects of the building only, since the hidden faults and defects in principle are covered by the insurance. The building expert is not allowed to move around furniture for closer inspection or to make any tests, whether destructive or not. The assessment carried out by the building expert relates the condition of the building to similar buildings of same type, age and conditions – and not with a new house.

The salary for conducting a condition report depends on the size of the building. Maximum limits on salaries are set by the government, and these limits are in the range of 5-10,000 DKK per inspection and condition report.

## 2.3 Cost and performance indicators applied in the assessments

### **The estate agent's sheet of information**

The sheet of information provided by estate agents typically comprises 6-10 pages. The sheet of information is requested by law to include a detailed description of the property and the following information:

- 1) The cash price.
- 2) Information on mortgages and bank loans as well as a standard financing scheme.
- 3) Gross/net expenses.
- 4) Utilisation costs.
- 5) Cash payment required to finance and finalise the purchase.
- 6) Latest property value and land value according to public valuation.
- 7) Plot, building and built-up area (BBR registry) possibly including distributional keys for heating etc.
- 8) Land registry number, location, present use and previous use if different from present use.
- 9) Present insurance including special conditions e.g. non-insurable against dry-rot and insect.
- 10) Burdens and liabilities of the property or seller, which the buyer must take on outside the purchase amount.
- 11) Energy performance.
- 12) Special or extensive limitations of use due to district plans, servitudes etc.
- 13) Pollution mapped according to knowledge level 1 or 2, or information on light polluted soil.
- 14) Economic or personal circumstances, including:
  - a) any economic or personal interest that the estate agent may have in closing a deal or in the buyer's choice of finance, insurance or other services in relation to the purchase of property, or
  - b) that the estate agent do not have the interests mentioned in 14a).
- 15) Other items of significance.

### **An energy label**

The energy label operates with predefined energy categories ranging from A to G, with A being the best and G being the poorest energy performance.

The energy consumption is calculated in two ways:

- Energy costs per year in DKK including taxes, rates and dues.
- Energy consumption per year in kWh for electricity, m<sup>3</sup> for gas etc.

The report on the energy label typically comprises 6-10 pages. The report includes:

- Basic information on the property and the assessor.
- Calculated heat consumption.
- Energy label (category A to G).
- Proposals for energy saving measures.
- Savings and financing.
- Free text comments describing the analysis of energy performance.
- Detailed building inspection by energy consultant.
- Detailed basic information on property.
- Assumptions used in calculation.
- General information on energy labelling.

### **The condition report**

The condition report uses the following grading scale for the assessment:

- IB: No comments.
- K0: Cosmetic faults and defects.
- K1: Less serious faults and defects.

- K2: Serious faults and defects.
- K3: Critical faults and defects.
- UN: To be analysed further.

The grading scale is applied in the assessment of the building divided in to 11 main building parts. The results of the individual inspections are summarised in a table similar to Table 1 shown below.

Table 1. Summary of condition report.

	Assessment::	IB	K0	K1	K2	K3	UN	Note
Building parts:								
1. Foundations/basis				1				x
2. Cellar/crawl space/ground deck				1		1		x
3. Outer and inner walls				1				
4. Windows and doors				1	1			x
5. Ceilings/floor structure (horizontal division)		x						
6. Floors		x						
7. Internal stairs		x						
8. Roof structure					1	1		x
9. Bath/toilet and utility room				3				x
10. Plumbing(heating/water/sewage)/HVAC		x						
11. Electrical installations						1	1	x

The condition report typically comprises a report of around 20 pages including:

- Basic information on the property and the assessor.
- General information on the house inspection system, grading scales etc.
- Detailed observations on each of the 11 building parts summarised in the above table.
- Questionnaire to be answered by the seller.
- Summary information to the insurance company from the assessor on the results of the inspection.

## 2.4 Relation to different enterprises and national benchmarking

The assessments employed serves two main purposes: transparency and consumer safety in the marketing and sales process of homes.

Transparency is strongly enforced through the establishment of various search engines (to be described in more detail in Chapter 3 and 4), which makes it possible for all groups of users – estate agents, sellers and buyers – to access the excessive amount of data on any given property provided by the sheet of information, energy label and condition report. The increased market transparency created by the different sets of assessments and their accessibility through search engines are used by estate agents and sellers as well as buyers to set a 'fair' price in the marketing and sales process. The ability to monitor the market with the use of limited resources makes it much easier for estate agents, sellers and buyers alike to navigate. Consequently, transparency makes comparisons (benchmarking) easier for all actors.

Yet some distinct differences in the use are apparent. The sheets of information are primarily a *marketing device* used by sellers and estate agents, less so when it comes to the energy label and the condition report. Clearly, the objective is to make the actual property as attractive as possible to potential buyers. Very 'creative' presentations are countered by strict public regulation

on the content of the sheet of information. On the other hand, the search engines have made the sheets of information much more accessible to the buyers. Buyers use the sheets of information (and less so the energy label and condition report) as a *selection mechanism* to find the most appropriate purchase of home given a wide variety of criteria being building type, location, price, size etc.

The other main purpose served by the assessments is that of consumer safety in the marketing and sales process. Especially the house inspection system has been created for liability reasons. Despite close to 1 million condition reports being issued since 1997, no official statistics or benchmarks on the performance of homes is provided e.g. 'houses built in the 1950s on average has a higher number of defects in category K3 than others'. Some estate agents like home a/s has on several occasions even argued against both the energy label and the condition report as wasteful use of resources. Since the sales process entails the transfer of liabilities with potential damaging effects to the seller's or the buyer's private economy, the house inspection system has been contested but is nonetheless being deployed with a very high market share.

In a similar vein, previous studies conducted at the Danish Building Research Institute have documented that energy savings are not a prime concern to home owners (Jensen 2005). Further, in a comparative study between Denmark and Belgium Gram-Hanssen et al. (2007: 2879) has analysed how house owners interpret and use the knowledge from labels for the renovation of their house:

*'The article questions the faith in the rational enlightened actor, which is at the basis of the idea of labels. Using sociological theories on knowledge and everyday life in the interpretation of the qualitative material, it is shown that people relate to, interpret and question new knowledge rather than just take it in. Furthermore, it is also shown how the use of knowledge and advice interact with other priorities in everyday life. These results can help explain why people often do not carry through energy measures even though it might be economically advantageous to them.'*

## 2.5 Innovation and visions for future improvements

Whether the three assessment methods and tools described above are going to be changed or not, is primarily subject to changes in governmental regulation. As for now (May 2009) there are no immediate plans to change the three assessment methods and tools.

One of the main lessons to be learned is that a wide range of information is already available through these three assessment methods and tools. These assessments cover a number of the key performance indicators discussed in CREDIT like price, size, location, energy performance and building performance (however, most notable visible defects or damages).

What seems to be more pressing – and definitely contested – is the need for performance indicators focused on the performance of services provided by the actors, in particular the estate agents. This is in essence what the competing website of Boliga aims to do. We will return to this issue in more detail in Chapter 4.

None of the interviewees has by themselves pointed at the need to include new performance indicators on e.g. building performance. Instead they argue that building performance is something that can be changed (at a price, off course), whereas the location remains fixed. However, the foundation Realdania has rather recently procured a study on perception and satisfaction among users with the building inspection scheme and condition report. Based on a survey among sellers and buyers with experience with the building inspection scheme, the study concludes (Public Affairs Group & IBM, 2006: 7-10):

- 1. 90 % of the home owners find the building inspection scheme valuable.
- 2. 7 out of 10 home owners has confidence to the insurance scheme.
- 3. 8 out of 10 home owners has confidence to the condition reports.
- 4. A significant majority of 75 % of home owners wishes to preserve the scheme, but a significant minority of 20-25 % wishes to abolish the scheme.
- 5. Despite the confidence of the consumers, there is a huge gap between the way the consumers *perceive* the scheme works and the way the scheme actually works.
  - a. Communication of conditions pertaining to the preparation of a condition report, in particular the fatal misconception that the assessments are based on comparisons with e.g. a new building.
  - b. The consumers (8 out of 10) think that the quality and usability of the condition report is hampered by being based on visual inspections only.
  - c. The grading scale is extraordinary difficult for the consumers to understand. In particular, the focus is on the character K3, while the seriousness of K2 is left out of concern and the risk of UN is ignored.
- 6. There is a noticeable wish among consumers to improve consumer protection by expanding the coverage of the condition report. As a starting point the consumers wish the *complete* facility to be assessed, and the insurance to cover *all* hidden damages and defects – thus including e.g. illegal installations. If the condition report is to be expanded, a number of specific building performance issues are considered important or very important by the consumers:
  - Issues with more than 75 % backing include:
    - Environmental impacts e.g. earth pollution and noise pollution.
    - Function, lawfulness etc. of electrical and plumbing installations.
    - Installations outside the building like drainage.
    - Illegally erected buildings on the plot.
    - Possibility of discussing the condition report with the building inspector.
  - Issues with 50-70 % backing include:
    - Outdoor facilities like oil tanks, swimming pools etc.
    - Indoor climate.
    - Remaining lifetime of vital building components like roofs and windows.
    - State of maintenance.
    - Cost of repairing damages and defects.
- 7. Consumers are willing to pay for an expansion of the scheme. The willingness to pay is estimated at an additional cost of 2,000 DKK for the condition report and 1-2,000 DKK/year for the insurance.

### 3. Enterprises – assessments and indicators internally applied

This chapter focuses on how a leading chain of estate agents home a/s applies the assessments and indicators internally in the firma, company or organisation to control and improve their business.

#### 3.1 The actual enterprise, company and firm

In this case study, we are focusing on the Danish chain of estate agents home a/s. The chain was established in 1990 as a fully controlled subsidiary of the mortgage institution Kreditforeningen Danmark. The chain was from the outset a nationwide chain with about 120 real estate agencies across the country. Each agency is an independent franchisee (Bjørnbirk ed. 2004).

Shortly after its kickoff, home a/s launches a national database in 1991 making it possible for customers to visit any estate agency of the chain and browse through all properties for sale by home a/s nationwide. Just a few years later, home a/s launches a housing newspaper BoligAktuelt in 650,000 copies to increase to one million within short. This was quickly followed by similar newspaper for summer cottages and one for commercial properties (Bjørnbirk ed. 2004).

In the mid-1990s, home a/s initiates a quality assurance concept labelled 'SundhedsAttest' and buyer's insurance as a new service. This was essentially a precursor to the condition report and the house inspection system, but with a more elaborated scope e.g. including the cost associated with repairing the defects (Bjørnbirk ed. 2004).

In 1996, home a/s became the first Danish nationwide chain of estate agents to open a site on the web with access to all of their private properties for sale. It is not surprising to witness home a/s as the first chain on the internet. Indeed, home a/s has been a market leader in developing and implementing new web-based services ever since like the '3D Interior Planner', 'Click-a-Price', 'Best Bid', 'Know-Your-Neighbourhood', 'Parents' Buy Calculator' etc.

Today, the chain of home a/s has some 200 agencies nationwide with 1,000 employees. The agencies are run by some 100 franchisees each operating from 1 to 15 agencies. The chain is fully owned by the mortgage institution Realkredit Danmark A/S, which in turn is owned 100 % by the bank Danske Bank A/S. Further, home a/s collaborates closely with the second largest insurance company Topdanmark ([www.home.dk](http://www.home.dk)).

Today, the Danish estate market is dominated by four chains of estate agents: home a/s, EDC, Nybolig and Danbolig. Assessed by the value of private property being sold, home a/s is the single largest estate agent in Denmark (see Table 2).

Table 2. Turnover (2007, million DKK).

Chain	Tenants- owner	Dwelling	Summer cottage	Farm house	Detached house/terrace house	Sum	Market share
Base 1	29	1.633	-	-	116	1.778	1 %
Danbolig	227	7.621	1.891	759	21.364	31.861	14 %
EDC	302	9.056	3.642	972	28.568	42.539	18 %
Estate	130	2.840	679	465	7.396	11.511	5 %
home	238	12.919	2.862	969	30.480	47.467	20 %
Livingstones	8	345	13	-	188	554	0 %
Nybolig	437	11.041	3.669	1.341	24.483	40.971	18 %
Realmæglerne	133	2.622	870	410	5.417	9.453	4 %
Robinhus	9	746	128	28	1.134	2.045	1 %
Safe	-	114	37	4	118	274	0 %
Others	459	9.132	4.359	3.199	27.081	44.228	19 %
<b>Sum</b>	<b>1.972</b>	<b>58.070</b>	<b>18.150</b>	<b>8.146</b>	<b>146.344</b>	<b>232.682</b>	<b>100 %</b>

Source: [www.home.dk](http://www.home.dk) (based on the RealView® database (e-nettet / RealViewTNI)). Note: Turnover calculated as value of homes removed from the web.

### 3.2 Assessments methods and tools applied in the enterprise

Obviously, the estate agents are using the three assessment methods discussed in the previous Chapter 2 – sheet of information, energy label and condition report – in their daily work with the marketing and sales process. Further, the data is presented and searchable as described in the following Section 3.3. The question is how the firm manages and uses the information internally.

Some of the chains of estate agents like EDC have developed their own internal information management systems, but the majority has purchased either one of the two prime systems developed specifically for estate agents. Home a/s has chosen C&B Systemer as their supplier of real estate information management system. C&B Systemer covers some 60 % of the estate agencies on the housing market and about 80 % of the commercial property market. As part of the franchise contract the franchisees are obliged to use the real estate information system chosen by home a/s.

C&B Systemer is an independent firm established in 1978 with now 35 employees. The firm has developed various systems for different building types like private property and commercial properties. The system for housing consists of a base system with individual modules to add if so wanted. The information management system is designed to handle the information flow throughout the case handling. Below Figure 2 shows the headlines of the system ([www.cb.dk](http://www.cb.dk)).

Figure 2. Headlines of the information management system.



Source: Screen dump from [www.cb.dk](http://www.cb.dk).

The C&B housing system automates a number of functions in the management of the sale process of private housing. The system uses Windows standards and Microsoft Word as standard word processor. The information management system has an inbuilt facility for online communication and updating with e-nettet and the internet e.g. mapping features by Krak/Eniro. E-nettet is an online service provided by the Danish mortgage banks, where information on property data, debts on the property, bond rates etc. can be found and updated automatically. The system also includes a number of templates and standard letters following the agreed documents of the Danish Association of Chartered Estate Agents. These include standard contract for marketing, sales budget, proceeds, sheet of information, marketing material, purchase contract, budget for buyer, power of attorney etc. ([www.cb.dk](http://www.cb.dk)).

The information management system includes a range of other features. One feature is a comprehensive financial calculation tool. The calculator can be used for a number of simulations and includes all types of loans from Danish banks and mortgage institutions. Another feature is an image processing module to produce sales material for print and internet presentations e.g. feeding data forward to Boligsiden. The information management system also contains a document handling feature, including various archival features ([www.cb.dk](http://www.cb.dk)).

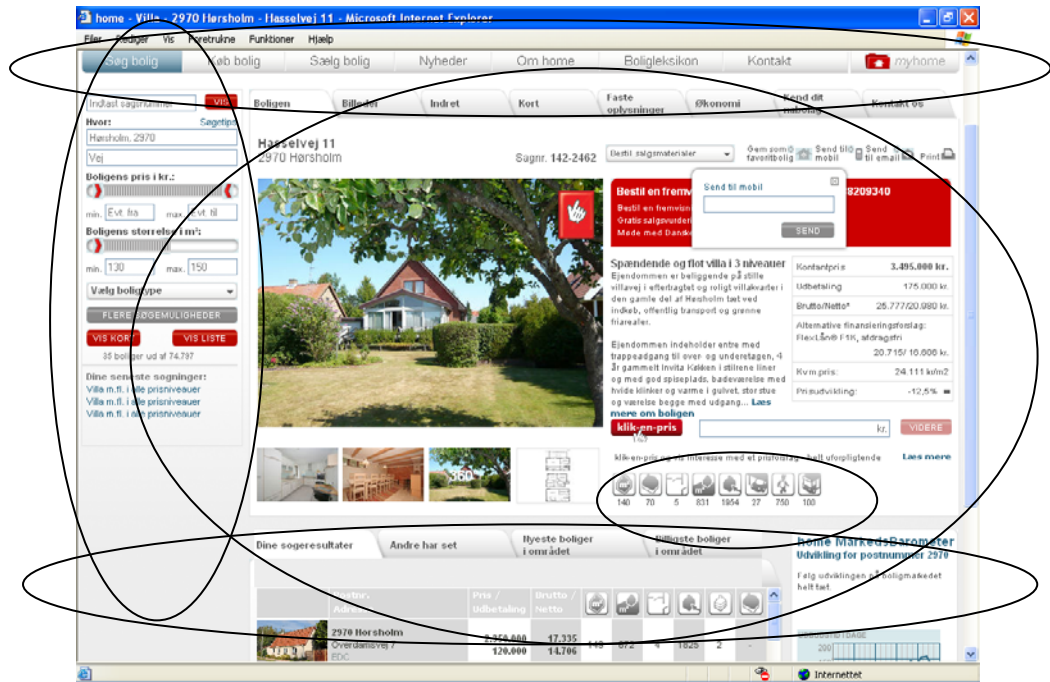
The information management system includes a number of features aimed at the buyers. These features include a financial and budgeting calculation tool to calculate the sum of money at the disposal of the buyer after purchase of a property. Further, the system contains an advanced customer relations management module, which makes it possible to archive potential buyers' preference and make cross-references from a specific property ([www.cb.dk](http://www.cb.dk)).

### 3.3 Costs and performance indicators applied in the enterprise

#### **Simple search facilities**

The figure shown below shows an example of a single-family house being advertised for sale by a real estate agent – home a/s. In this case the documentation stems from a screen dump from the real estate agent. The sites of many other real estate agents look rather similar, but the site of home a/s is one of the most advanced sites.

Figure 3. Screen dump of an example of a house for sale at home.



Source: Adapted from screen dump from [www.home.dk](http://www.home.dk).

Beside of the top banner commercials (left out here), the top frame of the website contains a number of tabs. From left to right the tabs are:

- Search a home.
- Buy a home.
- Sell a home.
- News.
- About home.
- Housing dictionary.
- Contact.
- *myhome*.

At the left frame, you find various search options like:

- Reference id.
- Address.
- Price.
- Size in m<sup>2</sup>.
- Extended search facilities.

The major frame of the site contains the actual house of interest. From left to right the tabs include:

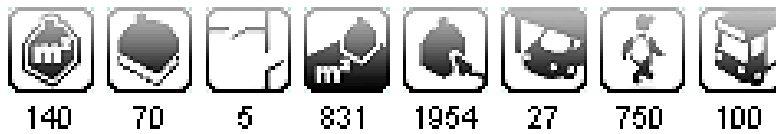
- General description of the house.
- Pictures.
- Fit out.
- Map.
- Obligatory building data (like type of windows, roof and heating system).
- Economy.
- Know your neighbourhood.
- Contact home.

In the bottom right corner of the description of the actual house, a number of pictograms are depicted showing from left to right (see Figure 4):

- Size in m<sup>2</sup>.
- Size of basement in m<sup>2</sup>.
- Number of rooms.
- Plot size in m<sup>2</sup>.

- Building year.
- Size of garage in m<sup>2</sup>.
- Distance to school in m.
- Distance to public transportation in m.

Figure 4. Screen dump of pictograms.



Source: Screen dump from [www.home.dk](http://www.home.dk).

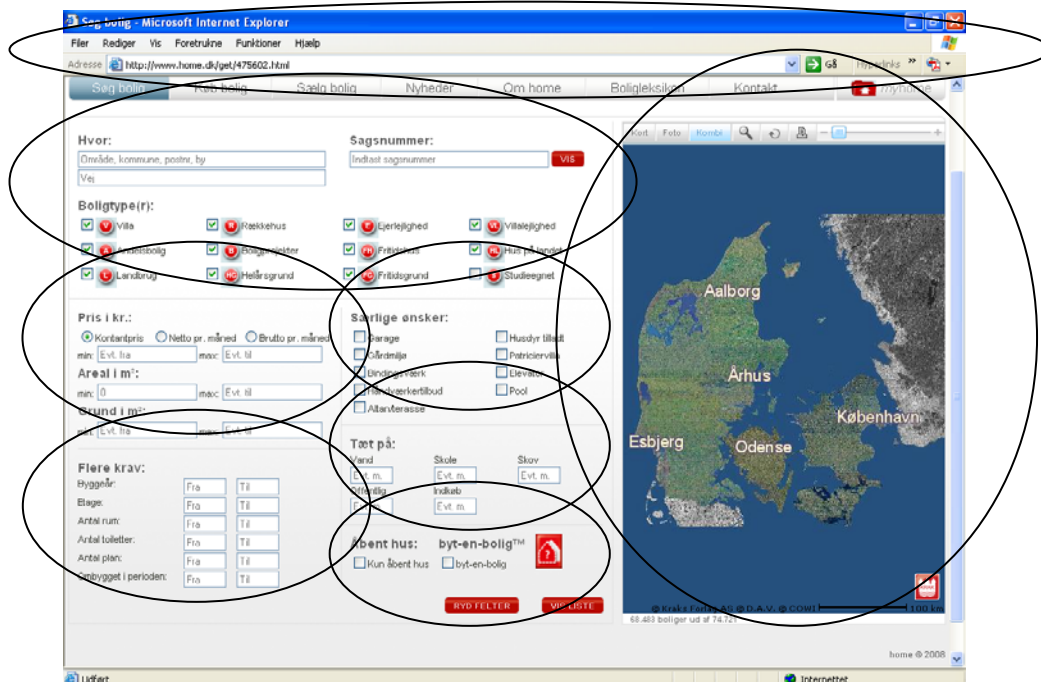
In the bottom frame the site contains a number of tabs (from left to right):

- My search results.
- Other visitors also visited.
- Newest houses for sale in the area.
- Cheapest houses for sale in the area.

### Advanced search facilities

Below the advanced search options at the website of home a/s can be seen (see Figure 5).

Figure 5. Screen dump of advanced search facilities.



Source: Adapted from screen dump from [www.home.dk](http://www.home.dk).

At your right hand side, the map/photo of Denmark displays the results of the search. The display can be shown as a map, photo or a combination (shown here).

The search options or indicators being used is grouped in six. You can narrow your searches using any combinations of the options or indicators. Near the top, you can search by using the following options (see Figure 6):

- Location: Can be specified by area, municipality, zip code, city or road.
- Reference identification number.

- Housing type: Single-family house/detached house, tenants-owner housing, farm, semi-detached house, housing development projects, vacant building site for permanent housing, dwelling, summer cottage, vacant building site for summer cottage, dwelling in small detached house, house in the country side and student apartment.

Figure 6. Types of searchable buildings.

**Boligtype(r):**

<input checked="" type="checkbox"/> <b>V</b> Villa	<input checked="" type="checkbox"/> <b>R</b> Rækkehus	<input checked="" type="checkbox"/> <b>E</b> Ejerlejlighed	<input checked="" type="checkbox"/> <b>VL</b> Villalejlighed
<input checked="" type="checkbox"/> <b>A</b> Andelsbolig	<input checked="" type="checkbox"/> <b>B</b> Boligprojekter	<input checked="" type="checkbox"/> <b>FH</b> Fritidshus	<input checked="" type="checkbox"/> <b>HL</b> Hus på landet
<input checked="" type="checkbox"/> <b>L</b> Landbrug	<input checked="" type="checkbox"/> <b>HG</b> Helårsgrund	<input checked="" type="checkbox"/> <b>FG</b> Fritidsgrund	<input type="checkbox"/> <b>S</b> Studieegnet

Source: Screen dump from [www.home.dk](http://www.home.dk).

Further, down your right hand side you will find search options like (see Figure 7):

- Price: Select between cash, net price/payment per month or gross price/payment per month.
- Size of building in m<sup>2</sup>: A search can be narrowed by setting minimum and maximum values.
- Size of plot/property in m<sup>2</sup>: A search can be narrowed by setting minimum and maximum values.

Figure 7. Various top-level search options.

**Pris i kr.:**

Kontantpris  
  Netto pr. måned  
  Brutto pr. måned

min:  max:

**Areal i m<sup>2</sup>:**

min:  max:

**Grund i m<sup>2</sup>:**

min:  max:

Source: Screen dump from [www.home.dk](http://www.home.dk).

At the bottom left hand side, a number of additional search criteria can be added (see Figure 8). In each case a search can be narrowed by setting minimum and maximum values of:

- Building year.
- Which floor.
- Number of rooms.
- Number of toilets.
- Number of storeys.
- Year of refurbishment.

Figure 8. Additional search options.

**Flere krav:**

Byggeår:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>
Etage:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>
Antal rum:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>
Antal toiletter:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>
Antal plan:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>
Ombygget i perioden:	<input type="text" value="Fra"/>	<input type="text" value="Til"/>

Source: Screen dump from [www.home.dk](http://www.home.dk).

In the middle section, special wishes can be specified by ticking the appropriate box. The options include (see Figure 9):

- Garage.
- Attractive inner courtyard.
- Half-timbered house.
- Extensive renovation required.
- Balcony/terrace.
- Pets allowed.
- Patrician villa.
- Elevator.
- Pool.

Figure 9. Search facilities for special wishes.



Source: Screen dump from [www.home.dk](http://www.home.dk).

Right below, the closeness of the home to a number of facilities can be specified. These include (see Figure 10):

- Water (harbour, beach, lake and the like).
- Public transportation.
- Schools.
- Shopping.
- Wood (forest, fields and the like).

Figure 10. Proximity to various facilities.

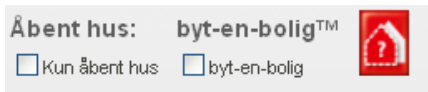


Source: Screen dump from [www.home.dk](http://www.home.dk).

At the bottom, the last two options are displayed (see Figure 11):

- Only include 'Open house'.
- Only include 'Swap-a-home'.

Figure 11. Additional features.



Source: Screen dump from [www.home.dk](http://www.home.dk).

### 3.4 Relation to building cases and benchmarking organisations

The real estate information management system is effectively building a communication bridge between the building level, the firm level and the national system level. Thus, the information management system is the core

system binding together the three levels in the daily practices of estate agents. The information management system is being used for input and import of data as well as export of data.

The real estate agents can use the system not only to input data on e.g. sellers and buyers but also to import data from a number of other external national systems e.g. on average sales prices from the Association of Danish Mortgage Banks and data on size etc. from the land registry (BBR/OIS). Further, the system can be used to export data to websites, information sheets etc.

### 3.5 Innovation and visions for future improvements

The overall innovation strategy of home a/s is to become the largest estate agent chain by pursuing a first-mover strategy of constantly developing and implementing new web-based features and services in the marketing and sales process. Consequently, Boligsiden only exist in order to comply with the governmental regulation and is a secondary priority of not only home a/s. Thus, without the governmental pressure on the association of estate agents Boligsiden would probably not exist. In fact, the individual estate agent chains are more concerned with profiling their own websites.

Input to new features and services stems from various sources: user questionnaires are regularly conducted, the search profiles of users are anonymously analysed, feed back is regularly obtained from estate agencies, and the marketing department and the IT department at the headquarters frequently interact on developing new features and services.

The implementation process is facilitated by the franchise organisation. As part of the overall franchise organisation, central departments for IT and marketing have been established. Each of the individual franchisees needs to adhere to common and standardised ICT systems, marketing concepts etc. developed and implemented centrally at the headquarters of home a/s. All IT systems are leased by the franchisees from the headquarters of home a/s.

Although the IT manager of home a/s expressed concerns of beginning to run out of ideas, the future visions and plans include a number of features to be explored by home a/s. In a similar vein to the search engines for used cars (Bilbasen), using interactive maps to define a search by distance is considered. Another option to be possibly explored is frontloading the energy label. However, most estate agents consider the energy label a waste of resources. Thus, it is more likely to be information displayed rather than being a criteria to search upon. Finally, using tagging and defining an ontology for free text searching is also on the list.

One of the lessons to be learned by home a/s in relation to CREDIT is that the focus and scope of assessments on private property is more about compliance with public regulation and transparency – open access to a wide variety of information – than on benchmarks in a very strict sense. Nevertheless, the dynamic character of the search facilities along with the bulk of data available makes it an inspiring approach to pursue in CREDIT.

## 4. National benchmarking – indicators, assessment and organisation

This chapter focuses on national search engines for private homes, which can be used to benchmark private homes. In this chapter, we will take a look at the website [www.boligsiden.dk](http://www.boligsiden.dk) as our starting point, since this has been a very prominent search engine for private homes.

### 4.1 The actual benchmarking organisation and its purpose

#### History of a marketing device

The search engine [www.boligsiden.dk](http://www.boligsiden.dk) was formally established in the autumn 1998 by the Danish Association of Chartered Estate Agents. But before dealing with that particular search engine, we need to start somewhere else. The history of search engines is basically a history of digitalising the services of the estate agents.

In the late 1960s, the first attempts to digitalise the business and work processes of estate agents became manifest. At the annual winter assembly in the Danish Association of Chartered Estate Agents, it was proposed to implement an electronic market place for properties using a system developed by IBM in collaboration with a smaller group of members of the association. The system was supposed to be an internal business system, not to be used by the customers but by the estate agents. Still, the proposal was highly controversial.

Despite three working groups and a road show around the country, things were stalled until 16 August 1971 when a small group of estate agents launched their own system called 'Ejendomsmæglerne DATATEK'. During the 1970s another system also came about, which effectively formed the creation of a new chain of estate agents – EDC, short for 'Ejendomsmæglerne Data-Centrum'.

The year 1985 became a turning point, which almost disrupted the association. Debates arose on developing a new common system 'E-info' for all estate agents in collaboration with one mortgage institution BRF. First of all, the other mortgage institutions representing some 80 % of the total mortgage loans were very dissatisfied with the monopolistic position BRF would attain and insights in to loan procedures etc., which BRF could obtain from the system. Second, the EDC Group was considered disloyal to the association since the chain was working on a similar idea with the two other major mortgage institutions Nykredit and Kreditforeningen Danmark. After long and harsh negotiations, the association eventually withdrew from the development of E-info, which was established as a separate commercial entity outside the association. A year later, the three mortgage institutions launches a common new firm called REALDATA to develop software for estate agents, which effectively marked the death of E-info.

In the beginning of the 1990s, the EDC Group utilises some of the options in their digital system to start publishing statistics e.g. on the price for sale of single-family homes and dwellings distributed on the quarters of the year.

In 1996, the chain of estate agents home a/s is the first Danish estate agent to launch a website, where buyers can get access to all the properties for sale within the chain. Shortly after a think tank established by the Ministry of Commerce launches its report on streamlining the sales process. One of the proposals within the report was to utilise the new opportunities offered by the internet to establish a common search engine for private homes. Some of the chains of estate agents, especially Nybolig and home a/s, were very sceptical, but the Ministry of Commerce threatened with establishing the search engine under public management instead. Eventually the chains accepted that the association of estate agents would take on the task of establishing and operating the search engine to be known under the name of Boligsiden. Thus, the association could take decisive control of both cost and course of development of a marketing device considered extremely important for the estate agents.

### **Operator and organisation**

The association of estate agents was formed in 1912 to safeguard the members' business interests. The number of members amounted to 2,731 estate agents (1 December 2005), which is approximately 94 % of all practising Danish estate agents. The members are either owner of an estate agency or employed in such a business. There are approximately 1,500 estate agencies in Denmark.

The search engine [www.boligsiden.dk](http://www.boligsiden.dk) was put into an independent limited company named Boligsiden A/S owned fully by the association of estate agents, since the chains did not want ownership. Until recently (2008), the company was fully owned and operated by the Danish Association of Chartered Estate Agents. Except for 5 % of the shares still owned by the association, the search engine is now owned by a group of shareholders consisting of the four main chains as well as independent estate agents.

A company board has been established with a chairman from an independent ICT firm, a representative from the association, one representative from each of the main estate agents chains and one representative of the independent estate agents.

### **Financing**

Until recently (2008), the operation of the site has been financed by contributions from the association of estate agents and the chains of estate agents. When the company was formally and physically dissociated from the association, a new financing scheme came into existence. Besides the income from issuing shares to the shareholders, the website now also gain income from selling various banner commercials.

### **Coverage of building types**

The search engine covers both existing buildings and new building (typically project development). The following types of buildings are included:

- Single-family house/detached house.
- Semi-detached house.
- Dwelling.
- Dwelling in small detached house.
- Summer cottage.
- Farm house.
- Vacant building site for summer cottage.
- Site for all-year housing.
- Tenants-owner housing.

## Market share

The search engine includes only private homes for sale from professional estate agents and not from private individuals. Although some private homes are sold by private individuals, the overwhelming majority is sold with the assistance of professional estate agents. At present (April 2009), some 75,000 homes are for sale.

Despite hardly any marketing of the website, the search engine quickly generated a very significant traffic after its start. According to counts made by FDIM as of April 2009, [www.boligsiden.dk](http://www.boligsiden.dk) is one of the top 50 Danish websites with more than 400,000 unique users each month.

## 4.2 Assessment applied in the benchmarking organisation

### Who collects data?

Data for [www.boligsiden.dk](http://www.boligsiden.dk) is collected and delivered by the estate agencies. Data stems from the sheet of information.

### How is data collected?

A predefined data set structure has been defined by the estate agencies. This database structure is applied in the internal systems of the estate agencies.

Updating of data can take place whenever the estate agencies want to. Automatic updates are installed by most estate agencies. Most estate agencies choose to have several daily updates. Only a few choose to have one daily update typically by night.

### Data validation

Whether incoming data is correct or not, is not checked by the administration of the website. Rather, this is the responsibility of the individual estate agencies as part of their normal duties as estate agents.

Incoming data from the estate agencies to [www.boligsiden.dk](http://www.boligsiden.dk) is checked and validated automatically and manually for obvious flaws. A number of built-in checks ensure that e.g. the estate agency can not leave fields empty, but will be prompted an answer before a data session can be finished. Other checks are made manually.

## 4.3 Cost and performance indicators applied in benchmarking

In the first 10 year life time, the search engine and portal was only changed slightly. The content of the portal (as of November 2008) is divided in three focus areas:

- Search for housing: Data on all houses for sale in Denmark in order to give a comprehensive overview of the housing market.
- The ABC of housing: Information on the sale process step-by-step including guidelines, tools and documents.
- Housing statistics: The recent update of the site includes various statistics on the housing market in general and with search options for your specific neighbourhood.

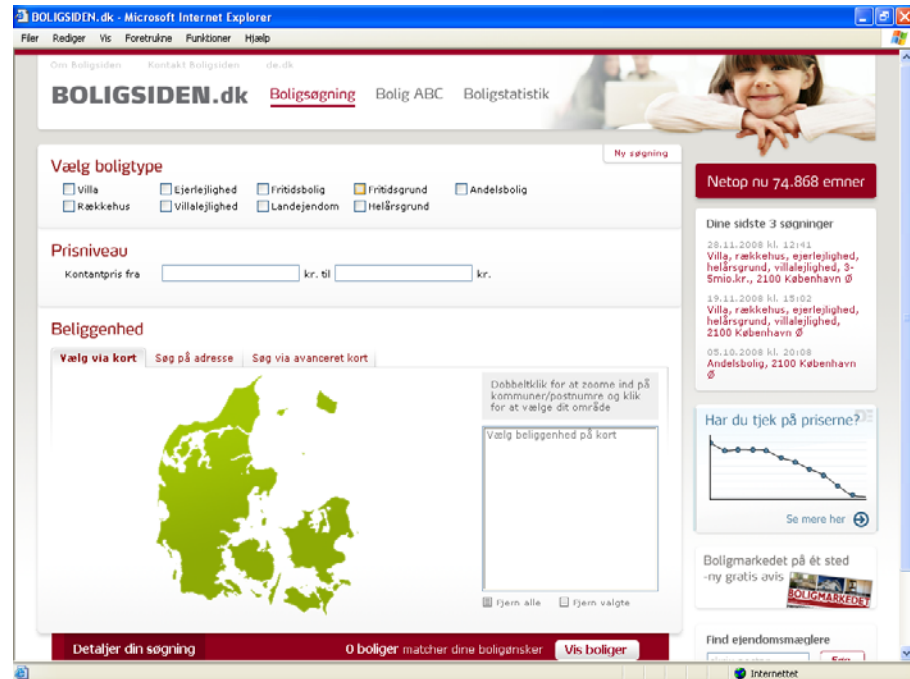
### Search for housing

In the simplest version at the front page, the user can specify a search for housing using only three criteria. These three criteria have not come about

as a result of in-depth user studies, but rather as a pragmatic response based on the experiences of highly experienced estate agents. The three main search criteria are (see Figure 12):

- Type of housing.
- Price level. Minimum and/or maximum values can be specified to limit search results.
- Location: Choices can be made using the interactive map, specifying an address (or zip code etc.) or by using the advanced mapping functionality.

Figure 12. Top-level search facilities.



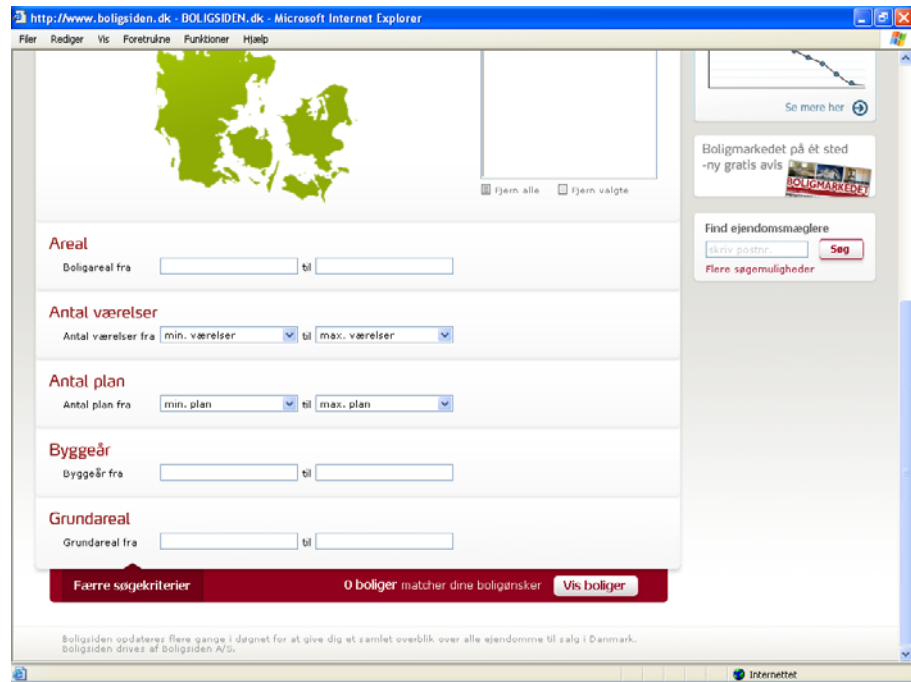
Source: Screen dump from [www.boligsiden.dk](http://www.boligsiden.dk).

In more advanced searches, the search facilities for housing contain several additional search options that can be used as pleased (see

Figure 13):

- Floor space/area: Minimum and maximum can be specified to limit search results.
- Number of rooms. Minimum and maximum can be specified to limit search results.
- Number of floors. Minimum and maximum can be specified to limit search results.
- Building year. Minimum and maximum can be specified to limit search results.
- Site/property area. Minimum and maximum can be specified to limit search results.

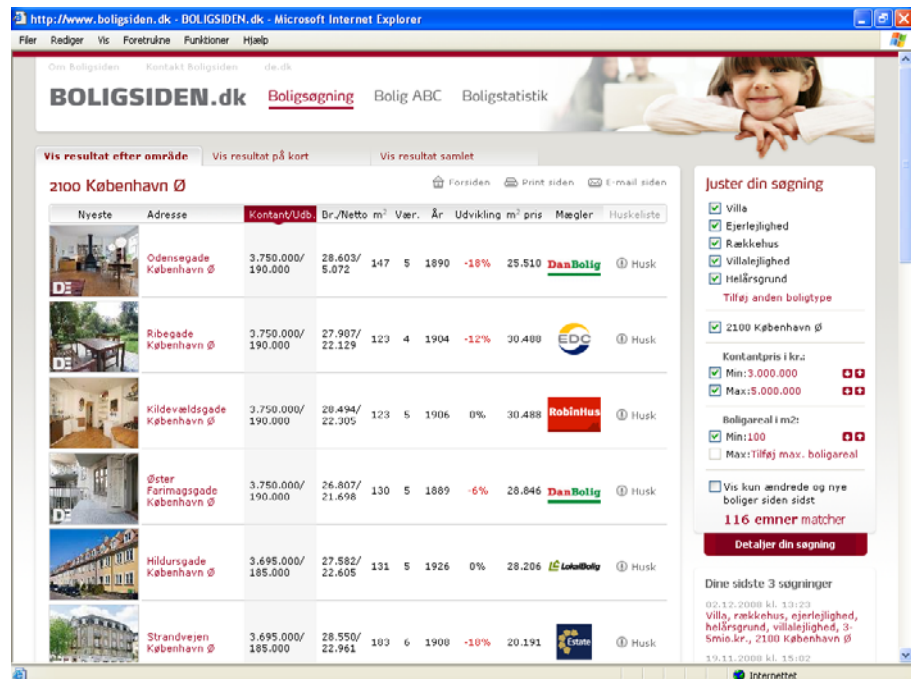
Figure 13. Additional top-level search options.



Source: Screen dump from [www.boligsiden.dk](http://www.boligsiden.dk).

The search results are shown in the next Figure 14:

Figure 14. Search results.



Source: Screen dump from [www.boligsiden.dk](http://www.boligsiden.dk).

The search results will be displayed with a number of key indicators:

- A picture of the house.
- The address.
- Price/down payment.
- Gross/net payment/price per month.
- Size in m<sup>2</sup>.
- Number of rooms.
- Building year.
- Change in price in % since first advertised.

- Price per m<sup>2</sup>.
- Real estate agent: Logo.
- Add/create your own list.

If you double-click on any of the shown results, a new window will appear. This window will automatically show the specific house for sale at the actual real estate agent's website.

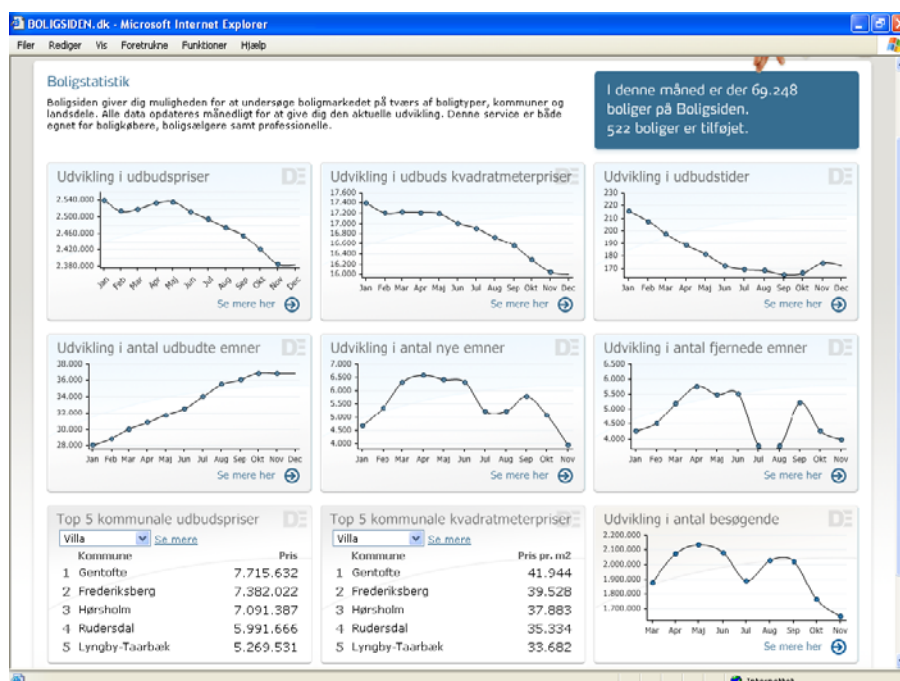
## The ABC of housing

The second part of the website is the ABC of housing. The ABC of housing consists of two main parts: one related to sellers and one related to buyers. It is a guideline that takes the buyer/seller through all of the phases in the sales process.

## Housing statistics

The third part of the website contains various housing statistics. An overview can be seen in Figure 15 below.

Figure 15. Housing statistics.



Source: Screen dump from [www.boligsiden.dk](http://www.boligsiden.dk).

The statistical tables and figures cover the past 2 year period. The housing statistics cover a number of areas:

- Change in asking price.
- Change in asking price per m<sup>2</sup>.
- Change in duration of sales period.
- Change in number of houses for sale.
- Change in number of new houses for sale.
- Change in number of houses removed from the site.
- Top 5 municipal asking prices.
- Top 5 municipal prices per m<sup>2</sup>.
- Number of visitors at website.

Clicking on each of the statistics will allow you to conduct a more advanced search on various types of statistics, type of housing and geographical areas.

## 4.4 Relation to enterprises, building project and real estate

The whole idea of creating a search engine has been to create *transparency* in the marketplace of private homes for all interested actors – estate agents, sellers and buyers alike. Thus, the information displayed in the sheet of information is available to all with access to the internet. Most estate agents also publish the energy labels and condition reports on their websites in relation to the specific property, but some estate agents ask the visitor to apply for that kind of information by sending an email to the agency. The information provided is not only related to individual properties but also include various generic statistics on the housing market as described more closely in the previous chapter.

One of the contested features of the search engines has precisely been the transparency, since a search engine makes it possible not only to display and market your own product, but also your competitors. Thus, the search engines gives the estate agents an opportunity to closely *monitor your competitors'* way of marketing, market shares, valuations etc. Consequently, some of the estate agents have been reluctant towards the search engines.

Furthermore, the main chains of estate agents are owned by mortgage institutions, banks or other financial institutions. The mortgage institutions etc. is fiercely competing to ensure and expand their market shares on lending money to the buyers. Providing the loans to the buyers is a much more interesting business than estate business as such. Thus, the mortgage institutions etc. are viewing the ownership of the chains of estate agencies as a direct and effective means to get access to offer a financial product to the buyers. Generating traffic on the websites of the individual chains of estate agencies is therefore considered an important means to get hold of *new customers for various financial products* including insurance.

## 4.5 Innovation and visions for future improvements

Until 2007, Boligsiden A/S hardly did any innovation or development of the website. The rationale was to keep activities at a minimum in order to comply with public regulation and nothing more. The management of the website was located at the Danish Association of Chartered Estate Agents, where one person took care of the website as a minor part of his job. The activities primarily included support, which was outsourced to an ICT firm.

This situation changed quite dramatically in the beginning of 2007, when another website [www.boliga.dk](http://www.boliga.dk) was launched. Inspired by Google and their previous job experiences from other search engines and portals like Jubii, the three founders of Boliga insisted on a different approach to search engines for private homes. Boliga did two things very differently from Boligsiden. First, location-location-location is a mantra among estate agents, still the search facilities in Boligsiden was linked to addresses, internal reference numbers or similar. Instead Boliga decided to implement interactive maps or rather aerial photos as the prime search facility. Second, being independent of the estate agencies Boliga took the buyers' perspective as the starting point. Thus, historical data on price reductions/rise and duration of the waiting time/selling period was included in the search facilities. These facilities quickly generated massive traffic on the website.

The emergence and immediate success of Boliga put pressure on Boligsiden. While Boligsiden obtained data from the estate agencies through a predetermined and fixed database structures and reporting routines, Boliga ob-

tained data by simply web-crawling the sites of the estate agents to harvest data typically at night. This was considered intrusive by the estate chains and the association of estate agents, and the chains decided collectively to block for access by the search robot of Boliga. This was done by blocking the IP addresses identified as belonging to Boliga. This made feelings run high in the media. Consequently, the competition authorities became involved. After about two weeks of blockade, the estate chains and the association of estate agents were subjected to open access to the sites again. The swift action was possible since a similar case involving Ofir and the association had been taken to court some time earlier. This case was lost by the estate agents. Shortly after, a redesigned version of Boligsiden was launched. This redesign was, however, already underway according to Boligsiden itself.

But the pressure had two other significant impacts. First, Boligsiden was effectively transferred to a commercial company owned by the shareholders constituted primarily by the estate agents and with only a small amount of shares to the association. With the transfer a new innovation strategy was deployed. The secretariat has been expanded to 3-4 full time employees although technical support and development is still outsourced. But being less tied to the association has opened up for a more commercial road ahead, which include selling banner commercials and deploying more extensive user analysis through web questionnaires and search profiles than previous. Second, along with transfer of Boligsiden an agreement was settled between the chains of estate agents to do cross-referencing of items on sale, thus effectively creating 6-7 national search engines.

## 5. Discussions and conclusions

This chapter discusses the lessons learned on search engines for private homes and draws conclusions with respect to work package 4-6 on project level, firm level and system level.

### 5.1 Buildings – lessons learned and recommendations

The assessment methods and tools applied in the marketing and sales process include three sets of methods and tools:

- The estate agent's sheet of information.
- An energy label.
- A condition report as part of the house inspection system.

The lessons learned on the usability of the three assessment methods and tools can be summarised in four conclusions.

The first question to answer is if the assessment methods are being used at all. The three assessment methods are effectively being applied in practice by estate agents, sellers and buyers in almost all sales of private homes, which amount to some 60-80,000 sales per year.

The second question of usability is about the purposes for which the assessment methods can or are being used. As illustrated previously, the assessment methods serve various purposes. These purposes include e.g. compliance with public regulation, redistribution of liabilities, market transparency and ease of comparisons. Thus, seen from a policy perspective the assessments methods plays a crucial role in correcting market deficiencies whether the schemes and assessment methods are mandatory or in principle voluntary to apply.

The third question is whether the results of the assessments are reliable and valid. All three assessment methods are standardised in order to support transparency and easy comparisons of different products. This standardisation is ensured through requirements of formal professional qualification, demonstrated proficiency through courses and exams, and application of standardised tools of the trade. However, the reliability and validity of the assessments have on several occasions been questioned, in particular when it comes to the condition report and house inspection system (COWI 2005; Pedersen 2006).

The fourth question is whether the assessments are worth the effort. All three assessment methods have for various reasons been contested and on more occasions been revised. The sheet of information has e.g. been criticised by estate agents for being too restrictive when it comes to informing on alternative financial opportunities. The energy label has been called superfluous by estate agents questioning whether the energy label is worth the money spent. Similar, some researchers (e.g. Gram-Hanssen et al. 2007) have argued that the energy label does not generate the intended impact. The condition report and house inspection system has in particular been contested. Frequently, media coverage has questioned the qualification of the building experts and validity of condition reports. Also estate agents like

home a/s have publicly declared that condition reports are at best superfluous. One reason being that many buyers distrust the condition report and bring their expert with them anyway.

Our recommendations to WP4 on project assessments and tools can be summarised as:

- A number of tools and methods are already in place to address issues that are considered significant in a political-practical sense. Thus, the need for development is more linked to improving existing tools and methods rather than inventing and implementing new ones.
- Developing building performance indicators is one of the central CREDIT challenges. In the evaluation of the house inspection scheme, the 10+ scenario suggests a list of priorities when it comes to the most relevant building performance indicators to be addressed not only in a national revision of the house inspection system, but also in the Nordic/Baltic CREDIT project.
- Establishing confidence in the validity of the assessment being deployed is crucial to ensure acceptance and support of a CREDIT benchmarking scheme.

## 5.2 Enterprises – lessons learned and recommendations

The assessment methods and tools applied in the marketing and sales process include two different perspectives on the sets of methods and tools

- in this case exemplified by home a/s:
- An external perspective dealing with the public display of information on the website of an estate agent. Since this is very similar to the national systems, it will be dealt with in the next subchapter.
- An internal perspective on the use of methods and tools.

The lessons learned on usability of the real estate information management system can be summarised in four conclusions.

The first question to answer is whether estate information management systems are being used at all or not. There is no doubt that these systems are an integral part of the daily management and are being used extensively across the estate market – C&B Systemer A/S alone has a market share of 60 % on the housing market.

The second question of usability is about the purposes for which the estate information management system can or are being used. As illustrated previously, the information management system serves two main purposes: an internal and an external purpose. Internally, the information management system is a means to manage all data relevant to the entire marketing and sales process. Externally, the information management system is used for importing and exporting data from external sources or presentations on websites etc.

The third question is whether the data in the information management system are reliable and valid. The answer to this question primarily rest with how reliable and valid the data imported from other individual systems or assessments are. Certain automatic as well as manual checks are however carried out to ensure that wrong data is not published e.g. on the website.

The fourth question is whether information management systems are worth the effort. In the public eye, the information management systems are living a very anonymous life. Within the real estate business, the pervasive nature

and diffusion of information management systems illustrates the importance and potential value ascribed by estate agents.

Our recommendations to WP5 on enterprise level can be summarised as:

- It is vital to activate the commercial interest of stakeholders and make benchmarking of products or services a part of their business model, like it has become the case of the estate agents and mortgage institutions.
- Establishing a new business model may involve approaching a stakeholder with a less direct interest in a given product and instead focus on brokers who are somehow involved in distribution or selling services surrounding the actual product, like we have seen with estate agents or markets brokers like eBay.
- It is essential to design the benchmarking system as an integrated part of a more general information management system within the firm and to ensure integrated validity checks.

### 5.3 National benchmarking – lessons learned and recommendations

On a national level, the assessment methods and tools applied in the marketing and sales process include the two national search engines for private homes:

- [www.boligsiden.dk](http://www.boligsiden.dk).
- [www.boliga.dk](http://www.boliga.dk).

The lessons learned on usability of the two national search engines can be summarised in four conclusions.

The first question to answer is if the search engines are being used at all. The two search engines are effectively being visited by some 3-400,000 unique users every month. Both search engines are ranked among the top 50 websites in Denmark judged by their number of visitors according to FDIM ([www.fdim.dk](http://www.fdim.dk)) – the Danish association of interactive internet media.

The second question of usability is about the purposes for which the search engines can or are being used. As illustrated previously, the search engines serve various purposes. These purposes include e.g. compliance with public regulation in particular regarding [www.boligsiden.dk](http://www.boligsiden.dk), marketing, market transparency and ease of comparisons in the search and selection process of buyers. Ironically, the search engines are apparently also being used by criminals to select the most appropriate house to break into.

The third question is whether the results of the assessments are reliable and valid. Since the base data stems from the estate agencies, the reliability and validity is basically dealt with at the real estate agencies. The question is rather if it is the most appropriate and relevant data being presented at the search engines. The rapid success of and the controversies surrounding [www.boliga.dk](http://www.boliga.dk) illustrates that at least buyers are evidently looking for other types of information than originally provided by [www.boligsiden.dk](http://www.boligsiden.dk), most notably on price alterations and the sales period along with the interactive map search features.

The fourth question is whether the search engines are worth the effort. Two facts point at the value of the search engines. First, the accessibility to information has been greatly improved, which benefits the buyers in particular in their search and selection process. Second, the competition between the major chains of estate agents and the two national search engines – in par-

ticular the harsh attacks on [www.boliga.dk](http://www.boliga.dk) from the association of real estate agents – emphasise the commercial value of search engines seen from the perspective of estate agents and mortgage institutions.

Our recommendations to WP6 on benchmarking system level can be summarised as:

- The core indicators are building type, map based location, economy and size.
- Given the diverse and very different requirements set by the individual user, it may be more appropriate to skip the idea of having a star-rating system as indicated in the CREDIT application, and instead establish search options that can be individually optimised by the users to serve different purposes.
- An intelligent interplay between public regulation and market forces can potentially create a very powerful benchmarking-like system.
- Unhindered accessibility of basic data is crucial.

Summing up, the study concludes that search engines include a number of indicators, assessments and search facilities that can be applicable in CREDIT. Further, search engines represent a highly valuable approach to setting up an international benchmarking system that is dynamic in nature, user-oriented and cost-effective.

Table 3. Questionnaire to evaluate CREDIT Indicator Classification.

Comments: Not filled out since the questionnaire was not available at the time of interviews.

CREDIT Indicator Classification		To which degree are the following indicators preferred?					
Company:		Please use the following scale when answering:					
Role:		2 Always - strategic and very important					
Project:		1 Sometimes, depends upon the project					
Date:		0 Not at all, unimportant					
Sign:							
		Public demands	Internal project demands	Measures during building process	Measures when finished project	During facility management	Comments and other indicators recommended
<b>Cost and performance indicators</b>							
<b>1. Cost, price and life cycle economy (LCE)</b>							
11 Capital, investment, construction, commissioning cost							
12 Building services related to operation and maintenance							
13 Business services related the activities in the building							
<b>2. Location, site, plot, region and country</b>							
21 Location and address							
22 Plot opportunities							
23 Spatial solution and property aesthetics							
24 Surrounding services							
25 Social values							
<b>3. Building performance and indoor environment</b>							
31 Category of building, quantity, size and area							
32 Safety and security of burglary							
33 Usability and adjustability							
34 Thermal comfort							
35 Air quality and health							
36 Visual climate							
37 Acoustic climate							
38 Aesthetics of building and indoor spaces							
39 Feelings and sensations							
<b>4. Building part and product performance</b>							
41 Category of building parts, quantity, size and area							
42 Safety							
43 Durability							
44 Thermal quality							
45 Impact on air quality							
46 Lighting quality							
47 Acoustic quality							
48 Aesthetic quality as form, surface, colour and details							
49 Feelings and sensations							
<b>5. Facility performance in operation and use</b>							
51 Category of tenancy and operation and area of space							
52 Applicability of the facility							
53 Operation							
54 Services							
55 Social performance							
<b>6. Process performance in design and construction</b>							
61 Category of process, supplier and organisation							
62 Resource control and project management							
63 Health and safety and work environment							
64 Quality management							
65 User involvement and cooperation							
<b>7. Environmental impact</b>							
71 Resource use							
72 Emissions							
73 Biodiversity							

## References

Bakens, W.; Vries, O. & Courtney, R. (2005). *International review of Benchmarking in Construction*. PSIBouw, The Netherlands.

Beatham, S.; Anumbam, C.; Thorpe, T. & Hedges, I. (2004). *KPIs: a critical appraisal of their use in construction*. *Benchmarking: An International Journal*, Vol. 11 (1), 93-117.

Bjørnbirk, Ib (ed). (2004). *Ejendomsmæglernes historie. Et erhverv anerkendes. Bind 2. Fra 1946 til 2000*. København: Dansk Ejendomsmæglerforening.

Bresnen, M. & Marshall, N. (2001). *Understanding the diffusion and application of new management ideas in construction*. *Engineering, Construction and Architectural Management*, Vol. 8 (5/6), 335-345.

Camp, R. C. (1989). *Benchmarking. The Search for Industry Best Practices that Lead to Superior Performance*. Milwaukee, Wisconsin: ASQC Quality Press & White Plains, New York: Quality Resources.

Chan, A. P. C. & Chan, D. W. M. (2004). *Developing a benchmark model for project construction time performance in Hong Kong*. *Building and Environment*, Vol. 39, 339-349.

COWI (2005). *Undersøgelse af tilstandsrapporters kvalitet*. København: Erhvervs- og Byggestyrelsen.

Flyvbjerg, B. (1991). *Rationalitet og magt. Bind 1. Det konkrete videnskab*. København: Akademisk Forlag.

Garnett, N. & Pickrell, S. (2000). *Benchmarking for construction: theory and practice*. I: *Construction Management and Economics*, Vol. 18, 55-63.

Gram-Hanssen, K.; Jensen, O. M.; Bartiaux, F. Cantaert, M. (2007). Do homeowners use energy labels? A comparison between Denmark and Belgium. *Energy Policy*, 35 (5), 2879-2888.

Jensen, O. M. (2005). *Barrierer for realisering af energibesparelser i bygninger*. (Notat). Hørsholm: Statens Byggeforskningsinstitut.

Kaka, A. P. (1999). *The development of a benchmark model that uses historical data for monitoring the progress of current construction projects*. *Engineering, Construction and Architectural Management*, Vol. 6 (3), 256-266.

Li, H.; Cheng, E. W. L.; Love, P. E. D. & Irani, Z. (2001). *Co-operative benchmarking: a tool for partnering excellence in construction*. *International Journal of Project Management*, Vol. 19, 171-179.

Lum, S. K. (2004). *Property price indices in the Commonwealth. Construction methodologies and problems*. I: *Journal of Property Investment & Finance*, Vol. 22 (1), 25-54.

Massheder, K. & Finch, E. (1998). *Benchmarking methodologies applied to UK facilities management*. *Facilities*, vol. 16 (3/4), 99-106.

McAdam, R. & O'Neill, L. (2002). *Evaluating best value through clustered benchmarking in UK local government: building control services*. *The International Journal of Public Sector Management*, vol. 16 (6), 438-457.

McDougall, G. & Hinks, J. (2000). *Identifying priority issues in facilities management benchmarking*. *Facilities*, vol. 18 (10/11/12), 427-434.

McGeorge, D. & A. Palmer with K. London (2002). *Construction Management*. New Directions. Second Edition. Oxford: Blackwell Science.

Newell, G. & Webb, J. R. (1998). *Real Estate Performance Benchmarks in New Zealand and South Africa*. *Journal of Real Estate Literature*, vol. 6, 137-143.

Palaneeswaran, E. & Kumaraswamy, M. M. (2000). *Benchmarking contractor selection practices in public-sector construction – a proposed model*. *Engineering, Construction and Architectural Management*, vol. 7 (3), 285-299.

Pedersen, C. M. (2006). *Gyldighedsperiode for tilstandsrapporter*. (SBI 2006: 07). Hørsholm: Statens Byggeforskningsinstitut.

Pemsel, S.; Widén, K.; Svetoft, I. & Hansson, B. (2009). Managing end user requirements in construction projects. *Proceedings 5<sup>th</sup> Nordic Conference on Construction Economics and Organisation*, vol. 1, 44-55. Reykjavik, Iceland: Reykjavik University.

Public Affairs Group & IBM (2006). *Huseftersynsordningen – plus, minus ti år. Set med forbrugerøjne*. København: Realdania. Located 20100531 at: [http://www.realdania.dk/upload/rapport\\_huseftersyn\\_plus\\_minus\\_ti\\_%C3%A5r\\_-\\_set\\_med\\_forbrugernes\\_%C3%B8jne.pdf](http://www.realdania.dk/upload/rapport_huseftersyn_plus_minus_ti_%C3%A5r_-_set_med_forbrugernes_%C3%B8jne.pdf)

Sommerville, J. & Robertson, H.W. (2000). *A scorecard approach to benchmarking for total quality construction*. *The International Journal of Quality & Reliability Management*, Vol. 17 (4/5), 453-466.

Xiao, H. & Proverbs, D. (2002). *The performance of contractors in Japan, the UK and the USA. An evaluation of construction quality*. *International Journal of Quality and Reliability Management*, Vol. 19 (6), 672-687.





This report describes the results a case study of search engines and related assessment methods and tools for private housing. The study was undertaken as part of the Nordic and Baltic project CREDIT: Construction and Real Estate – Developing Indicators for Transparency.

The analysis is aiming at three levels: the project or building, the firm and the national benchmarking system.

The study concludes that search engines include a number of indicators, assessments and search facilities that can be applicable in CREDIT. Further, search engines represent a highly valuable approach to setting up an international benchmarking system that is dynamic in nature, user-oriented and cost-effective.

1<sup>st</sup> edition, 2010

ISBN 978-87-563-1434-3