

FEASIBILITY STUDY
REAL ESTATE WEBSITE
(4SALE.COM)

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Table of Contents

1. PROBLEM STATEMENT	3
2. EXECUTIVE SUMMARY	3
3. CURRENT SYSTEMS AND PROCESSES	3
3.1 CURRENT OPERATIONS	3
3.2 PHYSICAL ENVIRONMENT	3
3.3 USER ORGANIZATION	3
4. SYSTEM OBJECTIVES	3
4.1 DESCRIPTION OF PRODUCTS AND SERVICES	4
4.2 HIGH LEVEL BLOCK DIAGRAM SHOWING THE SOLUTION	4
4.3 TARGETED CUSTOMERS AND BENEFITS	4
4.4 TECHNOLOGY CONSIDERATIONS	4
5. PRODUCT/SERVICE MARKETPLACE	5
6. MARKETING STRATEGY	5
7. ORGANIZATION AND STAFFING	6
8. SCHEDULE	7
9. FINANCIAL PROJECTIONS	7
10. ISSUES	8
11. ASSUMPTIONS AND CONSTRAINTS	8
12. ALTERNATIVES	8
12.1 ALTERNATIVE 1	8
12.2 ALTERNATIVE 2	8

13. FINDINGS AND RECOMMENDATIONS	9
13.1 PROJECT OBJECTIVES	9

1. PROBLEM STATEMENT

To develop a real estate website *4sale.com*, which intends to serve as a marketplace for sellers and buyers of real estate properties. The website is made more powerful with recommendations for buyers based on location, cost, distance from hospitals, metro stations, etc, amenities and for sellers to know the best price to sell their property for, advice from experts and a forum for any customer queries among various other features which includes green cover of the area, Vastu compliance with photo sharing feature of the property available. Parsing through Newspaper listings of advertisements for the same day will also be put up in a separate bulletin on our website.

2. EXECUTIVE SUMMARY

Real Estate Sellers used to advertise their properties on newspapers like Classifieds and allow potential buyers to contact the buyer through various contact numbers mentioned in the advertisement. Sellers would also try to hire brokers in hopes of getting their property sold at a good rate. However, in the recent decade with the advancement of technology, most of the real estate business is done on websites like www.99acres.com , www.magicbricks.com . *4sale.com* intends to be a more powerful real estate website with powerful recommendations for buyers based on location, cost, distance from hospitals, metro stations, etc, amenities and for sellers to know the best price to sell their property for, advice from experts and a forum for any customer queries among other features. The green cover of locality, photo sharing and Vastu Compliance feature will also look at customer satisfaction before visiting the site.

3. CURRENT SYSTEMS AND PROCESSES

3.1 Current Operations

Currently, most of the real estate business is carried out through advertisements in newspapers through which the buyer can contact the seller. More recently, websites like 99acres.com and magicbricks.com have transformed this into an online business with advertisers capable of posting advertisements online and providing a means by which the buyer and the seller can meet and make any purchase. These type of websites are still young and researchers are using many ML techniques to make this into a powerful marketplace.

3.2 Physical Environment

The physical environment (hardware and software) used for the existing system involve:

- Software: Web browser that supports HTML5, Non-relational database management system, Compilers and interpreters, General purpose programming language, Server side scripting language.
- Hardware: A user would require a machine with at least 2 GB RAM, Pentium 4 Processor (or its equivalents), to smoothly run the platform on the web browser. A server with the same specifications will be needed to support at least 10 users at a time and will have to be scaled up depending on traffic.

3.3 User Organization

The client base is mainly of two types -

1. **Real estate businessmen** who sell and buy property and
 2. **The common man** who chooses to rent houses/buy small properties.
- Advertisers** of different businesses are also a huge client base for real estate websites, contributing 90% of the revenue of the real estate website.

4. SYSTEM OBJECTIVES

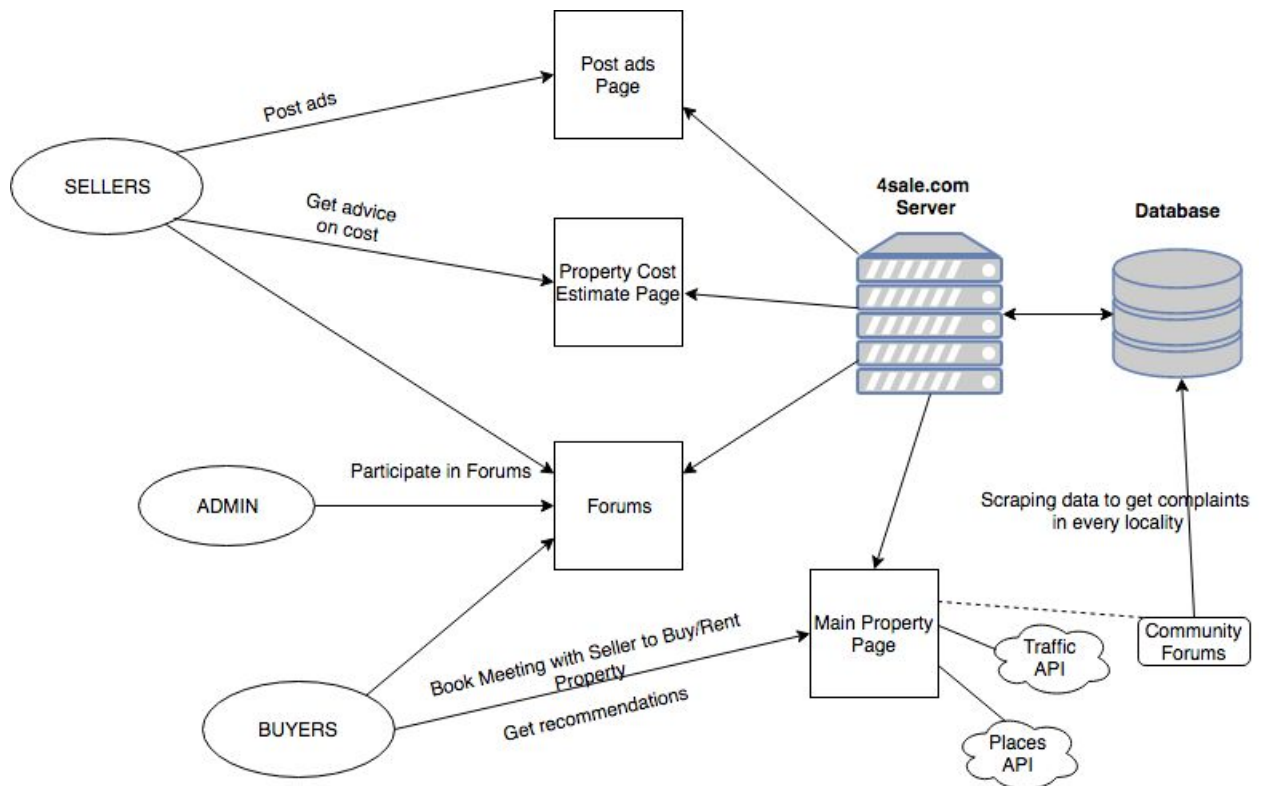
The main objectives of this project is to build a robust, error-prone system for real estate property buyers and sellers. The project includes many features from property recommendation, property cost suggestion, forums and chatting between buyer and seller.

4.1 Description of Products and Services

- Our website 4sale.com would serve as an **online portal** for buyers and sellers to do their business.
- It would facilitate as a platform for sellers to **post advertisements** of their properties which they wish to sell or give for rent.
- Buyers can **browse** these advertisements and buy or rent properties.
- **Recommendations** are given to the seller based on **his budget, preferred location and many other factors**.
- Factors like **proximity to hospitals, bus stations, metro stations** are also listed for each such property.
- Buyers are also provided with the **various recent complaints** in the locality of every property to make better decisions on their purchase.

- Sellers are provided with a '*Know the value of your property*' feature which suggests the most appropriate cost for that property given the locality and other factors.
- A buyer can book a meeting with the seller on 4sale.com regarding the property and make any purchase he wants.
- 4sale.com also comes with a forum where people can ask any question regarding real estate or the website in general.

4.2 High level Block diagram showing the solution



4.3 Targeted Customers and Benefits

Buyers and sellers of real estate property are the main targeted customers of our website 4sale.com. The sellers of property are benefited by the '*Know the value of your property*' feature, easy chatting features between buyer and seller, easier way of

posting advertisement for properties. The buyers of property are benefited with filtering/recommendation features, easy chatting features between buyer and seller, list of the nearest hospital, metros for each locality, a look into the various complaints in each locality, forums to ask questions.

4.4 Technology Considerations

Technologies to be learned and used include PHP and MySQL. Google Places and Traffic API would be used to find the distance between various places. Local complaints websites would be scraped using Python to figure out the common complaints in every locality. ML techniques(Recommendation Sytem) would be used to find the best price at which a seller can sell his property for. Maintenance of the server is of utmost importance to provide reliable service to the customer. Online marketing functionality must be considered in order to target existing and potential customers through methods such as e-mailing lists, promotional advertisements, and loyalty discounts.

5. PRODUCT/SERVICE MARKETPLACE

In 1981, 22 percent of home buyers read newspaper ads to find a home and eight percent used friends as an information source. In 2016, 44 percent looked for properties online first. In 2016, 51 percent of all buyers found the home they ultimately purchased on the internet and 34 percent found their home through a real estate agent. In comparison, in 2001, only eight percent of buyers found the home they purchased on the internet and 48 percent found their home through an agent. The use of the internet to find the home has increased over the years.

The real estate website [Housing.com](#)'s revenue more than doubled last fiscal year, helping it become one of the top three players in the [real estate](#) classified business. In January last year, Singapore-based Elara Technologies, which owns [PropTiger.com](#) and [Makaan.com](#), bought Housing.com -- a startup founded in 2012 by around dozen IIT graduates -- in a major consolidation in the Indian online real estate business. Apart from News Corp and its Australia-based group firm REA, Elara Technologies has SAIF Partners, Softbank and Accel Partners as major shareholders. It has raised \$105 million so far from investors.

Housing.com achieved 110% growth in revenue and 75% growth in traffic during the last fiscal. Even in the first quarter of this fiscal, the company posted a 77% growth in revenue year-on-year. This real estate website is expected to increase its revenue by over 50% this fiscal year. Housing.com earns revenues from advertisements placed by

developers, brokers and homeowners. It also generates revenues by providing marketing tools to builders like 3D Visualization and Augmented Reality. At this growth rate, he claimed that Housing.com would become market leader within a couple of years. Housing.com competes with 99acres.com and Magicbricks.com in real estate classified business among few others. Housing.com also launched a new app for sellers, which enables them to manage their listings and leads, and get instant alerts on the go. It reintroduced renting segment and launched brand campaign for achieving higher traffic and revenue. Agarwala, the CEO, said many new products and new marketing campaign are in pipeline to further strengthen the Housing.com brand.

6. MARKETING STRATEGY

- An targeted email marketing strategy is the most effective strategies to reach prospects, engage them in conversations, and convert them into deals. By Building and segmenting a database of potential buyers and sellers who register on our portal for sending targeted email communication will help us fuel our sales or leasing efforts.
- Social media marketing is free and an effective way to build brand awareness and drive more people to our website. Twitter, LinkedIn and Facebook are the some relevant social networks for commercial real estate, and where our company could be most active.
- There are 500 million searches on Google every day and chances are that our clients are searching for keywords related to your property or business right now. Google Adwords can be a very powerful acquisition channel to help you attract leads but real estate keywords can be very expensive depending on your target market.
- When a user visits our website, a cookie is dropped on their computer so you can target them and show relevant Ads when they browse on different websites. This can be an effective way to drive visitors that engaged previously back to your property listing or company website.

7. ORGANIZATION AND STAFFING

We plan to use our team of 11 efficiently, by splitting ourselves up into groups of 3-4 that can work of different things at the same time, thereby maintaining the time-line an focusing on the end product as well as the organizational aspects. Once the site is set, we would hire a Marketing Manager to market our product and a Forum Admin who would monitor conversations on the forum of our website.

8. SCHEDULE

The Real Estate Website is expected to take three months from project approval to the completion of the website. The following is a high level schedule of some significant milestones for this initiative:

Aug 2018: Approval of the Project Topic

Sep 6th 2018: Look at the Project Requirements and complete the Feasibility Report

Sep 2018 and Oct 2018: Working on Price Suggestion, basic marketplace real estate site

Nov 2018: Adding more powerful recommendation features and Testing

End of Nov 2018: Completion of the Website

9. FINANCIAL PROJECTIONS

The financial projections for our real estate website are highlighted in the table below. These figures account for projected online sales, **design, build and implementation of our application** (one time expenditure), **web servers and hosting** and **staff for building and maintaining**.

The assumptions for these projections are as follows:

- In store sales projections remain unchanged
- Google Adwords helps put our website on Google listings, which in turn is our marketing strategy
- All milestones are performed in accordance with the schedule and deadlines
- All transactions are closed yearly with no carry-over to subsequent years
- All the requirements continue to support the project till the end
- Staff is well trained by the end of 1st year, no more investments on that from the 2nd year onwards

MEASURE	YEAR 1	YEAR 2
Design, build and implementation	₹40,000	₹0
Web servers and hosting	₹30,000	₹30,000
Google AdWords and commissions	₹40,000	₹4,00,000
Maintenance and Repairs	₹40,000	₹40,000
Salaries and Wages	₹1,00,000	₹1,50,000
Total Profit	-₹1,70,000	₹1,80,000

10. ISSUES

Issues which could affect the development and operation of the system include

- Overload on the main server due to many clients.
- Database issues like its deployment, speed and security.
- Inefficient error handling in the software
- Security of the system from potential attacks like DDoS attacks, etc.
- Scalability

11. ASSUMPTIONS AND CONSTRAINTS

This section presents the assumptions or constraints that will affect the proposed system, such as:

- The Operational life of the product is expected to be as long as possible, possibly for a decade or two.
- The expected date of delivery of the final product is predicted to be at the end of November 2018.
- The proposed system is being developed solely for our company 4sale.com. We would allow stakeholders in our company in the future.
- The development costs and Operational costs for the project would be initially quite small. Costs would include paying some of the workers, maintaining web servers. But as usage becomes more, money has to be paid to Google for the usage of their APIs. Also as the company becomes larger, the cost spent on employees would be quite large.
- We will need to update our application as and when there are updates across hardware, operating systems, or softwares being used to ensure continued compatibility and operability.

12. ALTERNATIVES

12.1 Alternative 1

One of the alternatives is the currently existing system, which has been functioning very well thus far, but in the long run, websites using more ML techniques and Data Analytics would succeed over conventional websites. So, over time it seems there would be a competition among all the Real estate websites to be the best.

12.2 Alternative 2

As an alternative, we could develop our project using PHP+MySQL. We would add as many features to make good recommendations to users and use ML techniques to advice sellers on how much to sell their property for, etc. This could be made into a very powerful website over time.

13. FINDINGS AND RECOMMENDATIONS

Based on the information presented in this feasibility study, it is recommended that 4sale.com approves the online sales initiative and begins project initiation. The findings of this feasibility study show that this initiative will be highly beneficial to the organization and has a high probability of success. Key findings are as follows:

13.1 Project objectives

- **Summary**
 - **Assumptions and Constraints:** System cannot be compromised. No hardware failure or defects.
 - **Issues:** Recommendation system may not be perfect and user preferences may have changed. System may not handle all possible fraudulent properties. Man power may be insufficient
 - **Project scope:** Since our company has just gone online recently, we may not have a large customer base, however we plan to increase our customer base exponentially in the years to come. We plan on targeting schools, universities and major corporate organisations to improve our sales. We can add a recommendation system.
- **Results of research on hardware and software alternatives, technology, marketing, financial and organizational**

Technology:

- System requirements are minimum and cost effective.
- More servers will be needed with time as the site gains popularity.
- Recommendation system will recommend users properties customized to the user's preferences.

Marketing:

- Online ads will be used for marketing.
- Ads will increase the number of views of the site and also the number of potential customers
- Estimated profit is around 20% in annual revenue.
- Increased users will increase load on system.

Organizational:

- More personnel will be required on days when high offers are provided on popular products.
- Automated error detection can reduce the number of personnel required.

Financial:

- Exponential growth expected in early years.
- 10% profit expected every year after first five years.

- **Risk Factors**

- System may not be able to handle unexpectedly high number of users.
- System may not detect fraudulent properties.
- Profits may suffer due to competition from other major Real Estate Websites.
- Recommendation system may not recommend correct products as user preferences keeps changing.

PROJECT PLAN

1. **Deliverables of the Project:** A fully built real estate website complete with recommendation features.
2. **Process Model which you intend to follow:** SCRUM Model with weekly sprints
3. **Identification of the upstream-downstream partners needed for the product:** Potential real estate buyers and sellers
4. **Resources needed for the project/product:** XAMPP server, usage of MySQL database, datasets of properties for ML insights
5. **How are you organizing your team in the project?** We plan to split the team for each project phase into groups of 3-4 so that we can simultaneously work on delivering the product as well as organizational aspects. In effect, due to the small size of the team, the team leader will also additionally serve as a “scrum master”, aside from being an active member in the development process
6. **Standards-Guidelines-Procedures:** We plan to follow agile methodologies in the design and implementation and complete each phase of a sprint before moving on to the next. Also we plan to have regular documentation reviews and conform to any deadlines to the best of our capability.
7. **Communication Mechanism:** We have a Google group as well as a WhatsApp group for communication, where all members are actively participating.
8. **Risks:** Development time could be an issue, software installation issues, portability.
9. **Quality Criteria:** Well functional real estate website with powerful recommendation features.
10. **Work Packages:** Will decide as a team on how to split which portions of the project to whom.

11. **Budget and Schedule:** We will split the team up into different scrum teams for each phase and also have sprints, weekly review meetings and a scrum master to ensure smooth iterations.
12. **Delivery means:** We will present the fully functional website to the concerned teachers at the end of the semester. The project will also be regularly updated on GitHub.