

Looking for property via Smartphone

trends, offers and prospects

Research Paper

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Abstract

Our project deals with the yet uncharted topic "Relevance of Smartphone applications in the search for real estate in the German-speaking region". Market analyses assume rapid growth of the number of augmented reality applications. Hence, it is expected that there will also be an increase in the use of Smartphone applications in the real estate search. Since June 2010 two applications have been on the Austrian Market, of which one supports the Augmented Reality (AR). In both Germany and Switzerland there are numerous applications for real estate search by now.

Our project analyses the quantity and structure of real estate search applications in German-speaking regions. Using qualitative methodology, it also provides a methodical comparison of applications available in Austria. The main criteria of product comparison are: operating system, correspondence of available information and real estate on offer, extent of provided information, application usability, the types of real estate on offer.

Based on the results of our research, the project covers the structural, technological and user related factors that facilitate or impede dissemination of Smartphone applications for real estate search. Finally, it gives an overview of the market potential of AR-applications for real estate search via Smartphone.

The result of the analysis suggests that usage of Smartphone applications depends on hard facts, i.e. predominance of iPhone operating systems iOS, as well as on soft facts, like usability. Currently, only 10% of real estate on offer in the only available application in Austria that supports augmented reality is geo-coded.

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1. Introduction

During the last year, the word *App* was nominated by the American Dialect Society as the word of 2010. App is an abbreviation for application. The main characteristics of an app are its simple usage and the flat training curve in usage in a short life cycle. It is a cheap product, created for consumers and distributed via virtual markets. Applications for Smartphones, which can be downloaded in an application store, have been available since 2008. Apple can be regarded a pioneer with its foundation of 'App Stores'. The research institute of Gartner predicts 17.7 billion of downloaded applications for the year 2011. At the end of 2014 there will be even more than 185 billion of downloaded apps.

In the year 2010 more than 300 million of smartphones have been sold throughout the world. This enormous demand of smartphones results from additions, such as cameras, touch screens and AMOLED-Screens¹. Most smartphones have been sold in Western Europe and North America. In these areas the average income is quite high. Besides this the download rate is high enough to facilitate use of offered features. Figure 1 shows the worldwide market of Smartphones in comparison to the used system software.

Figure 1: Totally amount of sold Smartphones in comparison to the used software system

| | Units 2010 [Thousands of units.] | Market Share 2010 [%] | Units 2009 [Thousands of units.] | Market share 2009 [%] |
|------------------|--|---------------------------------|--|---------------------------------|
| Symbian | 111,577.7 | 37.6 | 80,878.3 | 46.9 |
| Android | 67,225.5 | 22.7 | 6,798.4 | 3.9 |
| RIM | 47,452.6 | 16.0 | 34,347.6 | 19.9 |
| iOS | 46,598.3 | 15.7 | 24,890.7 | 14.4 |
| Microsoft | 12,378.2 | 4.2 | 15,031.0 | 8.7 |
| Sonstige | 11,417.4 | 3.8 | 10,432.1 | 6.1 |
| Gesamt | 296,647.7 | 100.0 | 172,376.1 | 100.0 |

Source: based on Gartner (2011)

The software system of Google Android, used by the smartphone producers HTC, Samsung and Motorola, had an annual growth of 889% in 2009. Compared to other sales figures, Google Android was second in the ranking. This ranking changed during the fourth quarter of 2010 when Nokia's Symbian lost its leading position to Google Android. RIM holds the third place with 16%, followed by Apple's iOS with 15.7%.

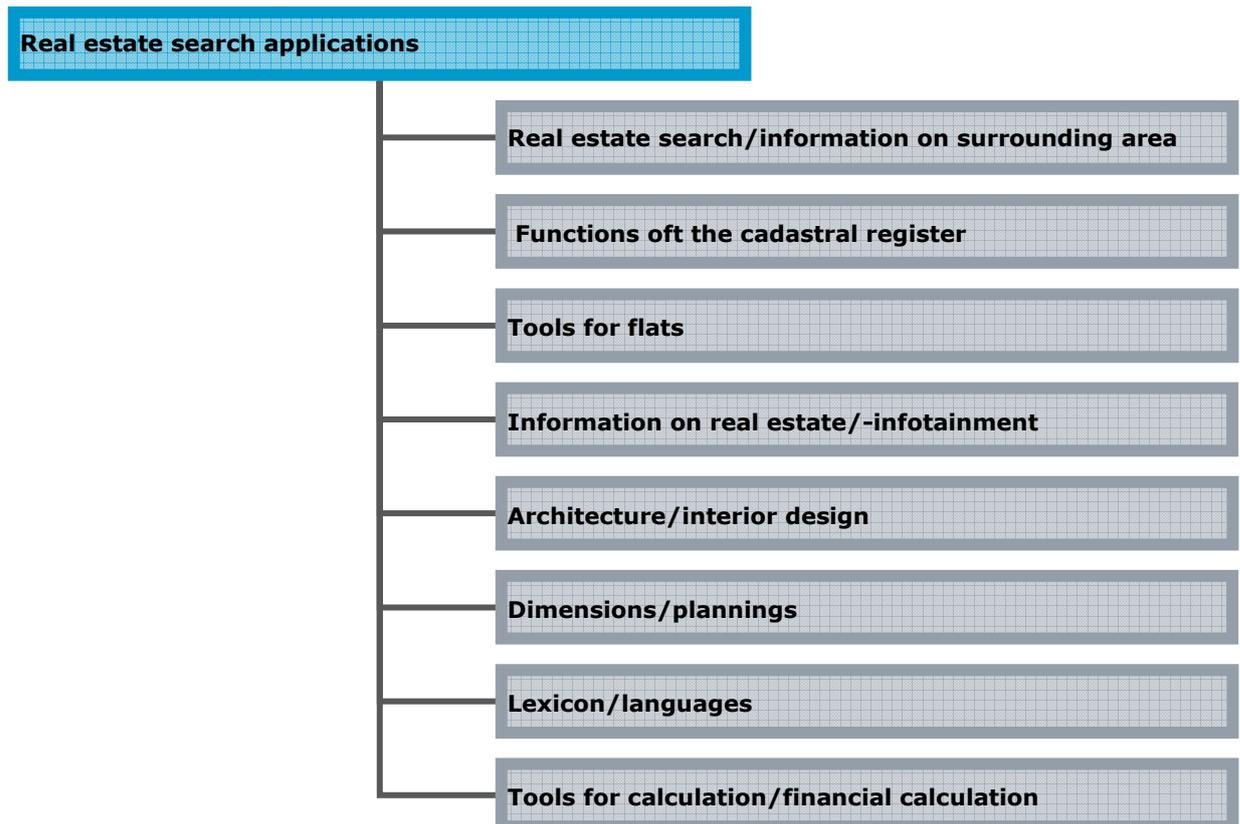
Due to the topicality and high profile of this topic, A1 published a study of the Austrian mobile phone market. The title of the study is „Social Impact Study 2010 - So smart sind Österreichs Handybesitzer“. In this study, 1,150 Austrian mobile phone users from the ages 12 to 99 were interviewed. According to the Social Impact Study of A1, one third (32%) of mobile phone users, from the age of twelve, are already using a smartphone. It is noteworthy, that young men from the ages 12 to 29 make up the biggest part of smartphone users, namely 45%. Furthermore, 18% of those young men under 29, who have not used a smartphone until now, declared that they were already planning to buy a smartphone within the next 6 months. Their purchase decision is mainly influenced by the functionality (16%) and the low price of the devices (15%). Further reasons for buying a smartphone are mobile internet (10%), E-Mail (9%) and finally the convenience of an all in one device (8%).

In connection with the rapid growth of the smartphone market, mobile phones are becoming more and more a status symbol. The development of the additional value of mobile phones shows a plus of 7% within one year. This is mainly due to the fact that mobile phones are seen as an indispensable feature in business and private life. Mobile phones influence our lives in a positive and sustainable way. By now mobile phones have become an essential part of daily life for Austrians. Every fourth person in Austria says that he/she would rather abstain from coffee, car and television, than from the use of their mobile phone. In August 2010, the consulting firm Arthur D. Little published a study of the use of smartphones and apps in Germany. 32% of the respondents from the age of 18 up to 29 are owners of a smartphone– with an increasing tendency. For 2012/2013 it is expected that the amount of smartphone users will be more than 50%, rising up to 70% by 2014/2015. This development cannot only be noticed in Germany and Austria, it can also be observed throughout Europe. Within Europe more than 28 % of adolescents between 15-24 years of age own a smartphone.

The real estate sector has also become part of this development/trend. So far there are various real estate applications (short RE apps). These are classified in the table below.

As a result, the real estate sector has already adopted this development/trend. So far, several real estate search applications have been established. In the following figure the main real estate search applications are classified.

Figure 2: Classification of the real estate search applications



The focal point of our study was real estate search. On the one hand, we investigated different real estate search applications in Germany, Switzerland and Austria and on the other hand we compared systematically the two applications that are available in Austria.

In Germany, Switzerland and Austria, there are over 20 real estate search applications available – with an increasing tendency. For our studies we evaluated only applications with more than 35,000 real estate objects. Furthermore, applications based on searching tools (e.g. IMMO) and real estate websites were not considered.

The following applications immobilien.net and wohhnet.at were tested on iPhone 4 (iOS), LG P 500 (Android) and Orange Boston (Android). Both applications were compared systematically. As shown in figure 3, the following criteria were chosen:

Figure 3: Parameters for investigation of the two applications

| Criteria | Description |
|--|--|
| Operating System (iOS, Android) | How does the chosen software system influence the results of the application? Are there any differences? |
| Correspondence of available information with real estate on offer | Amount of identified real estates? Are there any geographically differences? What kinds of differences have been identified? Based on five case studies (Vienna, St. Pölten, Linz, Graz, Salzburg) the amount of identified real estate was tested. Due to the small control sample, no statistical evaluation was done. Further observational research is planned. |
| Extent of provided information | What kind of information in connection with the identified real estate is available? Are there any differences between the two software systems? |
| Usability | The Usability of the App was defined by the following criteria: Download, Installation, Adjustment Square meters, Adjustment Prices, Radius in km, Notification of A1-Shops, Augmented Reality, phone connection to the estate agents, Pictures of the real estate? |
| Types on real estate on offer | Type of offered real estate? e.g. flat, house, purchase/rent/tenancy |

The phone and internet connections were supported by the company ORANGE. The Applications were tested from November 2010 until March 2011.

2. Overview of apps in the German-speaking region

The apps were researched based on the following questions which are divided in sub criteria.

Figure 4: Questions concerning app overview in the German-Speaking region

| Criterion | Description |
|--------------------------|--|
| General | What is the name of the app? In which application is the app available? In which countries are the offers available? Does the application support different languages? Does the application support augmented reality? What is the price for the app? |
| Types of Property | How many objects are offered? Which different types of objects can be searched for? How many objects are geo-coded? |
| Other features | How many downloads were available for the application? ² Which special features does the application include? Is the application also available for iPad? When was application last updated? |

Figure 5 (on page 7) describes our findings. Then our paper will focus on applications in the German-speaking region and describe the situation in Germany, Switzerland and Austria.

Concerning the table (Figure 5) it should be noted that all investigated applications are free but download fees may apply. Download fees depend on data volume. While most providers already offer data download packages for a certain amount of GB, caution needs to be exercised when downloading abroad as roaming fees apply.

Geo-coded objects are distinguished in two different categories. On the one hand, they are distinguished based on how many percent of the objects are only partly geo-coded, e.g. only with postcode, and on the other hand, how many objects are geo-coded with their full address (street, number of house) and can therefore be clearly marked in the map of the application. In the application of immobilien.de also those objects are shown which are only registered with the place name. The applications of immobilien.net, homegate.ch and ImmobilienSchout24 Switzerland support objects that are listed with their full address. The percentage in the table shows the total geo-coding of the object.

A major challenge in this search for real estate is the geo-coding of the existing address information. Exact spatial positioning can only occur when the total data of the object is known and has been registered. This is where the problem with real estate search engines begins is Austria. Only 10% of all real estate on offer are currently geo-coded, e.g. immobilien.net, and thus can be shown in the application. Although real estate agents can use the app for free, the problem lies in the fact that purchasers, lessees and vendors are trying to avoid paying commissions by cutting out the agents. Therefore the agents hold back information on address when registering the real estate in the RE-app. Another aspect is discretion in cases when a vendor or owner is against publishing data or when security is an issue with empty objects. In practice, however, geo-coded objects that display full address information are 40% shorter on the market.

According to the search engine providers ImmoScout24, in Germany there is the same problem.

According to the search engine provider ImmoScout24.ch, apartments for lease are generally advertised by the owners, their property managements or even directly by the tenants, without employing an agent. If an agent (especially with objects for sale) brokers a deal, they exclusively advertise this object. Therefore it is not necessary to conceal the address of the object.

A further criterion was Augmented Reality. With the help of this, the real-life image of the Smartphone-camera image is provided with additional information through GPS- and compass information as well as with data from real estate search engines. This creates additional benefits for the user. At the same time, reality and virtual objects correlate in a three dimensional way.

Figure 5: Overview of real estate apps³ in the German speaking region in table form

| | Germany | | | | Switzerland | | | | Austria | |
|-------------------------------------|---|--|--|--|---|--|--|---------------------------------|--|---|
| Name of App | ImmoScout24 | immonet.de | immobilien.de | immowelt.de | Comparis | homegate.ch | ImmoScout24 | ImmoStreet | Immobilien.net | Wohnnet.at |
| Application Store | App Store, Android Market | App Store | App Store | App Store, Android Market, Ovi Store | App Store | App Store, Android Market | AppStore | Apple Store | App Store, Android Market | App Store |
| Languages | German | German | German | German, English | German English, French, Italian | German, English, French, Italian | German, English, French, Italian | German English, French, Italian | German | German |
| Augmented Reality | No | Yes | No | No | No | No | No | No | Yes | No |
| Price | Free | Free | Free | Free | Free | Free | Free | Free | Free | Free |
| Number of Objects | about 1.2 Mio | about 950,000 | about 180,000 | about 960,000 | about 96,000 | about 50,000 | about 43,000 | about 36,000 | about 55,000 | about 40,000 |
| Types of Real Estate | residential property, properties | residential property, properties, carparks | residential property | residential and commercial property, properties, carparks | residential and commercial property, properties, carparks | No choice | Residential and commercial property, vacation homes, properties | residential property | residential property | Residential and commercial properties, shared accommodation |
| Type of lease | purchase, rent, lease | purchase, rent | purchase, rent | purchase, rent, tenancy | purchase, rent | purchase, rent | purchase, rent | purchase, rent | purchase, rent | purchase, rent |
| Geo-coded Objects | None | No details | None | None | None | about 50% | about 95% | None | about 10% | None |
| Number of Downloads (Status) | No details | No details | 7,000 (Feb 2011) | App Store: 200,000 (March 2011) | 130,000 (Jan 2011) | No details | No details | No details | App Store: 6,000 (Dec. 2010), Android Market: 5,000 (March 2011) | 10,000 (March 2011) |
| Special Features | Entry of viewings, Route planner, Street view, Information of average price for a certain location, Addition of notes, photos | Entry of appointments, auto notice of new objects, Addition of notes/photos, videos, Property folder via Facebook and Twitter, multiple choice option of places possible | Entry of viewings, all objects are also shown on a map | Push-Notification, Distance between two objects is shown, Quick and detailed search with voice recognition | Different maps, Comparis-rating, additional information, like location-related factors and past prices of the objects | Order of moving boxes, Search for movers and cleaning companies possible | Saves the search progress, Objects/advertisements can be rated (with stars), Route planner | Auto notice of new objects also | Augmented Reality | Auto notice of new objects, Creation of advertisements, Advisor |
| iPad | No | No | No | Yes | Yes | No | Yes | Yes | No | Yes |
| Update | App Store: 2/3/2011 Android Market: 3/22/2011 | 2/1/2011 | 6/15/2010 | App Store: 3/30/2011, Android Market: 2/24/2011, Ovi Store: no details | 12/15/2010 | App Store: 12/19/2010, Android Market: 2/11/2010 | 2/25/2011 | 1/14/2011 | App Store: 12/5/2010, Android Market: 8/19/2010 | 1/17/2011 |

2.1. Findings in Germany

The study showed that currently there are four applications in Germany: ImmoScout24, immonet.de, immobilien.de, immowelt.de. The application of ImmoScout24 offers the widest range of advertisements in the German speaking region with 1.2 Mio objects. A special feature of the app of ImmoScout24 is the route planner that shows the quickest way from one prospective object to view to another. This guarantees an efficient viewing tour.

The application of immonet.de is the only app for Germany that supports augmented reality. Unfortunately, the 950,000 objects in the application of immonet.de have not been fully geo-coded. Often only the part of town/place is shown, but not the full address (street, number). This app, however, is connected with social media platforms as it offers the possibility to recommend property folders via Facebook and Twitter. In addition to saving notes and photos with the object information, users can also add videos. The multiple choice option of places and parts of town makes the search more efficient.

With 180,000 available objects, the application of immobilien.de offers the least number of objects. They can be shown in a map, yet they are not fully geo-coded. This means, while the place/part of town is known, the exact address information is absent.

The application of immowelt.de is the only app that can be downloaded not only from the App Store and the Android Market but also from the Ovi Store. With 960,000 objects it is the second largest application in the German speaking region. Until March 2011 the application was downloaded 200,000 times. None of the other comparable apps was downloaded more often. Its special features include a quick search, which can be done by typing a keyword or using voice recognition. Furthermore there is a detailed search that allows the user to switch between many different types of real estate (apartments, houses, property, office- surgery space, shops, warehouses/industrial sites, gastronomy/Hotels, agriculture/forestry, vacation homes, roof areas etc). The app includes a Push-Notification. Here the search and all its criteria are saved and as soon as new advertisements/objects that correspond to these criteria are found the user is notified.

The application of DGG-AG Real Estate as well as MyNextHome did not comply with the criterion of number of objects of a minimum of 35,000.

2.2. Findings in Switzerland

In Switzerland there are four applications that comply with the criteria: comparis, homegate.ch, ImmoScout24 and ImmoStreet. None of these four supports AR, but all of them are available in German, English, French and Italian.

With 96.000 objects/advertisements Comparis is the largest app on the Swiss real estate market. The great number of advertisements is due to a co-operation with various real estate online services, e.g. Acheter-Louer.ch, homegate.ch, iCasa, Immobuddy, ImmoClick, ImmoExperte.de, ImmoScout24 Schweiz, ImmoStreet, nabhome, newhome etc. About 50% of objects are geo-coded. The results can be viewed on three different maps: a regular map, a satellite map and in hybrid form (street names are shown in a satellite map). If a property folder is opened, one can view general data of the object as well as additional information, like location-related factors, past property prices and rent of comparable locations. The app of comparis is offered in three different languages other than German (English, French and Italian). These also work on an iPad.

The application of homegate.ch holds about 50,000 objects and is available in the App Store and also on the Android Market. It is worth mentioning that the version from the Android Market is not as developed as the one available in the App Store. In the Android-Version it is not possible to adjust the type of object in the search criteria. As a result users get a lot of results that do not correspond to their search criteria. A special feature of the iPhone App is that users cannot only order moving boxes, they can also view moving and cleaning companies in their surrounding area.

ImmoScout24 Switzerland holds about 43,000 objects and is therefore the third largest app for the real estate market in Switzerland. It is remarkable in this context that the percentage of geo-coded objects is extremely high, namely 95%. Special features of the app are the option of saving the search progress and the option of rating a viewed object with the help of stars.

Immostreet offers about 36,000 objects which are exclusively located in French-speaking Switzerland. The Push-Notification allows an automated notification of new objects that correspond to search criteria.

The application of ImmoDream (about 30,000 objects), Immo-net.ch (about 30,000 objects), newhome.ch (about 30,000 objects), NABHome (about 4,500 objects) ercase.ch (number of objects unknown) did not correspond to the criteria.

2.3. Findings in Austria

For the Austrian Market there are currently two applications (immobilien.net, wohnnet.at) available for download. The application for immobilien.net was the first AR application available in the German speaking region.

At this stage, immobilien.net offers about 55,000 objects in its application and is therefore the largest app in Austria. Besides immonet.de it is the only application that supports AR. Although the application is designed for the whole of Austria, in practice it focuses only on Vienna, especially on the inner districts (1., 6., 7., 8., 9. district). In the outskirts (21., 22., 23. district) there are hardly any objects to be found.

The application of wohnnet.at holds currently about 40,000 objects and was downloaded 10,000 times until March 2011. If one compares number of downloads of immobilien.net and wohnnet.at it becomes apparent that the application of wohnnet.at is more accepted among users (the application of immobilien.net was downloaded about 7,000 times by March 2011). Special features of wohnnet.at are a Push-Notification as well as a real estate advisor and the option to run advertisements.

2.4. Summary of Application results

In conclusion, the results of the analysis of applications can be summarised as follows:

- All apps are available for the iPhone. Four applications (immowelt.de, comparis, ImmoScout24 Schweiz, ImmoStreet) are also available for the iPad.
- Four (ImmoScout24, immowelt.de, homegate.ch, immobilien.net) of ten apps are also available for Android smartphones.
- Only one app (immowelt.de) can be downloaded from the OVI store.
- All four applications, which are offered for the Swiss real estate market are available in the following languages: German, English, French and Italian.
- Only two apps (immonet.de, immobilien.net) support Augmented Reality.
- All apps are free.
- The number of objects offered depends on the size of the respective real estate market.
- The majority of apps offer residential property and landed property. In some cases also commercial property, carports, shared accommodation and vacation homes are offered.
- Types of lease are mostly purchase and rent. Only on ImmoScout24 and immowelt.de can you find objects/areas for leasehold.
- The range of percentage of geo-coded objects is from 0 to 95%. Only the applications of immobilien.net, homegate.ch and ImmoScout24 Switzerland offer fully geo-coded objects
- The highest number of downloads was reached by the applications immowelt.de (200,000), comparis (135,000) and wohndat.at (9,000).

2.5. Features of applications

In the following, the features and special features of an application are presented based on functionality. This comprehensive list gives an overview of which characteristics an application can have or which characteristics would be desirable when implementing a new app respectively.

- Notification of the distance between two objects to better coordinate viewings. A route planner should be included.
- Ordering of moving boxes as well as notification of moving and cleaning companies in the surrounding area.
- Sending of property folders via social media platforms (e.g. Facebook, Twitter)
- Automated notification of objects/advertisements that correspond to search criteria via Push-Notification.
- Viewing of objects on different maps.
- Average prices for respective areas could be listed.
- Addition, like notes, photos, videos to respective viewings.
- Search results are saved and can be sorted according to price, place etc respectively.
- Entry of search keywords in quick search or via voice recognition.
- Individual valuation and ranking of the object with the help of stars.
- Additional information, like advisors with regard to real estate matters. (e.g. building & renovation, financing etc)
- Additional information, like ambient data (e.g. Tupalo etc.)
- Evaluation of Austrian applications

3. Testing the Applications in Austria

3.1. Testing of the Application of immobilien.net

In order to test the application, the app was downloaded from Google onto the iPhone 4 from Apple's iTunes AppStore⁴ and onto the LG P 500 from the Android Market⁵. After installing the application on the Orange Boston (Android Market), an error occurred when opening it. Therefore the application was only tested on the iPhone4 and the LG P 500.

Figure 6: Comparison criteria for immobilien.net in detail

| Criterion | Results |
|---|---|
| Operating System (iOS, Android) | There are differences with regard to design and usability of the app. (details in table) With regard to search and search results there are no differences. Both operating systems use the same data base. |
| Correspondence of the available information with the offered type of real estate | The application was tested in different areas/places. The app was tested in the capital, Vienna, as well as in the provincial capitals St. Pölten, Linz, Graz, und Salzburg. Please note that the tests were run with different search radiuses (on average between 4 and 5 km). In Vienna it is noticeable that in the outskirts (18.,19.,20.,21.,22.,23. district) only few results were shown. In the inner districts you get more results although currently apartments to rent were mostly found in the areas of Mariahilfer Straße and Neubaugasse. In the other provincial capitals there were no objects found. Based on this one can assume that the application only shows results in Vienna. For the future one has to observe whether objects are shown in the AR mode in Vienna only or also in the other provincial capitals. |
| Extent of information | Refer to the table on page 14 |
| Usability | The usability of the app was divided in the following subcriteria: download, installation, adjustment of floorspace, adjustment price range, search radius in km, notification of A1 shops, Augmented Reality, call connection to respective agent possible, presentation of objects. Ad. Augmented Reality: if the Smartphone is turned to a horizontal position when the search results are displayed, the search function via AR ist started automatically. The AR-Mode was carried out on Währinger Gürtel 97, 1180 Vienna. It was searched for apartments (purchase), within a 20km radius and a price range of € 0 to € 200,000,-- . Both the iPhone and the LG showed 20 results. |
| Type of offered real estate | Apartment, houses, rent/purchase |

The following table gives a summary of the application test of immobilien.net.

Figure 7: Test of the application of immobilien.net

| Criterion | iPhone 4 | LG P 500 |
|--|---|--|
| Operating System | iOS | Android |
| Correspondence of available information with offered types of real estate | Results primarily in the inner districts of Vienna. In the remaining provinces there are no results available. | Results primarily in the inner districts of Vienna. The number of results equals the one of iPhone . |
| Extent of available information | Property folder: these vary depending on agent with regard to design, detail, and number of images. In general, a property folder includes: purchase price, floor space, living space, living space, images of object | Hier gibt es keine Unterschiede zu Apple |
| Download time | about 1 minute | about 1 minute |
| Installation time | about 1 minute | about 1 minute |
| Adjustments Floor space (from to) in m ² | 10 to 9,000 | 0 to user-defined |
| Adjustments Price range (Rent/Purchase) in Euro | 10 to 9,000,000 | 0 to user-definded |
| Search radius in km | 0.5 to 20 | 0 to 20 |
| A1-Shops notification | No | Yes |
| Augmented Reality | Yes | Yes |
| Call connection to respective agent | No | Yes |
| Presentation of Objects/Results Provided one entered the same search criteria, more than 50 objects/results could not be displayed. If the search generates more than 50 results, the search radius is automatically reduced. The maximum zoom ends with a 3D-viewing of the street. | Address and distance to the searched object are shown. The property folder opens with the touch of the iButton. | Address and distance as well as dimension and price of searched object are shown. The property folder opens with the touch of the iButton. |
| Types of offered real estate | Apartments/houses (purchase/rent) | Apartments/houses (purchase/ rent) |

3.2. Testing of the application of wohnnet.at

As the application is only available in Apple's iTunes Store⁶, the app of wohnnet.at was tested exclusively on the iPhone 4.

Figure 8: Comparison criteria for wohnnet.at in detail

| Kriterium | Ergebnisse |
|---|---|
| Operating System (iOS, Android) | The app was solely tested on the iPhone as there is no Android-App available. Therefore no differences to Android can be demonstrated. |
| Correspondence of available information with offered types of real estate | Like the application of immobilien.net, this application was also tested in Vienna, St. Pölten, Linz, Graz und Salzburg. In the application of wohnnet.at no manual entry of search radius is enabled. While testing in Vienna the option <i>search current surroundings</i> was picked. In other cities the option <i>search in a place</i> was used. In Vienna, many results in all categories were found in the inner and outer districts. Also in the provincial capitals there were many objects/advertisements found. |
| Extent of information | Refer to the table on page 16 |
| Usability | Die usability of the app was divided in the following sub-criteria: download, installation, adjustments, floor space, adjustments price range, search radius in km, A1-Shops notification, Augmented Reality, call connection to respective agent possible, presentation of objects. |
| Types of offered real estate | Houses, apartments, property, offices, shared accommodation. |

The following table gives a summary application test of wohnnet.at

Figure 9: Test of the application of wohnnet.at

| Criterion | iPhone 4 |
|--|--|
| Operating System | iOS |
| Correspondence of available information with offered types of real estate | Results were found in all tested areas |
| Extent of available information | Property folder. These vary depending on agent with regard to design, detail and amount of images. In general, the property folder includes: purchase price, rent, running costs, commission, floors pace, number of rooms |
| Download time | about 1 minute |
| Installation time | about 1 minute |
| Adjustments floor space (from to) in m ² | <i>not important</i> , less than 10 to more than 500 |
| Adjustments price range (rent/purchase) in Euro | Rent: <i>not important</i> , less than 50 to more than 4,000; Purchase: <i>not important</i> , less than 5,000 to more than 5,000,000 |
| Search radius in km | Cannot be entered |
| A1-Shops notification | No |
| Augmented Reality | No |
| Call connection to respective agent | Yes |
| Presentation of Objects/Results Provided one entered the same search criteria, more than 50 objects/results could not be displayed. If the search generates more than 50 results, the search radius is automatically reduced. The maximum zoom ends with a 3D-viewing of the street. | Address, square metres, number of rooms. The property folder opens if you click on the Blue Arrow |
| Type of offered real estate | houses, apartments, property, offices, shared accommodation |

4. Conclusion

Summing up our analysis, we found out that the distribution of apps is influenced by the used hardware as well as by the dominance of iPhone's software system iOS, which has 10 real estate search applications in the German speaking region in contrast to the software system Android with 4 applications. The amount of geo-coded apartment information, as a quantitative criterion, depends on soft facts, e.g. usability. As a result, there is only one application in Austria that supports augmented reality and in this App only 10 % of the offered real estate is geo-coded.

Figure 10: SWOT-Analysis of real estate search applications

| Strengths | Weaknesses |
|---|--|
| <p>Innovative/dynamic: it is aimed at young, technically interested consumers</p> <p>Applications are trendy</p> <p>First-Mover-Advantage e.g. the application of immobilien.net supported first AR within the German speaking region</p> <p>Mobile apartment search has been redesigned</p> <p>New methods of application of real estate</p> <p>If geo-coded information is available, real estate customers can familiarize themselves with the surrounding area of the offered real estate. (This saves time for agents)</p> | <p>Small number of geo-coded real estate</p> <p>The number of available real estate varies (country specific differences)</p> <p>Different software systems require different coding (additional costs for software systems)</p> <p>The variety of types of real estate is missing, concentration on apartments, commercial property and plots</p> <p>Often versions are not multilingual</p> <p>Handicapped people are disadvantaged (e.g. visually challenged people, lacking motility of fingers)</p> |
| Opportunities | Threats |
| <p>An increasing number of geo-coded real estate will increase application potential</p> <p>Programming of additional features (compare chapter 2.5.)</p> <p>Increasing the amount of offered real estate (all over the country)</p> <p>Different types of real estate (second residences, parking and storage...)</p> | <p>Rapid technological changes e.g. Apps of today will not work in the near future (e.g. 3-Dimensional- Effects on Smartphones)</p> <p>Users evaluated applications negatively and many did not adopt them.</p> <p>Apps will probably not be compatible for the new generation of mobile phones, which means that they have to be reprogrammed</p> <p>Due to completely geo-coded real estate, estate agents may lose their commission</p> |

The rapid development of the augmented reality will be altered through applications in the areas of architecture/interior design (e.g. first attempt: Immo-App iLiving⁷), virtual viewing of real estate (first visualization of Vienna's urban development area Aspern⁸), Live-Translation of Words (e.g. App Word Lens⁹) and identification of faces including information of camera pictures (e.g. App Viewdle¹⁰). This is only the beginning of future opportunities.

Nevertheless, there is also the question of the added value for the consumers? Stephan Ganser, a German communication expert, comes to the conclusion that at the moment, the additional benefit of augmented reality is only its fascination and not its utility. The usefulness of augmented reality can only be expanded if the number of geo-coded real estate (especially in Austria) is enlarged. But who would have imagined a few years ago how much our way of life would be changed with the use of mobile phones? So who is to say that smartphones will not do the same for the real estate search?

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Endnotes

- ¹ AMOLED-Displays (Active-Matrix Organic Light-Emitting Diode) eliminate light reflections caused by the sun and offer better colour contrasts.
- ² Period varies from December 2010 till March 2011.
- ³ The data was researched on the websites www.immoscout24.de, www.immonet.de, www.immobilien.de, www.immowelt.de, www.comparis.ch, www.homegate.ch, www.immoscout24.ch, www.immostreet.ch, www.immobilien.net, www.wohnet.at.
- ⁴ Apple iTunes/AppStore, www.apple.com, first download November 2010
- ⁵ <https://market.android.com/apps/APPLICATION>, download November 2010
- ⁶ Apple iTunes/AppStore, www.apple.com, first download March 2011
- ⁷ <http://www.metaio.com/iLiving>
- ⁸ Application of the Austrian company Ovos as a layer of Layar.com
<http://www.ovos.at/portfolio/87,augmented-reality-app-aspern-die-seestadt-wiens.html>
- ⁹ <http://questvisual.com>
- ¹⁰ <http://www.viewdle.com>

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