



LAUREA
AMMATTIKORKEAKOULU

Uuden edellä

User centered property website for Singapore markets

Case: Midnight Sun Software Services

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Case: Midnight Sun Software Services

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Table of Contents:

1	Background and aim	6
2	Terminology	7
2.1	URL	7
2.2	HTML	8
2.3	Pop-ups	8
2.4	Domain name	8
2.5	Web host	8
2.6	JavaScript	9
3	User centered design	9
3.1	The benefits of user centered design	9
3.2	How and why to use user centered design in this project	10
4	User centered design methods	10
4.1	Prototype	10
4.2	Using wireframe in design	11
4.3	Competitor comparison	12
4.3.1	The good ideas:	13
4.3.2	What to avoid	15
4.4	The target user	15
4.4.1	Methods to define target user	16
4.5	Target users in this project:	16
4.6	User research	17
4.7	Results of user research	19
5	Usability	20
5.1	Usability definitions	20
5.2	Usability testing	21
5.2.1	Techniques for testing	21
5.2.2	Amount of test users	23
5.2.3	Usability test moderation	25
6	Technology preview	25
6.1	Adobe Photoshop	25
6.2	PHP	26
6.3	MySQL Database	26
6.4	CorelDraw	26
6.5	Dreamweaver	26
6.6	Web Browsers	27
6.7	Internet Explorer	27
6.8	Mozilla Firefox	27
6.9	Google Chrome	28
7	Requirement analysis	28
7.1	Login	28
7.2	Quick search	28
7.3	Advanced search	29
7.4	Navigation	29
7.5	Social media connect button	29
7.6	Contact form	31
7.7	Recent search and recent news	31
7.8	Main page	32
8	The Conclusion of the project	34
9	List of references	35

10 Pictures: 37

Attachments

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Business Information Technology

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User centered property site for Singaporean markets - Case: Midnight Sun Software Services Ltd

Year	2013	Sites	47
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This study is a case assignment for Midnight Sun Software Services Ltd, and the topic is User centered property site for Singaporean markets. The main objectives of the study is to create a prototype of new property website, tell about phases of making of user centered website and describe what does word "user-centered" and usability means. The intention is to find out how to describe a good website, what kind of websites company's main target wants to use and how to implement it.

This study is focused on designing and definition phase of the pre-requirement specifications. But this study is also introducing the implementation phase. Study is based on theories concerning usability and user centered service design and user's interviews.

The research method of this thesis was qualitative research, and more specifically one-to-one interview.

The current state analysis was made based on the first interviews with the company's manager. At this phase the needs for the new property site and what the manager wants from this project was surveyed. Based on the interviews with the manager the first prototype will be modified until the point it will be the second and final prototype.

In this case users, as well as users for the interviews are meaning the end users, users who are looking for buying, selling and renting apartments.

1 Background and aim

There are many property websites worldwide, but the keyword is usability and user centered design. Nowadays it is important to give a thought to a website's design, because good user experience could be a key factor for a popular website. There are already many websites, so users have freedom to choose website they want to use. That is why it is so important to focus on usability and user centered design

Chief executive officer of the case company was frustrated to find an apartment from local property websites, and his opinion was that there is a need for user centered designed property website in Singapore. There are existing property websites, but there are issues that disturbed users regarding to the user research which was made. For example some of the websites are abstruse, there is lack of information, information is not up-to-date, and search-function is insufficient. Good usability and user-centered design could be the key how this website stands out from the other property sites.

So the aim of this project is to find out what kind of website would be user-friendly, what type of website focus users would like to use, and how to implement it. Exemplars of this project has been Finnish property sites, because those are easy and enjoyable to use without compromising good design and nice layouts.

In 2011 Singapore's total population was 5,3 million, and there were 3.8 million residents (Sg residents include PRs (Permanent Residents and Citizens)). Singaporean citizens were 3.29 million (Out of 3.29 million, 0.53 million are PRs who are not Sg citizens)
(source: <http://www.singstat.gov.sg/stats/keyind.html>)

That means currently only 62% of people in Singapore are local citizens. Many of those, who are not citizens or PRs are expats (in this case expat means a person who is living temporarily in aboard, usually in the shorter or longer work command). Expats also needs a place to live in Singapore, and it is easiest way to find apartment from the Internet, then they can rent a house before they move to Singapore, and when they will move, they do not have to use so much time and effort to find a house, instead they can explore and familiarize with the new country. In order that could happen, the property site needs to be reliable. According to the data gathered from expat users, the current property sites are full of misinformation and outdated information, because there is no supervision or terms. So expats are one big target group. Then we should also pay attention for western users' habits and requirements.

Foreign buyers contributed to strong house price increases recently. In the first half of 2010, foreign purchases accounted for about 25% of the total residential property sales transactions in Singapore. (<http://www.globalpropertyguide.com/Asia/Singapore/Price-History>) So this group is really important.

Singapore's markets are highly growing, the Gross Domestic Product (GDP) in Singapore expanded 3.30 percent in the fourth quarter of 2012 over the previous quarter. GDP Growth Rate in Singapore is reported by the Statistics Singapore. Historically, from 2007 until 2012, Singapore GDP Growth Rate averaged 5.34 Percent reaching an all time high of 36.40 Percent in March of 2010 and a record low of -13 Percent in September of 2010. Since gaining independence in 1963, Singaporean economy has been growing rapidly and as a result the country has now one of the highest GDP per capita in the world. (<http://www.tradingeconomics.com/singapore/gdp-growth>)

At the same time Internet usage in Singapore is raising every year (now it is 77,8% of population who are using Internet), so people are becoming more familiar with using Internet and finding properties to buy from there.

Internet Usage and Population Statistics:

YEAR	Users	Population	% Pop.	Usage Source
2000	1,200,000	3,263,209	36.8 %	ITU
2006	2,421,800	3,654,103	66.3 %	ITU
2009	3,370,000	4,657,542	72.4 %	ITU
2010	3,658,400	4,701,069	77.8 %	ITU

The case company, Midnight Sun Software Services Ltd is a small Singaporean-Finnish IT-company, which is selling their IT-services, as consulting and developing work mainly to Singapore and to Finland. It is founded in year 2009.

2 Terminology

Here are listed some of the basic and technical jargon what has been used in this thesis.

2.1 URL

A URL is an abbreviation from Uniform Resource Locator. it gives the location of the site and also protocol needed to access it. The URL of a site is its address on the World Wide Web and all websites have URLs, which not only describe the location of a page or file, but also how to

access it. They are made up of two parts. The first part describes what protocol to use to access the file, such as HTTP (if it is for a webpage) or FTP if it is for a program file. The second part gives the domain name or IP address where the server is located. (Laing etc. 2010 p. 21)

2.2 HTML

HTML means Hypertext markup Language, it is the language of the Web and is used in constructing web pages. In effect, it tells the browser software how to display and handle the information or objects contained on a page. It also controls the hypertext links that enable you to click from one document to another, or from one section of page to another. (Laing etc. 2010 p. 28)

2.3 Pop-ups

A pop-up is a Graphical User Interface display area, usually a small window, that suddenly appears up in the foreground of visual interface. A pop-up window should be smaller than the background window or interface, otherwise it is a replacement interface. (Laing etc. 2010 p. 33)

2.4 Domain name

A domain name is a unique name for a web site. Domain names must be registered. When domain names are registered, they are added to a large domain name register. In addition, information about the web site, including the IP address, is stored on a DNS server. DNS stands for Domain Name System. A DNS server is responsible for informing all other computers on the Internet about the domain name and the web site address.

(<http://www.w3schools.com/>)

2.5 Web host

So the website would be visible to the world, it has to be hosted on a Web server. There are two ways to do this. Creator of the website can host the page itself if creator has right equipments, including a web server and a permanent connection to the Internet. Then the creator would also need to have website administration skills (for example managing/configuring a web server, patch management and virus protection).

The other way (and the most common) is using a third party hosting provider's services, which is normally including round-the-clock support and FTP access, email services and domain name registration.

2.6 JavaScript

Scripts are short programs you can write to add interactivity to web pages. JavaScript is the most popular scripting language. Because JavaScript code is executed by web browsers, also known as clients, it is known as a client-side scripting language.

(Wooldridge, M. 2009 p. 215)

3 User centered design

According to David Travis (The Fable of the User-Centered Designer by David Travis, 2009) the secrets of user centered designs are:

- Early and continual focus on users and their tasks.
- Empirical measurement of user behavior
- Iterative design

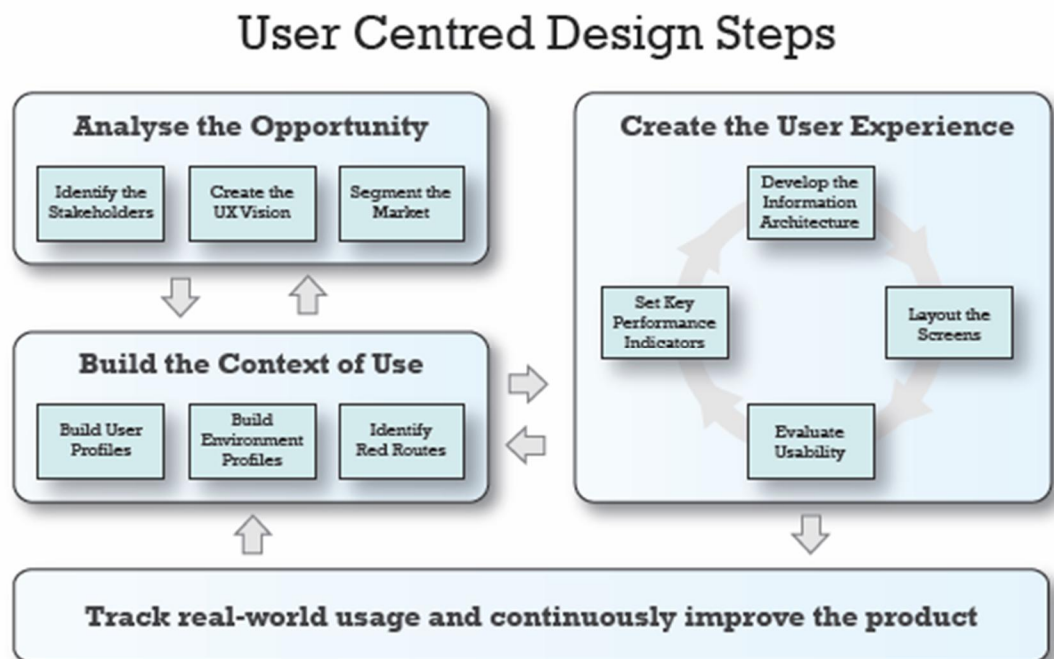


Figure 1 David Travis (The Fable of the User-Centered Designer by David Travis, 2009).

3.1 The benefits of user centered design

There are many of benefits, what user centered design could offer for designer. Here are two good reasons why to make user designed sites:

1. It reduced development time.

2. Less stress from frustrating software, so the users are more satisfied

3.2 How and why to use user centered design in this project

The main focus is to sell/rent apartments, the page should be easy and pleasant to use for searching apartments, because without any buyers there is no sense to put any flats on display. Good website means there will be users also and when there is users, there is also buyers, so if there is buyers enough, the sellers will also put more products to sell in this certain website, so it is simply The law of supply and demand. And after all this is a business activity.

User centered design ensures that the website is useful to users. Naturally it is useless to create website if no one is using it, and that would not be very profitable business. The design in this project focus on serving the users, not only to good-looking demos, because even if the layout is flashy and exquisite it is fruitless if usability is bad. The text published in the website is written in language that users understand.

4 User centered design methods

There are many different methods for user centered design. Methods purpose is to find out what kind of service or product users wants to use and for what purpose. Here are some examples of different UCD methods.

4.1 Prototype

The prototype is an essential part of user-centered design. It is a sketched plan for a final product. It helps to estimate usability of the product. It is not rational to spend as much time to make a prototype than the final product, so it means that it is possible to eliminate qualities and functionalities. (Kuutti, 2003, 104-105)

Good prototypes are embedded into quick, four-phase iterations, so in this project prototype is also divided into four phases. Phase 1 was iteration, which is planning phase, where the designer thinks about what they want to learn about the problem and how they might go about it, as the problem is in this case that the users are dissatisfied with current property websites, so there is demand for user-friendly property website.

The second phase is implementation, where designer implement the prototype instrument. This can be a quick sketch. The third phase is measurement, at this point the designer collects useful information from the prototype instrument. The idea is that designer is collecting information to help guide future decisions.

The final phase is learning, where designer asks from him-/herself what he/she has learned from this prototype, and will use the new information to going forward.

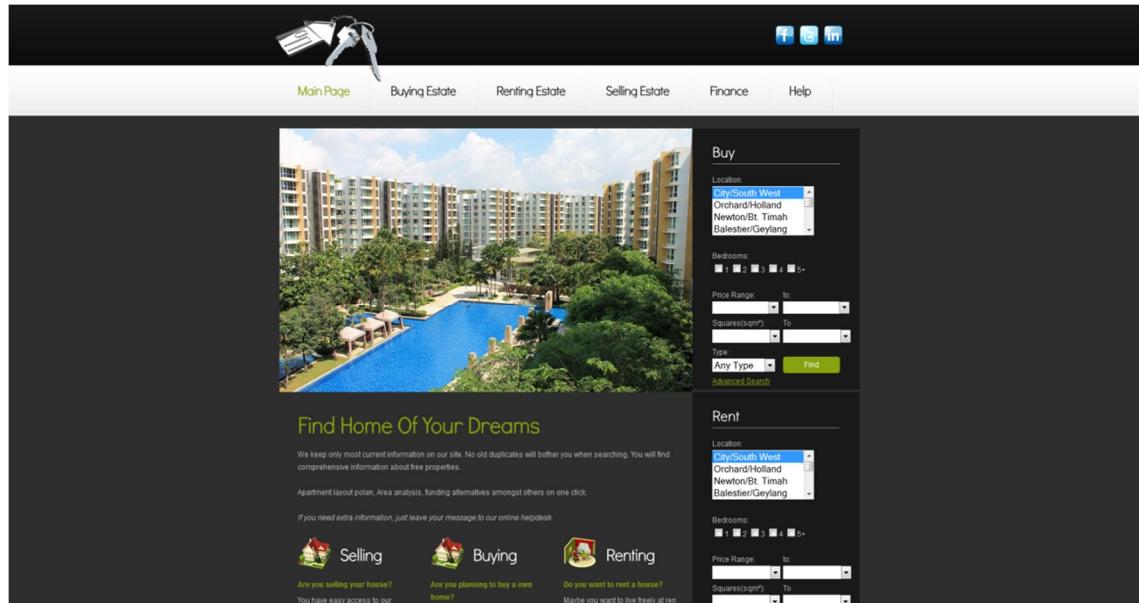


Figure 2 The final prototype of property site

4.2 Using wireframe in design

It is possible to integrate usability testing in the early stages of web development, it will not even require fully designed prototypes. Usability testing in the early stages of web development can be both efficient and cost-effective. With wireframes you can easily ensure that you have streamlined the user-experience before even completing your site. (Henri Stetter, 2011)

A wireframe is a stripped-down visual representation of a single web page, devoid of any graphic treatment. As the name suggests, it is a framework made with wires, which define basic layout and placement of content and page elements such as navigation; header & footer; branding etc. They are sometimes referred to as "page schematics", "page architecture" or even "blueprints" (though the term "blueprint" sometimes refers to a more overall site design). (<http://web2usability.wordpress.com/2009/01/07/definition-usage-wireframe/>)

The benefit of wireframe is that it provides guidance for more detailed visual design, and it also supports a shared understanding of design and other requirements. Wireframe's advantage is that it is cheap and easy, for example paper and pen can be enough, so there is no need for sophisticated tools.

The first wireframe of this project was more like a blueprint, just a sketch in a paper. But in this wireframe it was possible to see where to put important parts like navigation, search, login, layout and web elements. After we discussed about wireframe with the leader of the project It was decided to do slightly changes to some parts, but the final product was very close to the wireframe.



Figure 3 wireframe of project

4.3 Competitor comparison

The idea of competitor comparison is gather ideas to own service and investigate what has been achieved well and what could be done better. Wide benchmark research could be ordered from usability company or make self lighter comparison. Comparison is recommended to make systematically and in different phases of product development. (Sinkkonen etc. 2009.)

In competitor comparison I compared other Singaporean property websites and also Finnish property websites. The aim was to examine the quality of these sites (compared of the site

that is in development now) and find new ideas how to improvement the site which is in development now. Some good ideas were picked up.

Compared sites:

- <http://www.iproperty.com.sg/>
- <http://www.propertyguru.com.sg/>
- <http://www.stproperty.sg/>
- <http://www.propertyhub.com.sg/>
- <http://www.propwise.sg/>
- <http://asunnot.oikotie.fi/>
- <http://kuluttaja.etuovi.com/>
- <http://www.jokakoti.fi>
- <http://www.opkk.fi/>
- <http://www.fareast.com.sg/>
- <http://www.hartela.fi/>
- <http://www.ncc.fi/>
- <http://www.forenom.fi/>
- <http://www.setlementti.fi/s-asunnot/>
- <http://www.kiinteistomailma.fi/>
- <http://www.candh.com.sg/>
- <http://www.nationproperty.sg/>
- <http://www.asunnot.fi/>
- <http://www.nettiasunto.com/>

4.3.1 The good ideas:

Here are gathered the good issues which was used one way or another in this project. You can find the screenshots of the compared sites in the section "attachments", which is in end of this thesis.

Like you can see in figure 12, the previous searches are showed in the front page, so it is easy to get back to the previous searches when needed.

Small amount of the information about company and logos of the partners are good to set in bottom of the page, like in figure 13.

Discernible quick search is easy and quick to use, it is very suitable for users who know what they want or who have certain limitations, like price. All the search criteria should be optional, so the users can set the limit for instance to the size, but still search properties from all

price ranges. (See figure 14) Good placement for quick search is in sidebar, because it is easy to see in website and it looks clear, like in figure 15. The good placement for quick search is in figure 15, in side of the main page.

Clear structure is necessary, especially in the front page. There should not have too much content (text, pictures or any content) stuffed in the front page, so it would be easier for user to find what she/he is looking for, examples of clear structured websites are in figures 16 and 17.

Pictures and text should be in harmony together, not too much text nor pictures. Like in Figure 18.

Browsing the Internet by mobile phone can be slow and tangled, so in future website could also be mobile application for android and iOS, so using with mobile phone would be easier (figure 19).

There should be many different choices in advanced search, so the user can find exactly what they are looking for. That was one of the most important issues in the property site according to potential users in user research. You can see the model example of this in figure 20.

Advertises are good source of income, so it is likely that there will be ads in this propertysite. So there is need to consider about placements and style of the ads. Designers point of view is that a good advertise is almost unbrotusive advertises, which suits to site's design. It is not irritating but it still reach the target. There is an excellent ad in figure 21.

Navigation bar is very important part of website, it is how users navigate to the main areas of the sites. So it should be easy to use, and clear enough so it would be easy to find wanted data, good examples of good navigation bars are figures 22, 23, 24 and 25.

Layout is like a business card of the website, good layout makes appearance visually appealing and help users find what they are looking for quickly. Therefore layout is one of the most important part of the website. Good layout is pleasant to look and pleasant to use. It should be stylish, discernible and clear layout, like in Finnish property website etuovi.com (figure 26).

Like in figure 27, slideshow of the newest objects in front page is practical idea. At the same time it is a eye-catcher and the new objects will get visibility. It will not take too much space, because it is a slideshow, which in this case is an on-screen presentation of pictures. Clicking on the image would lead user to see more information of object. This should be considered carefully, since all the users do not like moving objects.

4.3.2 What to avoid

Annoying pop-ups, they distract from the page and makes user frustrated when they are trying to find close button, and at the same time they might accidentally click the advertise and leave the site they were. In user center interview almost every interviewee said that one of the most annoying issues in property websites are pop-ups. Good example of pop-up is in figure 28.

Other ads should be consider carefully too, so it will not happen like in figure 29, there are too much ads, which does not even suit to design. This kind of ads distract and annoys users.

Plan carefully structure, if structure is disorderly (like in figure 30), it is hard to find wanted information. If users do not find the information they are looking for easily enough, they will probably leave the page and use the another similar website. Disorderly structure does not look good too.

Unnecessary information and other content should be avoided. It is also recommended to avoid use scrolling. Reports state that readers are reluctant to scroll down for more than one and half screens, so it is better to run a longer story on to a second page than to force users to scroll away from the page header and navigation bar. (Laing etc. 2010 p. 21) Good example of website, which is way too crowded is in figure 31.

4.4 The target user

The first questions to ask at the beginning of any user-centered design project should be "Who are the users" and "What are their primary goals using this site". Ultimately, if the site does not target the right users, there will be no users.

The goal is to identify all unique user groups of the site. Sometimes the answer is obvious, and the owners of the site will intimately know who their users are. Other times owners think they know who is using the product but do not have any evidence to back up their assumptions. (Albert, W. 2010 p. 17-18)

4.4.1 Methods to define target user

Here are listed some methods, which would help to find out the target users. You do not need to use of these, just pick-up those which suits best for your needs.

- Current users. If there are any users already, find out who they are and what in common they have.
- Check out competition. Who are using the competitors services? Who are competitors focusing on?
- Analyze your service. List the benefits what the site offers and think about who would need it. Ask questions like who is this product or service for?
- Choose specific demographics to target
- Psychographics of your target
- Consider make psychographics, which are more personal characteristics of a person, like following factors: personality, lifestyle, hobbies, interests and values. Determine how your product or service will fit into your target's lifestyle. How and when will they use the product? What features are most appealing to them? What media do they turn to for information? Do they read the newspaper, search online or attend particular events?
- Test target with user group.
- Evaluate decisions. When target users are decided, consider it, for example with this questions: Are there enough people that fit my criteria?, Will my target really benefit from my /service? Will they see a need for it? Can I reach them with my message? Are they easily accessible?
- Tailor your business message to your market. Now that the target is identified it is needed to craft a message that reaches and speaks to that target. It should explain what you have to offer, why you are different, and why anyone should use just this site.
- Figure out not only who has a need for your product or service, but also who is most likely to buy it. For example, think about the following factors: age, gender, location, income level and education level.

4.5 Target users in this project:

Because the site is new, there is not any users yet, and it was hard to find information about users of competitors. The competitors are mostly focusing on Singaporean or Chinese about age 20 to 60. The benefits that the site offers are good usability, fits for all nationalities and it is suitable also to users that have not even be in Singapore. So most likely to use our service are expats or foreigners that will try to find a home from Singapore, or who wants to buy

or rent a new house (maybe bigger or in different area) or sell or rent their house when they are moving back to homeland. But the site is also for Singaporean users. Age group is about 25 - 50 years, for both women and men and people with good income, because living is expensive in Singapore if you are not a local. This is because only citizens or person with permanent residence can buy cheaper HDB apartments from Singapore.

And what other words there could be describing the users? Because they are living to abroad, they might be outgoing and adventurous. They know what they want and are ready to pay for it. They probably likes to travel and get acquainted with other cultures.

4.6 User research

User research offers a learning opportunity that can help you build an understanding of user behavior, but you must resolve discrepancies between research findings and your own beliefs. (Nielsen, J. 2000.)

User research provide information about the user´s needs, motives, qualities and goals. The research methods could be interviews, surveys, observations as well as examinee´s self-written stories, diaries or probes, or perhaps role-play or use situations and simulations. The extent of the user research depends on the product. New and complex product would need larger research while for small or already existing product small research could be enough. (Sinkkonen ym. 2009.)

Interviewing users or potential users is one key aspect of user centered design as they are the people who will be 'personally utilizing the product to accomplish a goal.' (Cooper et al. 2007: 56)

In this study case aim was to know what users will and would like to do in this website. It was not essential to know number of the users or how many times one user will visit in this site, it was more essential to know why someone would use the site, what this site could offer to users and what useful it should offer. Interview and observation was selected to research method.

Research questions was "What benefits could this website offer to users"

First I defined the different user groups:

- Expats who are being seconded or temporary transferred to Singapore. This group is probably going to stay for a short time, so they will rent a house.
- Expats who are transferred to Singapore for a longer time or going to work in Singaporean company, they probably wants to buy a house or make a longer and more secure lease.

- Singaporean, expats or immigrants who are moving from Singapore to abroad and wants to sell or rent their house.
- Investors who wants to buy a new properties.
- Investors who are renting their properties.

User research method in this study case was one to one interview because of resources. It is cheap and easy to implement and you do not need many participants. The advantages of an interview is that a participant's unique point of view can be explored in detail. It is also the case that any misunderstandings between the interviewer and the participant are likely to be quickly identified and addressed.

Interviews were implemented early in the design process in order to gain a more details of what focus group wants from this kind of websites, what they do not want and specific requirements.

Users who were interviewee were chosen because they are living in Singapore and they have bought or rented a house from Singapore less than three years ago or are planning to buy or rent one. One interviewee was Finnish entrepreneur who were currently living in Singapore and who is planning to buy a house from Singapore and has rented their newest apartment from Singapore two years ago, another interviewee was his wife, who took part in the purchase of a house. One of the interviewee was expat from Finland, who has just rented a apartment from Singapore a few months ago. The fourth interviewee was an Australian expat, who has been living in Singapore many years and is planning to switch his apartment to bigger.

The interviewee was told that the interviews will be recorded, and their names will not be mentioned anywhere. The interviews were transcribed with Microsoft Office ´s Word. Interviewee were asked to firstly think about Singaporean property websites.

Questions were:

- Have you ever visited in property website, how about Singaporean property site?
- Would you consider using property websites if you need to buy or rent a property and you have not used those before?
- If you answered yes then what for have you visited in?
- What kind of good user experiences you had, when you used those websites?
- Any bad user experiences?
- What do you expect a good property website to offer?
- What kind of website you like to visit?
- How do you use internet? What kind of websites and services you use?

4.7 Results of user research

All interviewees had visited in property sites. Some of them had visited in all major Singaporean property websites both for rent and for sell purposes. Interviewees thought that internet is the best way to start looking for properties in Singapore. And when they were asked what for have they visited in property sites, the interviewees answered for example that they have looked at condominiums for rent and for sale, researched information about different areas and facilities like public transportation, local schools and shopping malls as location is very important factor when you choose the place to live.

When interviewees were asked about good experiences, they told that level of different websites varied dramatically. There were websites from very poor to a one modern property website with level enough different options and functions. And also one website with comprehensive information about areas, price histories, local amenities and so on. Funny issue was, that the one does not committed any selling or renting activities, it only offered information. The website one of the interviewee mostly used, had lots of search options. Website offered quite free hands for property agents to enter information for clients. One detail is that I can check agents' legality very easily by clicking link in page. It is very important issue in Singapore.

How about bad experiences. For example there were outdated property ads in all websites and that was very annoying feature. All Websites allowed agents to enter the same property multiple times without removing older ads and it was confusing as when user is used number of suitable properties as a constraint to investigate some specific area, they got wrong results. Pages allowed ads without price or pictures.

Interviewees expected from property sites simple and easy way to enter selection criteria and exact information about property. Only available properties, no outdated information or ads. Every interviewees said that photos of properties are must.

Summary of what users expect from property site to offer is that they will got the information they need, no extras like advertisement or any pop-ups. Half of the interviewee said that they do not want any moving objects in site.

All interviewees said Internet is a good source of information. It is a good tool to buy something or order food to home. Every interviewee are using Internet banking. And they also used it for home delivery services, public transportation timetables and routes. Very common answer was also that they use Internet for travelling when buying tickets or reserving hotels.

check the travel location information beforehand and today internet is full of such kind of information.

5 Usability

5.1 Usability definitions

Roger Laing and Rhys Lewis says in their book *Design your own website* (2010), that a guaranteed way to drive visitors away from your site, is to create an unfriendly, slow-loading interface. But usability does not have to mean bland, image-free pages, it is just a case of understanding how users will find their way around the site.

Usability is a measure of effectiveness. It describes how effective tools and information sources are in helping us accomplish tasks. The more usable the tool, the better we are able to achieve our goals. Many tools help us overcome physical limitations by making us stronger, faster, and more sharp-sighted. But tools can be frustrating or even disabling. When we encounter a tool that we cannot work with, either because it is poorly designed or because its design does not take into account our needs, we are limited in what we can accomplish. (Patrick J. Lynch and Sarah Horton *Web Style Guide*, 1999)

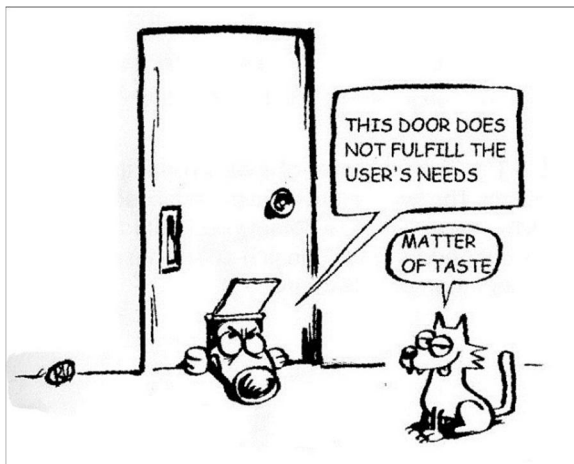


Figure 4 Usability: the extent to which a product can be used by specified users to achieve specified goals with effectiveness of use. ISO 9241-11

According Jakob Nielsen (*Alertbox*, 2000) definition for usability can be concluded into five basic components:

- Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the design?
- Efficiency: Once users have learned the design, how quickly can they perform tasks?

- Rememberability: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- Satisfaction: How pleasant is it to use the design?

There are many other important quality attributes. A key one is utility, which refers to the design's functionality: Does it do what users need?

So why is usability so important? It is necessary for websites, so users will use the site. For example, If a website is difficult to use, or the homepage fails to clearly state what a site offers, or website's information is hard to find or read or the colors and fonts are irritating people leave from website, they just do not want to use it anymore because there are plenty of other websites available with better usability. In the other hand it is necessary for websites survival to be good to use, so people will use it.

The key to creating a successful website lies in having a sound knowledge of all the factors influencing web design and in understanding how to achieve an effective balance between them. (Laing etc. 2010 p. 12)

5.2 Usability testing

In Usability testing usability of the website is estimated with real users, which means that it is user-oriented testing. The user will be asked to use the product and expert (tester) follows the event.

5.2.1 Techniques for testing

There are many different techniques to test usability of websites. Here are some examples.

5.2.1.1 Coaching methods

This technique can be used for usability test, where the participants are allowed to ask any system-related questions of an expert coach who will answer to the best of his or her ability. Usually the tester serves as the coach. One variant of the method involves a separate expert user serving as the coach, while the tester observes both the interaction between the participant and the computer, and the interaction between the participant and the coach.

The purpose of this technique is to discover the information needs of users in order to provide better training and documentation, as well as possibly redesign the interface to avoid the need for the questions. When an expert user is used as the coach, the expert user's mental

model of the system can also be analyzed by the tester. (J. Nielsen Usability Engineering, pp.199-200, Academic Press, 1993.)

5.2.1.2 Co-discovery Learning

During a usability test, two test users attempt to perform tasks together while being observed. They are to help each other in the same manner as they would if they were working together to accomplish a common goal using the product. They are encouraged to explain what they are thinking about while working on the tasks. Compared to thinking-aloud protocol, this technique makes it more natural for the test users to verbalize their thoughts during the test. This technique can be used in the following development stages: design, code, test, and deployment. (J. Nielsen Usability Engineering, pp.199-200, Academic Press, 1993.)

5.2.1.3 Question-asking protocol

During a usability test, besides letting the test users to verbalize their thoughts as in the thinking aloud protocol, the testers prompt them by asking direct questions about the product, in order to understand their mental model of the system and the tasks, and where they have trouble in understanding and using the system. This is a more natural way than the thinking-aloud method in letting the test user to verbalize their thoughts.

Providing the test users with the product to be tested (or a prototype of its interface) and a set of tasks to perform. Ask the participants to perform the tasks using the product, and explain what they are thinking about while working with the product's interface. Also ask them pointed, direct questions about the product; for example, "How would you send the email message?" Their response, either in terms of the product being tested or in other products from their past experience, will provide insights into their mental model of the product. (<http://www.usabilityhome.com/FramedLi.htm?Coaching.htm>)

5.2.1.4 Thinking aloud technique

During the course of a usability test, the test users are asked to verbalize their thoughts, feelings, and opinions while interacting with the system. It is very useful in capturing a wide range of cognitive activities. Two variations of thinking-aloud protocol technique are:

1. Critical response This requires the user to be vocal only during the execution of certain predetermined subtasks.
2. Periodic report This is used when the task is complex and makes it difficult for users to think aloud while performing the task at the same time. The user, therefore, verbalizes at predetermined intervals of time and describes what he/she is currently trying to achieve. The

length of the interval depends upon the complexity of the task. This technique is very time consuming, so it is recommended for subdivisions of a task.

Provide the test users with the product to be tested (or a prototype of its interface) and a set of tasks to perform. Ask the test users to perform the tasks using the product, and explain what they are thinking about while working with the product's interface.

Thinking aloud allows testers to understand how the user approaches the interface and what considerations the user keeps in mind when using the interface. If the user expresses that the sequence of steps dictated by the product to accomplish their task goal is different from what they expected, perhaps the interface is convoluted.

Although the main benefit of the thinking aloud protocol is a better understanding of the user's mental model and interaction with the product, there are other benefits as well. For example, the terminology the user uses to express an idea or function should be incorporated into the product design or at least its documentation.

(J. Nielsen Usability Engineering, pp.199-200, Academic Press, 1993.)

5.2.1.5 Retrospective testing

If a videotape has been made of a usability test session, the tester(s) can collect more information by reviewing the videotape together with the user participants and asking them questions regarding their behavior during the test. So this technique should be used along with other techniques, especially those where the interaction between the testers and the participants is restricted. But using this technique means that each test takes at least twice as long. Another obvious requirement for using this technique is that the user's interaction with the computer needs to be recorded and replayed.

(J. Nielsen Usability Engineering, pp.199-200, Academic Press, 1993.)

5.2.2 Amount of test users

Sometimes people think that it is better to use as many testers as possible, and the more there are testers the more costly and complex the user test is. But there is no need for huge budget or lavish time schedule. According to Nielsen (Alertbox, 2000) elaborate usability is just a waste of resources. Only five users and small tests are enough.

In earlier research, Tom Landauer and Jakob Nielsen showed that the number of usability problems found in a usability test with n users is:

$$N(1-(1-L)^n)$$

where N is the total number of usability problems in the design and L is the proportion of usability problems discovered while testing a single user. The typical value of L is 31%, averaged across a large number of projects we studied. Plotting the curve for $L=31\%$ gives the following result:

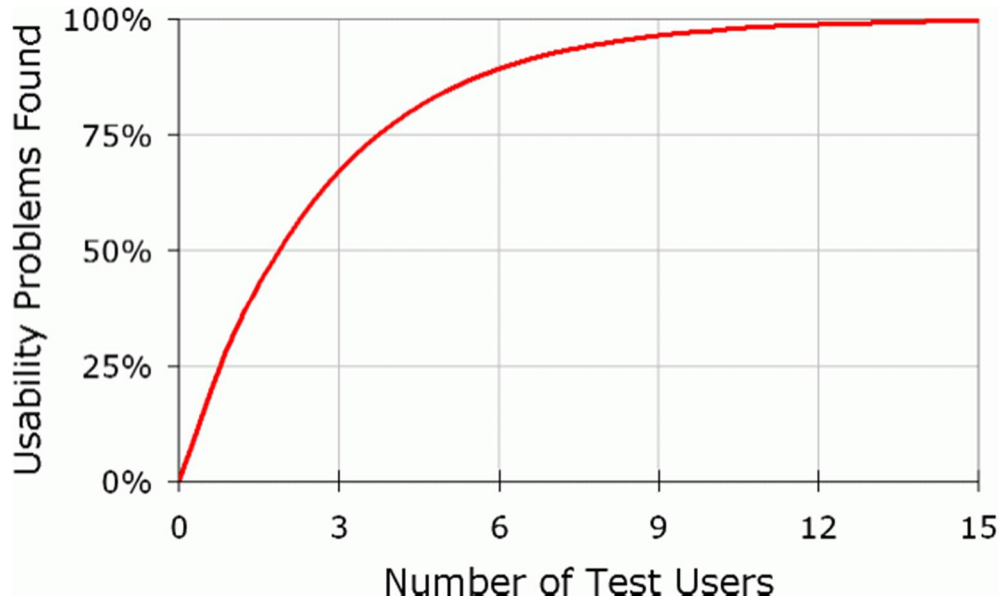


Figure 5 Jakob Nielsen Alerbox, 2000

The most striking truth of the curve is that zero users give zero insights.

As soon as you collect data from a single test user, your insights shoot up and you have already learned almost a third of all there is to know about the usability of the design. The difference between zero and even a little bit of data is astounding.

When you test the second user, you will discover that this person does some of the same things as the first user, so there is some overlap in what you learn. People are definitely different, so there will also be something new that the second user does that you did not observe with the first user. So the second user adds some amount of new insight, but not nearly as much as the first user did.

The third user will do many things that you already observed with the first user or with the second user and even some things that you have already seen twice. Plus, of course, the third user will generate a small amount of new data, even if not as much as the first and the second user did.

As you add more and more users, you learn less and less because you will keep seeing the same things again and again. There is no real need to keep observing the same thing multiple times, and you will be very motivated to go back to the drawing board and redesign the site to eliminate the usability problems.

After the fifth user, you are wasting your time by observing the same findings repeatedly but not learning much new. So why not to use only one tester?

There is two reasons why is better to use 5 testers with a couple tests then multiply tests with a single user

1. There is always a risk of being misled by the spurious behavior of a single person who may perform certain actions by accident or in an unrepresentative manner. Even three users are enough to get an idea of the diversity in user behavior and insight into what is unique and what can be generalized.
2. The cost-benefit analysis of user testing provides the optimal ratio around three or five users, depending on the style of testing. There is always a fixed initial cost associated with planning and running a test: it is better to depreciate this start-up cost across the findings from multiple users.

(Jakob Nielsen Alerbox, 2000 pp. 206-213)

5.2.3 Usability test moderation

There are three phases to moderating a usability test, first moderator needs to give instructions, for example ask the user to "think aloud" when user carry out the task, for example user tells to moderator what it is what she/he is trying to do or looking for or any decisions user is making, or if user get stuck or feel confused.

The moderator's role is to communicate what user say or do to the software developers, moderator will not be able to provide help or answer any questions. This is because the situation should be as realistic as possible. Even though moderator will not be able to answer user's questions, user can still ask them. It is very important to know all user's questions and comments from website. It is very important that moderator will not affect user's opinion of website, so moderator should be neutral.

6 Technology preview

Technology which is used in this project is introduced in this section.

6.1 Adobe Photoshop

Adobe Photoshop is graphics editing program created and developed by Adobe Systems. The "Photoshop family" is including Photoshop, Photoshop Extended, Photoshop Elements and Photoshop Light room. There is also Photoshop Express, free web-based image editing tool. But in

this project, only the basic Adobe Photoshop CS5 has been used. CS5 is the second newest Photoshop version, which was launched on 12 April 2010. The newest Photoshop version is CS6, which was released on 12 March 2012, so it was too late for this project which started on January 2012.

The Photoshop interface consist of a toolbox and a collection of tabbed context-sensitive dialog boxes that control the attributes of each tool. All images are created as a series of layers, so that different elements of a composition can be edited separately and "flattened" into a single layer shortly before exporting to a publishable format.

6.2 PHP

PHP (Hypertext preprocessor), is a server-sided/HTML embedded scripting language used to build up dynamic web pages for implementation of web application. PHP allows to use complex functions, because it is code is interpreted into a normal HTML page content in web server-side, and send it to the browser. PHP can be used in different platforms (for example Windows, Linux and OS) and it is compatibility almost all servers (for example Apache, IIS). One of the advantages of PHP is open source code, which means that code data have not been encrypted. So programmers can make further develops.

6.3 MySQL Database

MySQL is a database system, which is mainly used for processing stored information. SQL is structured query language, which also uses open source code. It is easy to use, what makes it the most used database system

6.4 CorelDraw

CorelDraw (styled CorelDraw) is a vector graphics editor developed and marketed by Corel Corporation.

This graphic design package is now almost 20 years old and has kept pace with the times with the addition of web-specific features as well as the latest image-edition tools.

6.5 Dreamweaver

Dreamweaver is Adobe ´s web editor tool. It includes the dominant multimedia standards Flash and Shockwave. Dreamweaver is popular among professional web designers, but all users of all degrees of experience can use it as well.

There are couple severe ways how to use Dreamweaver to create a web page. Designer can sketch a design for a site in a graphics package and then trace table elements, text areas and images over it. This way they can output to a regular page, or to the layer-based format, which ensures pixel-perfect design in the latest browsers. The other way is that designer can create pages in Dreamweaver's WYSIWYG HTML editor, where designer can build and view the pages graphically, just as they will appear in the browser. This is the easiest and very beginner friendly way, because it is possible to draw tables, add images and set up text styles without ever looking at the HTML code.

A tabbed window also gives access to the HTML source, which is very handy if you want to check why an effect is not working as it should. Dreamweaver will also check HTML for error and compatibility with all the latest and oldest versions of browsers such a Mozilla Firefox or Internet Explorer.

6.6 Web Browsers

According to Wikipedia A web browser (or commonly a browser) is a software application for retrieving, presenting and traversing information resources on the World Wide Web. An information resource is identified by a Uniform Resource Identifier (URI) and may be a web page, image, video or other piece of content. In this project functionality of website has been tested with the most common browsers, which are explained more below. All these browsers are free to download and use.

6.7 Internet Explorer

Internet Explorer (often shortened to IE) is Microsoft's browser, and it is it is the default browser in Windows operating system. For a long times IE was the most widely used browser on the Internet, but now it is the second popular browser with usage share 31,9%. The latest version of Internet Explorer is IE10.

6.8 Mozilla Firefox

Mozilla is a free and open source web browser coordinated by Mozilla Foundation and its subsidiary. Firefox has approximately 25% of worldwide usage share of web browsers, making it the third most used web browser. Unlike Internet Explorer, Firefox runs across several platforms, including various versions of Mac OS X, Microsoft Windows, Linux, and many other Unix-like operating systems. Mozilla Firefox was the most used browser in this project, and the site has been designed with a view to Firefox and Chrome.

6.9 Google Chrome

Google's Chrome is the newest of these browsers, it was published for Windows in December 2008, and for Linux and Mac OS X in June 2009. Even the Chrome is still new and fresh, it has managed to rise to the most popular browser with the usage share approximately 35% Chrome is lightweight and its claimed to be faster and more secure and stable than other browsers.

7 Requirement analysis

Requirements analysis process is an important stage in the system development. Website should include several basic functions, such as searching apartment for rent or apartment for sale, make an announce of selling home, some information of neighborhoods and cities and contact form.

7.1 Login

The login is happening with user ID (which is user's e-mail address) and password, which user has selected. Password must be at least six characters long and contains at least one special character or number. Login section should be easy to find and easy to use. If user has forget his/her password, they can have a new one by mail.

7.2 Quick search

The basic search (quick search) is located in main page and should be including following search criteria: Location (first neighborhoods in Singapore, and in further development there are also becoming different countries and cities), how many bedrooms, what is the price range, how many squares and which should be the property type (apartment, landed house, condominium or HDB Flat). There is own search forms for buy and for rent.

Figure 6 Quick search

7.3 Advanced search

In advanced search there should be more criteria: how many floors, is the house furnished or non-furnished, property features (like garage, pool, patio, yard, air conditioning etc) and is it children- or/and pet-friendly, price range, price per square, bed-/bathrooms. Another option is to search with keyword. There is chance to clear the form with clear-button.

7.4 Navigation

According to website machable.com the navigation bar is the most important design element on a website. Not only does it guide your users to pages beyond the homepage, but it is also the singular tool to give users a sense of orientation. With this in mind, it is important to adhere to time-tested design and usability conventions. Doing so will give your users a comfortable and easy reference point to fully engage with your content. So navigation to this site should be navigation bar where users are able to quickly and easily find the information they need: Clear, so only content that is absolutely necessary for users. Simple style, precise and recognizable words. Actions on the right, because people read from left to right. But main page link should be on the furthest left

7.5 Social media connect button

Social media, which means interactions among people in virtual communities and networks, is a great way to get free publicity, when users are advertising objects of the property website, they advertise the website itself at the same time. There should be connect buttons at least to Facebook and Twitter, so users could share, recommend and like the objects they are fond of, or advertise their own apartment.

Advanced Rented House Search

Location:

City/South West	Singapore
Orchard/Holland	Malaysia
Newton/Bt. Timah	Australia

Price Range: to:

Price per square
 - SGD

Squares(sqm²): To

Type: **Max floors:**

Bedrooms:
 1 2 3 4 5+

Bathrooms:
 1 2 3 4+

Apartment Facilities

Air conditioning Balcony Dishwasher Washing machine Garage Own yard
 Sauna

Common Facilities

Swimming Pool Tennis court Squash court Gymnasium Playground Jogging track
 Barbeque pits Basement carpark Security Sauna Elevator

Special needs:
 Pets allowed Safe for kids Suits for physically disabled

Condition:
 Tolerable Good Excellent New

Furnitures:
 Full furnished Partial furnished Unfurnished No matter

Free Search

Figure 7 Advanced search

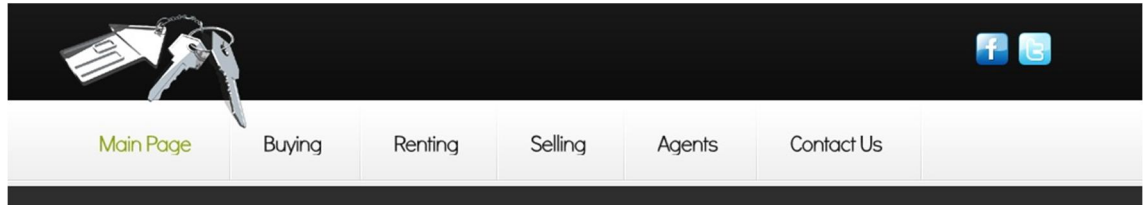


Figure 8 Navigation bar with social media buttons

7.6 Contact form

Contact form is an easy way to get feedback from users, it also helps users to take contact to company or administrator. Contact form should be easy and simple to use, it do not have to be good-looking or include anything special. Despite contact form, there should be also company's full contact information visible.

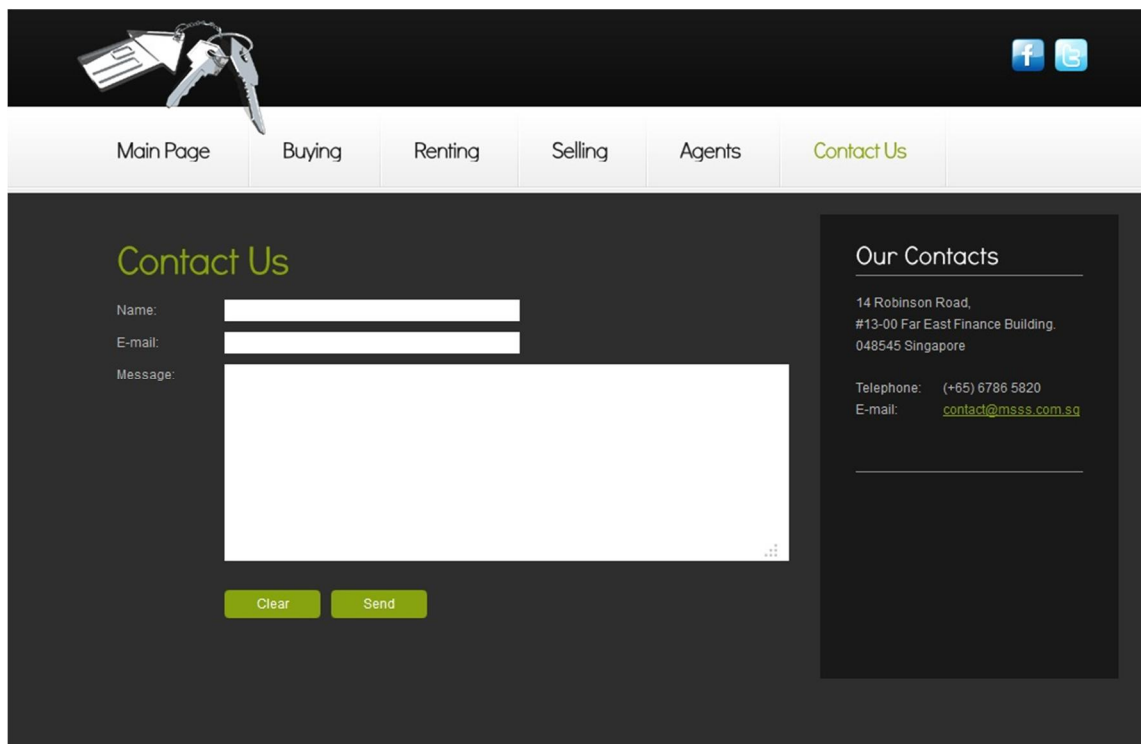


Figure 9 Contact form with contact information

7.7 Recent search and recent news

There is good to be recent searches in front page, it will help to remember what properties user has watched already and if user wants to do comparison between a few different properties, it is easy to do by clicking those recent searches. There is also good to be some news of the website, for example if there is coming new features or maintenance breaks, it is good to

inform users about these. The best place for recent search and recent news are in front page (but not in top of the page). There should be only a few objects, and if the user wants to see more about news or recent searched properties, she/he could go to the news page or property's page by clicking "more".

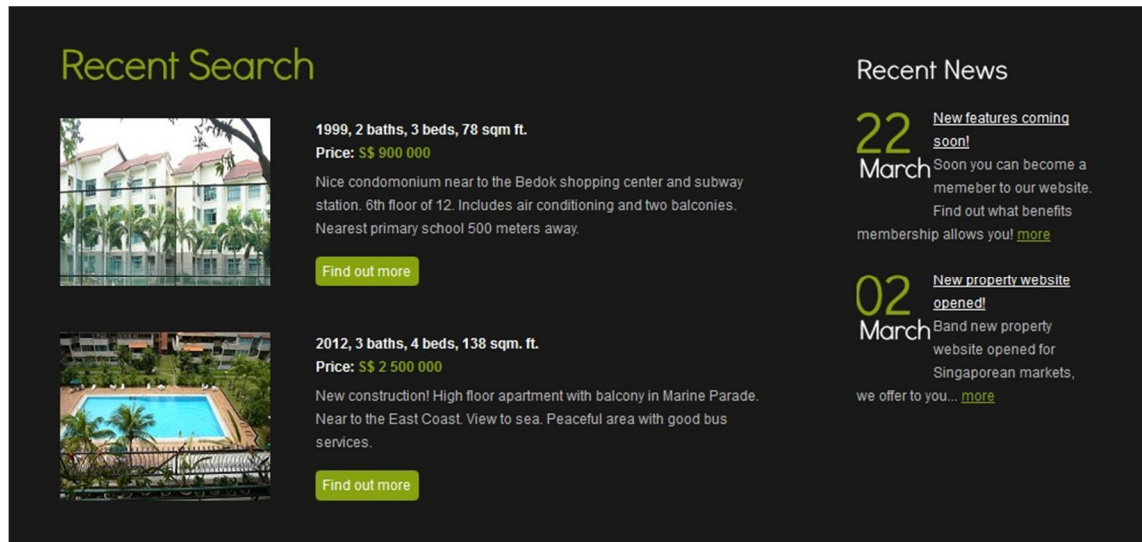



Figure 10 recent search / recent news

7.8 Main page

Main page means the same than front page, home page or index page. It means the page, which is appearing when user is entering to the website by typing the URL address in browser. So the main page should be attractive, since it is the first page that users sees when he/she enters to the website.

[Main Page](#)
[Buying](#)
[Renting](#)
[Selling](#)
[Agents](#)
[Contact Us](#)




Find Home Of Your Dreams

We keep only most current information on our site. No old duplicates will bother you when searching. You will find comprehensive information about free properties.

Apartment layout plan, Area analysis, funding alternatives amongst others on one click.

If you need extra information, just leave your message to our online helpdesk.




Selling

Are you selling your house?

You have easy access to our property agent database as well as our comprehensive statistics of sold information.

[Read more](#)




Buying

Are you planning to buy a own home?

Whether you need an agent or legal help, you can find them from our database. Our ads also include very detailed information about properties you are interested in. Layout plans, past transaction and so on.

[Read more](#)



Renting

Do you want to rent a house?

Maybe you want to live freely at rent home? You can also find many kind of nice rented houses in many different places! You can find reliable agents and detailed information about properties from our database. Layout plans, past transaction and so on.

[Read more](#)

Buy

Location:

 Orchard/Holland
 Newton/Bt. Timah
 Balestier/Geylang

Bedrooms:
 1 2 3 4 5+

Price Range: to:

Squares/sqm/ft: To:

Type:
 [Find](#)

[Advanced Search](#)

Rent

Location:

 Orchard/Holland
 Newton/Bt. Timah
 Balestier/Geylang

Bedrooms:
 1 2 3 4 5+


Price Range: to:

Squares/sqm/ft: To:

Type:
 [Find](#)

[Advanced Search](#)


Recent Search



1999, 2 baths, 3 beds, 73 sqm ft.
Price: \$8 800 000

Nice condominium near to the Bedok shopping center and subway station. 6th floor of 12. Includes air conditioning and two balconies. Nearest primary school 500 meters away.

[Find out more](#)



2012, 3 baths, 4 beds, 155 sqm. ft.
Price: \$8 2 600 000

New construction! High floor apartment with balcony in Marine Parade. Near to the East Coast. View to sea. Peaceful area with good bus services.

[Find out more](#)

Recent News

22 March

New features coming soon!

Soon you can become a member to our website. Find out what benefits membership allows you! [more](#)

02 March

New property website opened!

Brand new property website opened for Singaporean markets, we offer to you... [more](#)

Call us: +65 6786 5820

Figure 11 main page

8 The Conclusion of the project

It was useful to do this thesis, because we have learned in school about user centered design and usability, but now I was able to do it in the real world. It was fun to do so, and it was useful to the case company too, because they were able to know more about users and how to serve them. The whole process have been challenging learning process, but it is totally worth of it.

I learned that there is many different components which to consider while creating the website, it is not only the pretty outside or only the great content, what really matters is the big picture, which includes all the different parts.

The prototype and wireframe helped me a lot, it made design process much more easier. I made the design and layout by myself, but the other employees made the databases. User interview was very useful, it really told what users want, because what I thought could be great in website, was not what users automatically wanted.

Unfortunately I do not know about this project´s future yet. The case company is taking the break so far because of chief executive officer´s personal issues, and at this moment it do not have any business. We will look forward to see what will happen to this website.

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10 Pictures:

Figure 1 David Travis (The Fable of the User-Centered Designer by David Travis, 2009).....	9
Figure 2 The final prototype of property site.....	11
Figure 3 wireframe of project	12
Figure 4 Usability: the extent to which a product can be used by specified users to achieve specified goals with effectiveness of use. ISO 9241-11	20
Figure 5 Jakob Nielsen Alerbox, 2000	24
Figure 6 Quick search	29
Figure 7 Advanced search	30
Figure 8 Navigation bar with social media buttons	31
Figure 9 Contact form with contact information.....	31
Figure 10 recent search / recent news	32
Figure 11 main page.....	33
Figure 12 www.oikotie.fi	Attachment 1
Figure 13 www.jokakoti.fi.....	Attachment 2
Figure 14 www.oikotie.fi	Attachment 2
Figure 15 www.fareast.com.sg	Attachment 3
Figure 16 www.nationproperty.sg.com	Attachment 4
Figure 17 www.opkk.fi.....	Attachment 5
Figure 18 http://www.asunnot.fi/	Attachment 6
Figure 19 http://www.etuovi.com	Attachment 6
Figure 20 www.opkk.fi/	Attachment 7
Figure 21 www.etuovi.com.....	Attachment 8
Figure 22 http://www.stproperty.com.sg/	Attachment 8
Figure 23 Navigation bar of opkk.fi.....	Attachment 8
Figure 24 Navigation bar of jokakoti.fi	Attachment 9
Figure 25 Navigation bar of www.fareast.com.sg.....	Attachment 9
Figure 26 www.etuovi.com.....	Attachment 9
Figure 27 www.jokakoti.fi.....	Attachment 10
Figure 28 www.iproperty.com.sg	Attachment 11
Figure 29 http://www.stproperty.com.sg/	Attachment 11
Figure 30 http://www.propertyhub.com.sg/	Attachment 12
Figure 31 www.propertyguru.com.sg.....	Attachment 13

11 Attachments

The questions in user interview:

1. Have you ever visited in property website, how about Singaporean property site?
2. Would you consider using property websites if you need to buy or rent a property and you have not used those before?
3. If you answered yes then what for have you visited in?
4. What kind of good user experiences you had, when you used those websites?
5. Any bad user experiences?
6. What do you expect a good property website to offer?
7. What kind of website you like to visit?
8. How do you use internet? What kind of websites and services you use?

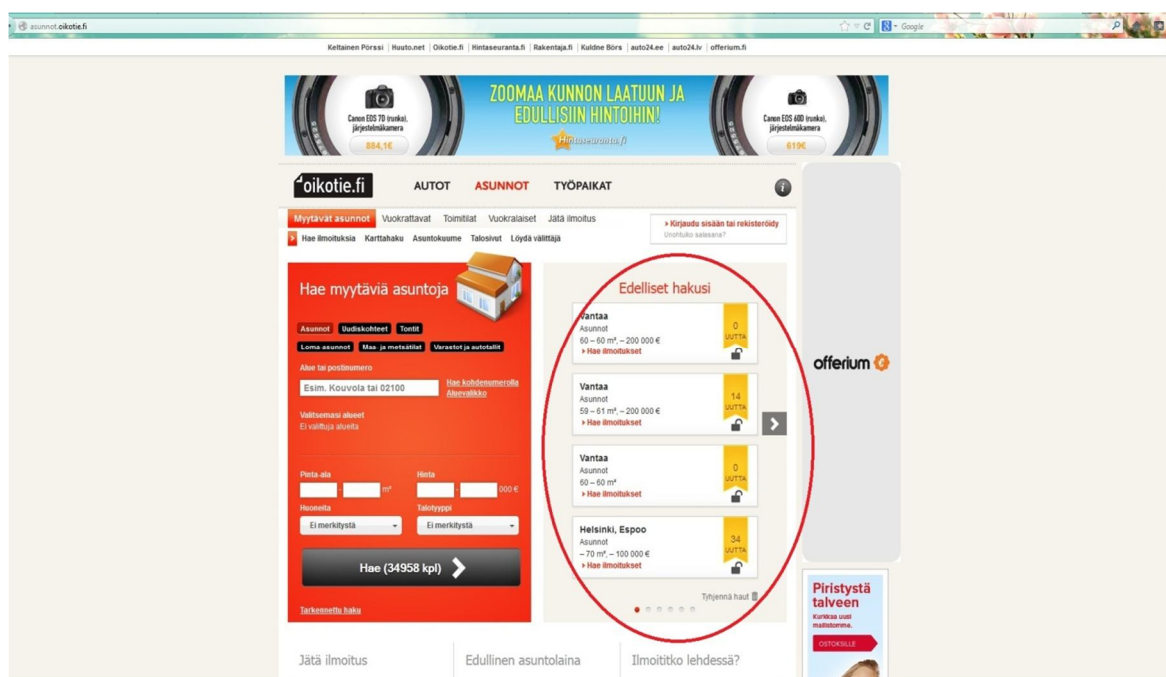


Figure 12 www.oikotie.fi

Jokakoti

Maan johtavat kiinteistönvälittäjät: Aktia, HUOM!, Huoneistokeskus, Kiinteistömaailma, OPKK, SKV Kiinteistönvälitys ja yli neljän sadan paikallisen yrittäjän muodostama Suomen Kiinteistönvälittäjälitto (SKVL) sekä MTV3 omistavat yhdessä Jokakoti.fi-palvelun.

Myytävät asunnot

Myytävät Helsinki (2124)
Myytävät Espoo (1767)
Myytävät Vantaa (1179)
Myytävät Tampere (1803)
Myytävät Turku (1288)
Myytävät Oulu (2007)
Myytävät Vaasa (463)
Myytävät Lappeenranta (598)
Myytävät Rovaniemi (510)
Myytävät Joensuu (688)

Vuokra-asunnot

Vuokra-asunnot Helsinki (511)
Vuokra-asunnot Espoo (217)
Vuokra-asunnot Vantaa (153)
Vuokra-asunnot Tampere (185)
Vuokra-asunnot Turku (387)
Vuokra-asunnot Oulu (232)
Vuokra-asunnot Vaasa (25)
Vuokra-asunnot Lappeenranta (43)
Vuokra-asunnot Rovaniemi (75)
Vuokra-asunnot Joensuu (6)

Kaikki myytävät kohteet 37638 asuntoa, 3184 Loma-asuntoa, 3775 tonttia, 2063 autopaikkaa, 82 toimistotilaa, 335 maa- ja metsätilaa, 316 varastotilaa, 161 tuotantotilaa, 256 autotallia ja 73 muuta kohdetta.

Kaikki vuokrattavat kohteet 3155 asuntoa, 59 Loma-asuntoa, 0 tonttia, 10 autopaikkaa, 272 toimistotilaa, 0 maa- ja metsätilaa, 168 varastotilaa, 72 tuotantotilaa, 16 autotallia ja 24 muuta kohdetta.

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Hae myytäviä asuntoja

Asunnot **Uudiskohteet** **Tontit**

Loma-asunnot **Maa- ja metsätilat** **Varastot ja autotallit**

[Hae kohdenumerolla](#)
[Aluevalikko](#)

Alue tai postinumero

Valitsemasi alueet

Ei valittuja alueita

Pinta-ala

- m²

Hinta

- 000 €

Huoneita

Talotyyppi

Hae (34958 kpl) >


[Tarkennettu haku](#)


Figure 14 www.oikotie.fi

Home
Residential
Industrial
Office
Medical
Hospitality
Retail
F&B
About Us
Our People
News

WE HAVE THE WIDEST SELECTION OF RESIDENCES FOR LEASE

Condominiums • Cluster Homes
Bungalows • Conservation Terraces






FAR EAST RESIDENTIAL LEASING

Far East Organization, Singapore's largest private residential landlord offers a variety of homes for lease in the most sought after districts across the island. Whether you are looking for a sophisticated modern apartment, a heritage home or a bungalow, we offer the widest selection of private residences to best suit the extensive needs and desire of the expatriate community for long term stay in Singapore.

For Enquiries, Call: +65 6223 5223 or Email: lease_res@fareast.com.sg

*We welcome enquiries/viewings on weekends.

 Available on the
App Store

RENT FAR EAST

Download this app now!

ANNOUNCEMENTS

We welcome enquiries / viewings on weekends.

Call us: (65) 6223 5223 or email:
LEASE_RES@FAREAST.COM.SG

Click
HERE

UPCOMING NEW HOMES FOR LEASE

PROPERTY HIGHLIGHT

Residential
Office
Industrial

To Buy To Rent

Property Name Any	Type Any
Location Any	Status Any
Size Any	No limit
Budget Any	No limit
District Any	Tenure Any
Nearest MRT Any	Nearest School Any
No. of Bedrooms Any	T.O.P Any

Search

SUBSCRIBE TO NEWSLETTER!

SUBSCRIBE

Figure 15 www.fareast.com.sg

NATION PROPERTY
One Nation, One Singapore, One Nation Property Portal

HDB Private Landed Industrial Caveat

Street:

Estate 1: All

Estate 2: All

Price Range: From To

Homes For: Sale

Flat Type: All

Block Range: From To

View Type: Compact View

Home | Post Listing | News | Home Guides | Loan Calculator | About Us | Contact Us

Featured Properties

WELCOME AGENTS AND BUYERS 'ALL RACE' PR ELIGIBLE. '84SQM 'ALL ROOMS AIRCON 'HIGH FLOOR 'NEAR ...

MATHAVAN MOHAN DAS
R0177983
90287902
[Call Now](#) [More Details](#)

H06 4A AT BLK 112 MCNAR ROAD FOR SALE, CONSIST OF 3 ROOMS LIVING HALL, KITCHEN, STORE AND 2 BATHS (...)

ASDHAR KHURSHID
R0226493
91881782
[Call Now](#) [More Details](#)

BEAUTIFUL AND NICE. CALL ME FOR DETAILS. 8380-2938

Yeo Yong Peng
R0147305
93882938
[Call Now](#) [More Details](#)

FOR GROUND FLOOR LOVERS, THE COAST @ SENTOSA. 283 OCEAN DRIVE 4 BEDROOMS (2540 SQ.FT.) ...

ER LEE KENG, SUSANN
L300490F
91013556
[Call Now](#) [More Details](#)

STRATA NOVENA ART F'HD. 3-RM LOFT. 1630 SQFT. HIGH FLOOR. SUI/MRT NOVENA SQ. GUIDE PRICE. SUKANTO ...

Sukanto Syarifin
R020062C
91500283
[Call Now](#) [More Details](#)

FIRE SALE! PREMIUM & BRAND NEW UNIT, UNRIVALLED IN LOCATION, QUALITY AND PRESTIGE. SENTOSA COVE IS ...

LIM SEOW PONG
R023882E
97919900
[Call Now](#) [More Details](#)

Figure 16 www.nationproperty.sg.com

[Tiedote: Tiedoksi opkk.fi vahtipalvelun käyttäjille](#) På svenska In English По-русски


Opkk.fi OP-lsännöinti ja OP-Talouhallinto

Ostajalle Myyjälle Ennakkomyynti-palvelu Yhteystiedot

Asunnot > Uudiskohteet > Loma-asunnot > Vuokra-asunnot > Tontit > Maa- ja metsätilat >

Toimitilat >

Katso Opkk:n asiakasedut tästä.



Asuntojen pikahaku

Kerrostalo 1h
 Omakotitalo 2h
 Rivitalo 3h
 Paritalo 4h+

Alue
(Kunta, kaupunginosa tai postinumero)
 Pinta-ala - m²
 Hinta 000 - 000 €


Esittelyssä 7 vrk:n sisällä

Kohdenumerohaku


Laske oma kuukausieräsi.
op.fi

”TARVITTAISIIN LISÄÄ SÄILYTYSTILAA”


Uusimmat kohteet



Alajärvi / 2h
Mh. 72000,00 €
[> Tutustu kohteeseen](#)



Valkeakoski / 3h
Mh. 135000,00 €
[> Tutustu kohteeseen](#)



Valkeakoski / 4h
Mh. 143510,11 €
Vh. 149500,00 €
[> Tutustu kohteeseen](#)

Ota yhteyttä

- [> Ota meihin yhteyttä](#)
- [> Lähetä meille palautetta](#)
- [> Luottihakemus osuuspankkiin](#)
- [> Pyydä tarjous Pohjolan vakuutuksista](#)
- [> Mediasuhteiden yhteyshenkilöt](#)

Katso myös

- [> Valittajaverkosto tehostamaan metsätilojen välitystä](#)
- [> Tutustu luoton takaisinmaksuturvaan](#)
- [> Palvelumme ostajalle](#)
- [> Etsitkö vuokra-asuntoa?](#)
- [> OP-Kiinteistökeskus vrttyksenä](#)
- [> Palvelun käyttöohjeet](#)

Oma opkk.fi


Oma opkk.fi -sivusto on rekisteröityneen käyttäjän oma sivu, jossa voit tallentaa esim. vahtipalvelun.

Käyttäjätunnus

Salasana

- [> Jos sinulla ei ole käyttäjätunnuksia, voit rekisteröityä tästä!](#)
- [> Käyttäjätunnus/salasana unohtunut?](#)

Uusi koti tarvitsee uuden vakuutuksen.





Pohjola 

Figure 17 www.opkk.fi

Figure 18 <http://www.asunnot.fi/>

Figure 19 <http://www.etuovi.com>


På svenska In English По-русски

Ostajalle Myyjälle Ennakkomyynti-palvelu Yhteystiedot OP-Isännöinti ja OP-Taloushallinto

Asunnot ▶ Uudiskohteet ▶ Loma-asunnot ▶ Vuokra-asunnot ▶ Tontit ▶ Maa- ja metsätilat ▶

Toimitilat ▶

Asuntohaku Ohje ?

Hae **Tyhjennä**

Alue
 Koko Suomi
 Ahvenanmaa
 Etelä-Karjala
 Etelä-Pohjanmaa
 Etelä-Savo
 Kainuu
 Kanta-Häme
 Keski-Pohjanmaa

Aluetarkennus
 Akaa
 Alajärvi
 Alavieska
 Alavus
 Asikkala
 Askola
 Aura
 Brändö

Kaupunki

Osoite

Postinumero

[Siirry karttarajaukseen](#)
Kaupunginosa

CTRL-näppäin pohjassa voit valita tai poistaa useamman alueen tai aluetarkennuksen. Kaupunginosa tai postinumerota voit syöttää useampia pilkulla erotettuna.

Asuntotyyppi
 kerrostalo
 omakotitalo
 rivitalo
 paritalo
 erillistalo
 luhtitalo
 puutalo-osake
 erillinen autotalli
 erillinen autopaikka

Huoneiden lukumäärä
 yksiö
 kaksio
 3 huonetta
 4 huonetta
 yli 4 huonetta

Asuinpinta-ala
 - m²

Omistusmuoto
 omistusasunto
 osaomistusasunto
 asumisoikeusasunto
 muu

Velaton hinta:
 000 - 000 €

Asunnon ominaisuudet
 oma sauna
 parveke
 alin kerros
 ylin kerros

Myyntihinta
 000 - 000 €

Asunnon kunto
 hyvä
 tyydyttävä
 välttävä
 ei luokiteltu

Taloyhtiössä
 hissi

Tontti
 oma
 vuokra

Tontin koko
 - m²

Ranta
 ranta
 ei rantaa
 oma ranta
 oikeus vesialueisiin
 rantaoikeus

Figure 20 www.opkk.fi/

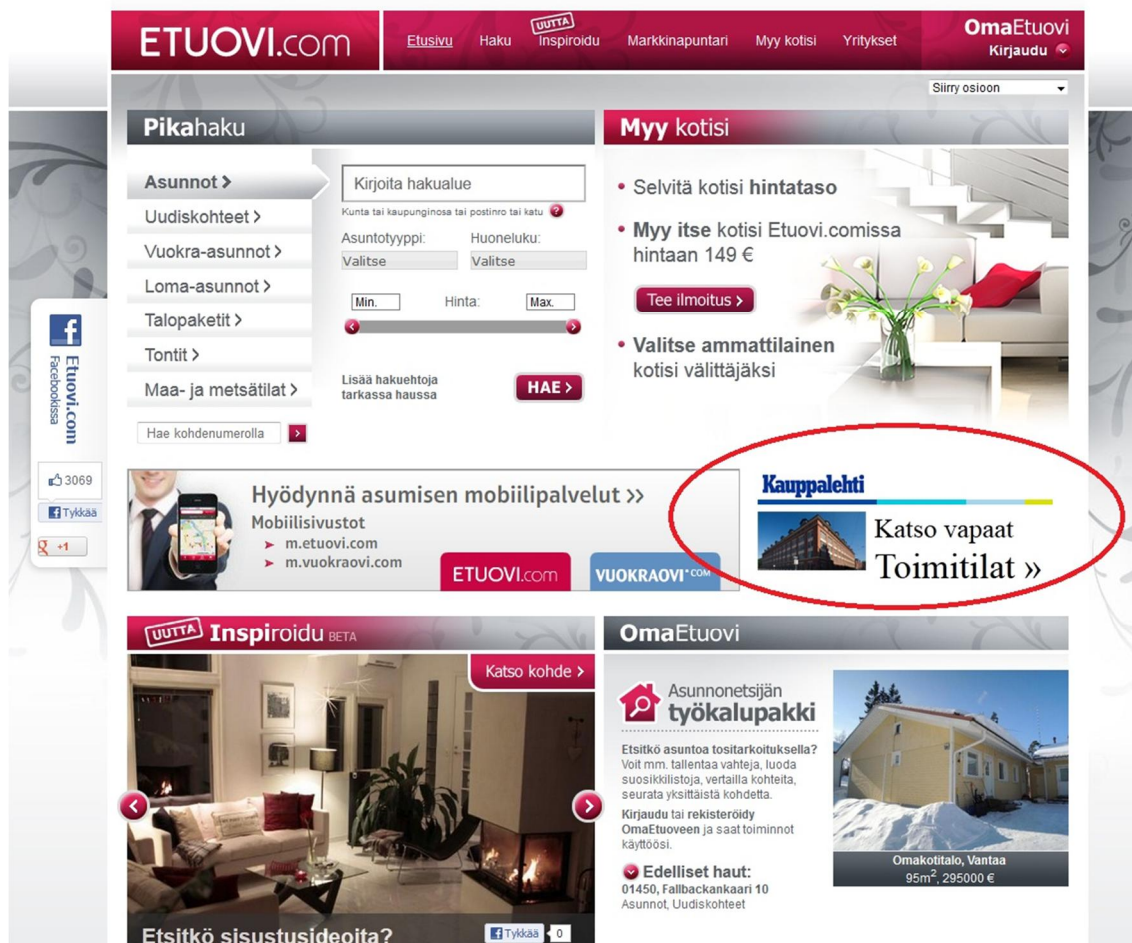


Figure 21 www.etuovi.com



Figure 22 http://www.stproperty.com.sg/

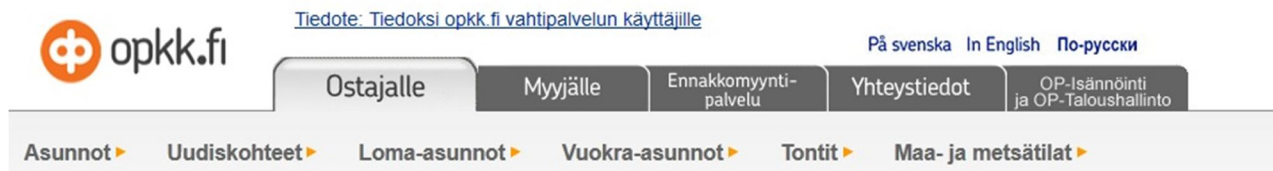


Figure 23 Navigation bar of opkk.fi

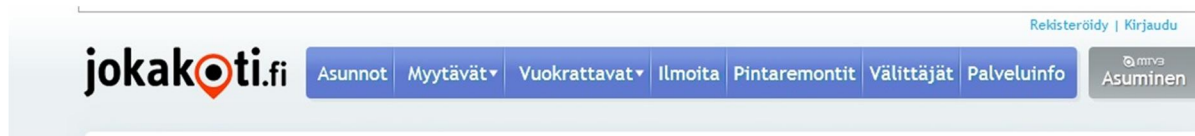


Figure 24 Navigation bar of jokakoti.fi

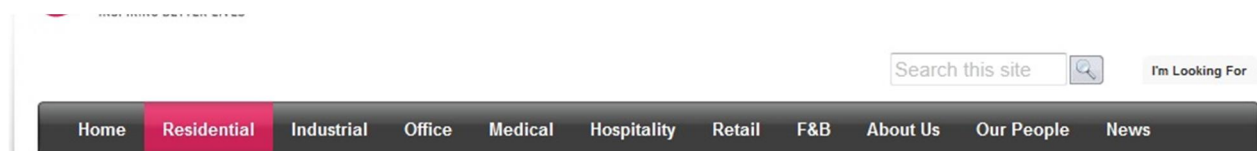


Figure 25 Navigation bar of www.fareast.com.sg

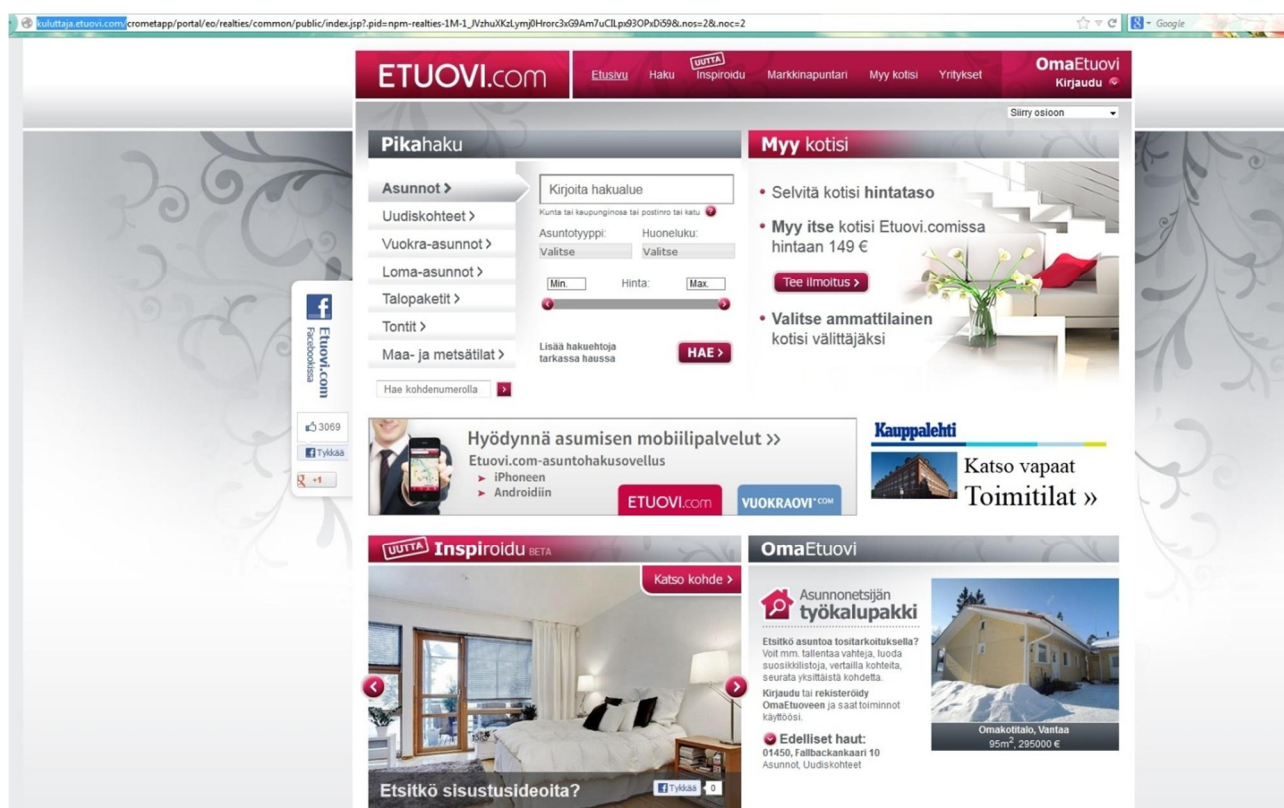


Figure 26 www.etuovi.com

Rekisteröidy | Kirjaudu

jokakoti.fi Asunnot Myytävät Vuokrattavat Ilmoita Pintaremontit Välittäjät Palveluinfo miva Asuminen

Jokakoti - 53259 kohdetta, 40871 asuntoa, 3239 loma-asuntoa, 3769 tonttia Siirry kohteeseen

Hae myytävää asuntoa

Alueet (katu, kaupunginosa, kaupunki, postinumero, kunta)

Aluevalitsin

Aloita kirjoittamaan kaupungin tai alueen nimeä...

Talotyyppi Huoneita Hinta Pinta-ala


min - max 000€ min - max m²

Näytä enemmän hakuehtoja

[Hae listalle](#) [Hae kartalle](#) Hakuehdoillasi: 37450 tulosta


Uusimpia kohteita

Uusimaa



Helsinki 00840 4h, k 245 000 €

Tiedä heti, kun etsimäsi asunto on saatavilla!
Löydä unelmiesi koti ja voita sille stailaus



- 1 Tee asuntohaku
- 2 Ota yhteyttä myyjään
- 3 Voita 2000 € lahjakortti & sisustus suunnittelu

Ilmoita asunto

Kiinteistönvälittäjä
Tule ilmoittamaan maan johtavien kiinteistönvälittäjien kanssa. Palvelusta

Myytävät	Vuokrattavat
Asunnot	37695
Loma-asunnot	3180
Tontit	3769
Maa- ja metsätilat	336
Varastotilat	315
Toimistotilat	80
Tuotantotilat	160
Autotallit	254
Autopaikat	2064
Muut	73

Figure 27 www.jokakoti.fi

The image shows a pop-up advertisement for Lock+Store, a private storage space provider. The ad features a muscular man holding a sign that reads "LOCK+STORE Your Private Storage Space" and "1800 3703737 www.lockandstore.com.sg". To the right of the man, the text provides two phone numbers: "6243 0600 (Chai Chee)" and "1800 370 3737 (Tanjong Pagar)", along with the website "www.lockandstore.com.sg". The background is a blurred screenshot of the iProperty.com.sg website, showing navigation tabs like "Find Property", "HDB", "Condo", and "New Property".

Figure 28 www.iproperty.com.sg

The image is a screenshot of the STProperty.com.sg website homepage. The page layout includes a top navigation bar with links for "PROPERTY", "JOBS", "CARS", "CLASSIFIEDS", "DIRECTORY", and "ST701". The main header features the "NASSIM AGENCY" logo and contact information. Below this is a "PROPERTY SEARCH" section with filters for "Property Type", "District", "Bedrooms", "Price", and "Size". A "SEARCH" button is prominently displayed. To the right of the search section are buttons for "REGISTER AS USER" and "REGISTER AS AGENT", along with a "LOGIN" button. The "FEATURED PROPERTIES" section displays several property listings with images and brief descriptions. A "PROJECT SPOTLIGHT" section highlights specific developments. At the bottom, there are sections for "PROPERTY HIGHLIGHTS" and "QUICK POLL". Red arrows point to various elements: one points to the "eco" advertisement on the left sidebar, another points to the "eco" advertisement on the right sidebar, and a third points to the "Sennett" advertisement at the bottom right.

Figure 29 http://www.stproperty.com.sg/

The screenshot shows the PropertyHub website interface. At the top, there is a navigation bar with links for 'How to Post?', 'FAQ', and 'Login'. Below this is a 'MEMBERS AREA' with fields for 'Username' and 'Password', and buttons for 'Login', 'Lost Password?', and 'Register'. A search bar is also present with the text 'search this site...' and a 'Go' button.

The main content area is divided into several sections:

- SEARCH SINGAPORE PROPERTY:** A search bar with a dropdown menu for 'All Types' and a 'Search' button. There is also a link to 'Advanced Search'.
- QUICK SEARCH BY PROPERTY TYPE:** Three image-based buttons for 'HDB for Rent', 'Condo for Rent', and 'Landed for Rent'.
- QUICK SEARCH BY DISTRICT / ESTATE:** A grid of buttons for various districts including Ang Mo Kio, Bedok, Bishan, Bukit Batok, Bukit Merah, Bukit Panjang, Bukit Timah, Central, Chai Chee, Choa Chu Kang, Clementi, Eunos, Geylang, Holland, Hougang, Jurong East, Jurong West, Kallang / Whampoa, Marine Parade, Pasir Ris / Changi, Potong Pasir, Punggol, Queenstown, Sembawang, Sengkang, Serangoon, Simei, Tampines, Toa Payoh, West Coast, Woodlands, and Yishun.
- ARTICLES AND RESOURCES:** Three articles with images and titles: 'PropertyHub Maps', 'Resources for HDB Flats', and 'Resources for Private Properties'.
- LATEST CONDO NEWS:** A section with several news items, including 'Le Loyang Mr', 'The Trumps', and 'Livia'.
- REISSULUOTTO.FI 60-1500€:** An advertisement for a Finnish property portal.
- LAINA.COM LAINAA 50-1000€:** An advertisement for a Finnish mortgage service.
- F-SECURE@ VIRUSTORJUNTA:** An advertisement for a Finnish virus protection service.
- SILVERSKIN:** An advertisement for a Finnish skin care product.
- LATEST LISTINGS: RENT:** A section with a filter for 'HDB', 'Condo', or 'Landed' and a list of rental listings.
- LATEST LISTINGS: SALE:** A section with a filter for 'HDB', 'Condo', or 'Landed' and a list of sale listings.
- SUBSCRIBE:** A section with a 'Sign up to receive regular newsletters' button and a 'Name' input field.

Figure 30 <http://www.propertyhub.com.sg/>

The screenshot displays the PropertyGuru Singapore website interface. At the top, there is a navigation bar with the PropertyGuru logo and various menu items like 'Home', 'About Us', 'Contact Us', etc. Below the navigation bar is a search section titled 'SINGAPORE PROPERTY SEARCH' with a maximum budget of S\$750,000. The search filters include 'For Sale', 'For Rent', 'New Homes', 'Commercial', and 'Mixed-Use'. There are dropdown menus for 'City/Town', 'Location', 'Min Price', 'Max Price', 'Bedrooms', 'Min Size', 'City District', 'Any Price', and 'Any Size'. A 'Search' button is prominently displayed.

Below the search section, there are several content blocks:

- SERVICES APARTMENT @ GENTING HIGHLANDS RESORT**: A banner for serviced apartments in Genting Highlands.
- Serley Ridge**: A featured property listing with an image of the building and a 'View Details' button.
- Singapore Property Market News**: A section with text-based news articles.
- Property Market Trend**: A line graph showing market trends over time.
- Home & Lifestyle**: A section with various lifestyle-related articles and images.
- PropertyGuru TV**: A section featuring video content with thumbnails.
- AskGuru - Get Answers to Your Questions from Professional Real Estate Experts**: A Q&A section with expert advice.
- How to Buy Property in Singapore**: A section providing information on the buying process.
- PropertyGuru App**: A section promoting the mobile application.

On the right side of the page, there are several vertical promotional banners:

- Job Free Road**: A banner about job opportunities.
- Upgrading Down**: A banner discussing property upgrading strategies.
- Property Hunting**: A banner for finding properties.
- Available for iPhone & Android**: A banner for the mobile app.
- Property Experts' Tip**: A banner with expert advice.
- PropertyGuru's ONLY Property Newspaper**: A banner for a digital newspaper.
- Quick Visa**: A banner about visa services.
- Market Research Report**: A banner for market research.
- Newsletter Sign Up**: A banner for subscribing to newsletters.

At the bottom of the page, there is a 'PropertyGuru App' section with a QR code and a 'Download on the App Store' button.

Figure 31 www.propertyguru.com.sg