Project:	Service Request System (SRS)
	CSE 5325 – Spring 2024
	Project Management
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1. Introduction and Executive Summary

The phenomenal rise of technology has resulted in the use of software systems in our daily lives. Many industries are adopting digital information at a rapid pace. In an era where convenience is paramount and time is a precious commodity, it is crucial to revolutionize the way individuals and small businesses access essential services for their homes and establishments.

The traditional approach to finding and engaging with service providers is often time-consuming, riddled with uncertainties, and lacks a centralized platform for streamlined interactions. The process of accessing essential services for our homes and small businesses has often been marred by inefficiencies and uncertainties.

The need for a one-stop solution led to the conceptualization of a robust platform that empowers users to effortlessly initiate service requests, efficiently connect with skilled professionals, and ultimately enhance the quality of their living and working spaces. The genesis of this **Serve Request System (SRS)** application arises from a deep understanding of the challenges faced by individuals and businesses when seeking reliable service providers. This application aims to bridge the gap between service seekers and providers, creating a symbiotic ecosystem that benefits both parties.

The core features of the platform include customer and vendor registration, service category management, service request placement, bid acceptance by service providers, a secure payment system, and a thorough review and rating system. The application will support an initial set of service categories such as Appliances, Electrical, Plumbing, Home Cleaning, Tutoring, Packaging and Moving, Computer Repair, Home Repair and Painting, and Pest Control. The website and mobile application will be designed to be user-friendly, with a visually appealing interface and intuitive navigation.

Customers will have the option to register and log in, gaining access to additional benefits such as points, service provider reviews, discounts, and updates. On the vendor side, service providers can register for approval in one or more service categories, specifying contact information, sample rates, and agreeing to a commission fee for services rendered.

2. OBJECTIVES

2.1 BUSINESS OBJECTIVES

The following is the list of business objectives:

Objective 1: **Login/ registration for Service requesters (SR**): Though Login/ registration is optional for a SR, if he registers and logs in, he will be able to get points, review Service Providers' quality of Service, get discounts and receive helpful tips and updates. To register, a SR must provide their full name, email, and phone number.

Objective 2: Vendor registration: To become an approved vendor to provide one or more services, the vendor must register by providing contact info including phone, address, and e-mail and must agree to pay an agreed portion of the money received as a fee**/** commission.

Objective 3: Setup: System will include setup control fields such as Sounds **on**/off, receive communication **yes**/no, and use points toward a service yes/**no**, and so on while being the bold characters as default choices.

Objective 4: Service categories: The following service areas will be presented on the website and the Android App:

o Appliances
o Electrical
o Plumbing
o Home Cleaning
o Tutoring
o Packaging and Moving
o Computer Repair
o Home Repair and Painting
o Pest Control

Objective 5: Place Service Request: A customer will select a service category and place an order soliciting bids by the service providers.

Objective 6: Cancellation and change: The system will allow customers to cancel or change service dates. Points will be lost if the cancellation is done within (last) specified hours.

Objective 7: Service request acceptance by providers: The system will enable Service Providers to provide bids for requested services to customers.

Objective 8: Payments: The system will handle financial transactions, allowing customers to pay for services and Service Providers to receive payments, with an implementation of a commission system where the app owner receives a percentage of the service fee.

Objective 9: Reviews and Ratings: A customer will be able to provide one to five stars as rating and can also post a short comment as a review to help future users of application.

Objective 10: Order history: Customer will be able to view history of previously requested services.

Objective 11: Search functionality: The system will have ability to search by various ways such as service type, service provider availability date, ratings and price.

Objective 12: Sort functionality: The user can sort search results/ available options in a range for services by dates, ratings price and can only see the range of results he needs.

2.2 SYSTEM OBJECTIVES

The following is the list of system objectives:

Objective 1: Both web-based and Mobile (Android and IOS) application will be supported.

Objective 2: Google Search will be integrated into the system for search.

Objective 3: **Map-** System will be able to show the location of vendor, along with directions and total distance from customer's location.

Objective 4: The application will be responsive for any device (Laptop, desktop computer, tablet, both android and iOS devices)

Objective 5: Voice search will be included for the customers who are unable to type.

Objective 6: Read aloud feature will also be provided in the application for people who are not able to see/ read the instructions.

3 Project Feasibility, Risks, and Metrics

Project feasibility and metrics are summarized below:

3.1 PROJECT FEASIBILITY CONCERNS

The Service Request System (SRS) is a robust software, that includes multiple functionalities. There are a few possible issues with the system that should be addressed, which include:

1. **Market readiness**
   Assessing the readiness of the market involves understanding if there is demand for the services provided by the platform and if customers and service providers are willing to adopt and engage with the platform. This includes considering factors such as competitors, market trends, and user preferences. According to that, adjusting the platform's features and offerings based on market insights to ensure alignment with customer expectations is needed.

2. **Technical Issues**
   Technical issues encompass the challenges related to developing and maintaining the website and mobile application, ensuring scalability, security, and compatibility across different devices and platforms. This includes concerns such as system reliability, performance optimization, and integration with third-party services Because the initial phase includes development for both web and Android, skilled labor who can work and develop on both platforms is preferred.

3. **Resources**
   Sufficient resources, encompassing manpower, finances, and technological support, are essential for the effective implementation and functioning of the platform. Inadequate resources may lead to delays, compromised quality, and project failure. Developing a comprehensive project plan and budget to track resource usage and maintain alignment with project goals and objectives can increase the efficiency.

4. **Cost**
   Evaluate the costs of creating, launching, and sustaining the platform, encompassing development, operations, marketing, and potential earnings. Overspending or inadequate funding can endanger the project's success. Perform a thorough cost analysis to gauge total expenses and potential revenues. Look for cost-saving options like using open-source software, cloud services, or outsourcing. Create a practical budget, considering unforeseen expenses and contingencies, to enhance project viability.

5. **Time to market**
   Timely market entry is crucial for seizing opportunities and staying ahead of the competition. Any delays in the development, testing, or launch phases can lead to missed chances and a decline in market presence. Establish a practical project timeline with distinct milestones and deadlines, regularly track progress, and adjust address any setbacks or challenges.

6. **Data accuracy and reliability**
   The information must be precise and trustworthy, with careful consideration given to potential sources of error or bias that require identification and resolution.

7. **Ethical considerations**
   Ethical issues pertaining to the gathering and utilization of personal health information must be acknowledged and tackled to guarantee the ethical development and execution of the system.s

3.2 PROJECT RISKS

1. Market Acceptance Risk:
Risk: The platform may face challenges in gaining market acceptance, resulting in low user adoption and service provider participation.
Mitigation: Conduct extensive market research prior to development, gather feedback from potential users, and adapt the platform based on market demands. Utilize a phased launch approach, starting with a specific geographic area or service category to assess market acceptance before scaling.

2. Technical Complexity Risk:
Risk: Developing a robust and scalable platform may encounter technical challenges leading to delays, performance issues, or system failures.
Mitigation: Perform a thorough technical feasibility study, hire experienced developers, and utilize proven development frameworks. Implement regular testing, quality assurance measures, and continuous monitoring to promptly address technical issues.

3. Resource Constraints Risk:
Risk: Insufficient resources, including human resources and funding, may cause delays, compromise quality, or lead to project failure.
Mitigation: Conduct a comprehensive resource assessment, allocate resources effectively, and consider outsourcing tasks if necessary. Develop a realistic budget and financial plan, continuously monitor, and adjust resource allocation based on project needs.

4. Timeline Delays Risk:
Risk: Delays in development, testing, or launch may lead to missed market opportunities and increased competition.
Mitigation: Develop a realistic project timeline with clear milestones, prioritize features based on importance, and streamline development processes. Regularly monitor progress, address obstacles promptly, and adjust the timeline as needed to ensure timely delivery.

5. Data Security and Privacy Risk:
Risk: Inadequate data security measures may result in breaches, compromising user data and harming the platform's reputation.
Mitigation: Implement robust data management practices, including encryption and regular security audits. Adhere to data protection regulations, establish privacy policies, and educate users on data security measures to foster trust.

6. Ethical Concerns and Reputation Risk:
Risk: Ethical considerations and responsible use of customer data may impact the platform's reputation and user trust.
Mitigation: Conduct an ethical review, establish, and enforce policies for responsible data use, and ensure transparency in decision-making processes. Engage with stakeholders, address ethical concerns promptly, and regularly update ethical standards in line with evolving societal norms.

3.3 PROJECT METRICS

- The platform prioritizes a user-friendly experience, ensuring ease of use for both Android and web applications.

- It places a strong emphasis on compatibility, striving for seamless performance across various web browsers such as Safari, Chrome, and Firefox.

- Accurate data analytics capabilities are implemented to enable effective user targeting for advertisements, leveraging insights from past purchases.

- Key performance indicators include monitoring the daily app usage, commonly known as the app's footfall, as well as the platform's ability to manage around 10,000 simultaneous requests.

- With a target of 30,000 user registrations on both the web and Android applications, the platform aims to facilitate a substantial user base.

- These benchmarks collectively contribute to the platform's commitment to delivering a robust, user-centric experience across multiple dimensions.

- Forecast can be done by conducting a user need base survey.

1. Customer Satisfaction Score (CSAT):
The CSAT is determined by adding up all positive responses (e.g., scores of 8 or 9 on a 10-point scale), dividing it by the total number of responses, and then multiplying by 100 to obtain a percentage score. The CSAT target is set at a level higher than 75%.

2. Productivity
Productivity serves as a crucial metric, gauging a company's efficiency in utilizing resources to generate outputs. It measures how effectively a company transforms inputs, such as labor, capital, and technology, into outputs, encompassing goods and services.
Productivity = Units of Input / Units of Output

3. Gross Profit Margin:
Both gross profit margin and net profit margin are pivotal financial metrics linked directly to a company's bottom line, offering a swift indication of its financial performance and success.
Gross Profit Margin = (Total Profit - Total Costs) / 100. The benchmark for GPM is set to be higher than 10%.

4. Code Quantity:
Development teams can assess this software metric, often referred to as thousands of lines of code (KLOC), to ascertain the application's size. A high KPI in this regard may indicate that developers were productive in their programming efforts.

4   Project Scope and Process Model

Project scope includes the following:

1. Customer registration and login
2. Vendor registration
3. Service categories.
4. User friendliness
5. Platform independencies (on various operating systems and devices)
6. Cancellation and change requests.
7. Order history.
8. Search
9. Review and rating functionality.
10. Placing service request- customer
11. Accepting service request
12. Map
13. Payments
14. Sort functionality.

The following is a list of items out of scope:

1. Post project maintenance issues.
2. Tax issues.
3. Contract negotiations and legal concerns.
4. Vacations and social/ health insurance costs
5. Verification of service providers' documents, e.g. licenses.

4.1 PROJECT PROCESS MODEL

Agile's flexibility allows for quick adaptation to changing circumstances, facilitating a responsive development approach. For the ongoing project of creating a service platform that connects customers with service providers, opting for the Agile project management approach, specifically the Scrum framework, is deemed advantageous for several reasons:

1. The project's inherent characteristics involve potential alterations in requirements, feedback loops from users, and evolving market demands. Agile, with its flexibility and adaptability to changing circumstances, facilitates swift responses by the development team to emerging needs.

2. Agile places a significant emphasis on customer collaboration and responsiveness to customer feedback. Given that the success of the service platform hinges on user satisfaction, Agile enables continuous feedback and adjustments throughout the development process, ensuring that the final product closely aligns with user expectations.

3. Agile adheres to an iterative development process, employing regular sprints to deliver incremental, functional components of the product. This approach enables the early and continuous delivery of operational software, providing stakeholders with tangible outcomes at the conclusion of each iteration.

4.2 PROJECT CONTEXT
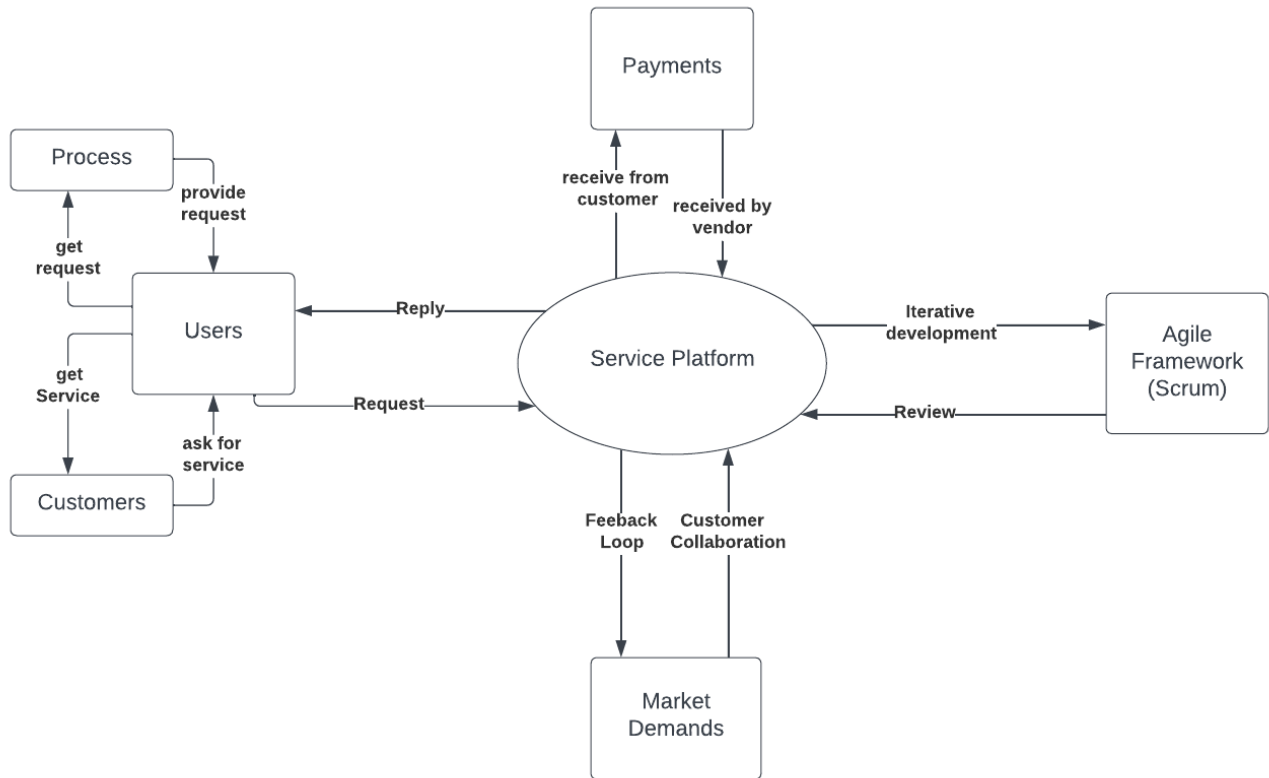
5. Assumptions and Constraints

5.1 ASSUMPTIONS

The following is a list of assumptions:

- Assume all users are over the age 18
- Ignore any tax issues.
- Any vacation and social and health insurance costs should be ignored.
- Ignore any contract negotiations and legal concerns.
- Service providers' licenses and backgrounds have been checked already.
- Developers are available throughout the development process.
- All required sources and funds are available until the project is completed.

5.2 CONSTRAINTS

The following is a list of constraints:

- Resource Constraint: Our developers are not trained in Android programming.
- Time constraint: A three-month timeframe is inadequate to accomplish this project.
- Technical Limitation: The project might have to follow certain rules about technology or use specific computer systems, programming languages, or tools.
- Testing and Quality Assurance Constraint: Rigorous testing and quality assurance procedures may need to be followed.
- Data security constraint: Data security is important for the project. To do this, we might need to put strong security measures in place. This could make some features harder to build or need more resources to make sure everything is safe.

6. Project Tasks, Schedule and Cost

Project tasks:

1. **Project Initiation (Feb 1 - Feb 7):**
   - Define project vision, goals, and scope.
   - Identify key stakeholders.
   - Establish the product backlog.
2. **Requirements Gathering (Feb 8 - Feb 14):**
   - Gather and document detailed project requirements.
   - Conduct stakeholder interviews.
3. **Design Phase (Feb 15 - Feb 28):**
   - Create system architecture and design.
   - Develop wireframes and mockups.
   - Define user interfaces and experiences.
4. **Frontend Development (Mar 1 - Mar 21):**
   - Implement frontend functionalities.
   - Develop user interfaces and features.
5. **Backend Development (Mar 22 - Apr 7):**
   - Implement backend logic and functionality.
   - Integrate frontend and backend components.
6. **Integration & Testing (Apr 8 - Apr 21):**
   - Conduct integration testing.
   - Identify and resolve bugs and issues.
7. **User Acceptance Testing (Apr 22 - Apr 28):**
   - Conduct testing with actual users.
   - Gather feedback for final adjustments.
8. **Deployment (Apr 29 - Apr 30):**
   - Deploy the platform for public use.
   - Monitor and ensure system stability.

Task	Start Date	End Date	Duration (Days)	Assigned Resources
Project Initiation	Feb 1, 2024	Feb 7, 2024	7	Project Manager, Team
Requirements Gathering	Feb 8, 2024	Feb 14, 2024	7	Project Manager, Team
Design Phase	Feb 15, 2024	Feb 28, 2024	14	Project Manager, Developers
Frontend Development	Mar 1, 2024	Mar 21, 2024	21	Developers
Backend Development	Mar 22, 2024	Apr 7, 2024	17	Developers
Integration & Testing	Apr 8, 2024	Apr 21, 2024	14	Testers, Developers
User Acceptance Testing	Apr 22, 2024	Apr 28, 2024	7	Testers, Project Manager
Deployment	Apr 29, 2024	Apr 30, 2024	2	Project Manager, Developers

Cost:

Hardware Requirements:

1. **Server Infrastructure:**
   - **Processor:** Dual-core or Quad-core processor.
   - **RAM:** 16GB to 32GB.
   - **Storage:** SSD storage with at least 256GB.
2. **Database Server:**
   - **Processor:** Dual-core or Quad-core processor.
   - **RAM:** 16GB to 32GB.
   - **Storage:** SSD storage with at least 512GB.
3. **Development Machines (for Each Developer):**
   - **Processor:** Quad-core processor.
   - **RAM:** 8GB to 16GB.
   - **Storage:** SSD storage with at least 256GB.
4. **Networking:**
   - **High-speed internet connection for servers.**
   - **Secure and scalable network infrastructure.**

Resource Allocation (Assuming 22 working days per month, per resource)
- Project Manager : 3 days/week
- Developers (6): Full-time

Estimated Costs
1. **Development Team Costs:**
   - **6 Developers:** 6 x $5,000 x 3 months = $90,000
   - **1 Project Manager:** $10,000 x 3 months = $30,000
   - **Total Personnel Costs:** $120,000
2. **Overhead Costs (50% of Personnel Costs):**
   - $120,000 x 0.5 = $60,000
3. **Hardware/Software Costs:**
   - Server costs, software licenses, development tools, etc.
   - Estimated at $40,000
4. **Project Profit Margin (50%):**
   - 50% of Total Costs = $120,000 (Personnel) + $60,000 (Overhead) + $40,000 (Hardware/Software) = $220,000
   - Profit Margin = $220,000 x 0.5 = $110,000

Total Project Cost
- $120,000 (Personnel) + $60,000 (Overhead) + $40,000 (Hardware/Software) = $220,000

Total Project Revenue
- $220,000 (Cost) + $110,000 (Profit Margin) = $330,000

This rough estimate provides a basic overview of the project tasks, resource allocation, estimated costs, and profit margin. These figures are based on assumptions and will be refined in later stages using tools like Microsoft Project and COCOMO for more accurate planning and cost estimation.

7. Conclusion and Recommendations

In conclusion, this project report offers a detailed overview of the project, encompassing its objectives, scope, and anticipated outcomes. The key features of both the website and mobile application are outlined, along with a discussion on the technologies and tools employed during the development process. A thorough evaluation of the project is provided, and potential areas for improvement in the future are explored.

The selected Agile project management approach, particularly the Scrum framework, is well-aligned with the project's characteristics. Its adaptability, customer-centric focus, iterative development process, and emphasis on continuous improvement make it a suitable choice for a project where flexibility, rapid feedback, and collaboration are crucial.

The success of the project will depend not only on the technical aspects of development but also on effective collaboration among stakeholders, including customers, service providers, and the app owners. Continuous communication, transparency, and a commitment to user satisfaction are key factors that will contribute to the project's success.

As the project progresses, it will be essential to monitor and evaluate key performance metrics, such as user adoption, service provider onboarding, transaction volume, and customer satisfaction. These metrics will provide valuable insights into the platform's effectiveness, enabling the project team to make informed decisions, optimize processes, and enhance the overall user experience.

This report serves as a comprehensive manual for the design and implementation of a website and mobile application dedicated to Serve Request System (SRS). The team is optimistic that the outcome will be a high-quality solution, providing users with an efficient and user-friendly means to and enhance their overall well-being.

Appendices

- Tool used for preparing the High-level design diagram: LucidChart https://www.lucidchart.com/pages/

- Agile methodology: https://asana.com/resources/agile-methodology

- https://engineering.futureuniversity.com/BOOKS%20FOR%20IT/Software-Engineering-9th-Edition-by-Ian-Sommerville.pdf

- https://www.mlsu.ac.in/econtents/16_EBOOK-7th_ed_software_engineering_a_practitioners_approach_by_roger_s._pressman_.pdf

- https://www.letsbuild.com/blog/construction-cost-estimate-101-basics