

BUILDINFII: A Feasibility Study and Design Framework for a Construction Procurement Platform

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Abstract–Purpose–The construction industry in India faces difficulties in procurement process due to manual efforts applied by Builders and Retailers resulting in bad quality product and frauds. There are also mediators which plays important role in procurement process and that is one of the reasons which creates trust and quality issues. Retailers face difficulties in finding nearby construction sites as there is no proper application providing information about nearby construction sites.

Design/Methodology/Approach

BUILDINFII is a conceptual web application which is developed to solve this problem. It provides map-based service to both Builders and Retailers. A field study and Interviews were performed to do research and knowing root problems and finding effective Solution. Technologies used are Flutter, Firebase [firestore, storage, authentication] for text data and PDF storage, EmailJS for real-time email service.

Findings

Builders can register their sites adding required list of materials and that construction site will get pinned on map which Retailers can view. Retailers can provide estimates in PDF format navigating nearby sites on map with real-time email service. Builders can add or remove sites whenever required and similarly Retailers can add or remove Estimate Data. Findings highlight the potential to connect Builders directly with Retailers which will streamline the procurement process and it will result into best quality construction and will improve Builder-Retailer relationship.

Originality/value

BUILDINFII provides a strong platform for builders to procure best quality products at best price and increases transparency and for Retailers to view nearby sites and its requirements and provide estimates in PDF format. PDF format is used for Builder's ease as it helps to view multiple estimates from different retailers easily.

Index Terms—Construction, Procurement, WebApp, Builders, Retailers, Construction Tech

I. INTRODUCTION

The construction sector plays important role in economic development, yet its operational workflows especially procurement remain inefficient. Builders often rely on informal networks to source materials which leads to delays, inflated costs, and limited competition. Retailers also remain unaware of nearby construction sites and face difficulties to find one as there is no such system available in market which provides a map-based service which streamlines the procurement process. There are multiple applications and web-apps available that provides various services connecting customers and service providers but this area is remained untouched due to lack of research in this direction. BUILDINFII is conceptualized web-app or a novel system to address these gaps by offering a centralized digital ecosystem designed for the construction domain.

II. RESEARCH

Field Study helped us to find this huge gap in construction services. To develop BUILDINFII we find Flutter a best fit as it is a cross-platform development technology. Firebase provides authentication, storage and real-time database providing extraordinary user experience. Builders can manage their site data like posting a site or deleting a site and updating personal information. Retailers can manage their estimate data like sending estimate as PDF via Email and delete PDF. PDF will be stored in Firebase storage if email is sent to the Builder. So, if Retailer deletes the PDF, Builder will be unable to view the PDF as it will get deleted from the database. This type of service is important for good quality construction. Some advancements are added that is the verification of sites and retailers, to increase the

trust between Retailers and Builders. Each site must be registered on government platforms like RERA and that site will be given a RERA number. We can verify a site using that RERA number and verification of Retailers can be done using GST number. If any of it doesn't work then we can verify sites and retailers physically by visiting the location. It will increase trust among users and builds strong trust on web-app.

Graphical User Interface

The graphical user interface (GUI) design process for "BUILDINFII" emphasized the creation of intuitive dashboards tailored to two user roles: Builder, Retailer. This strategic orientation prioritized user-friendly interactions to ensure seamless navigation and efficient execution of critical actions.

Figure1:- Retailer Dashboard

Figure2:- Builder Dashboard

Figure 3:- Map Service

Figure4:- Architecture Diagram

IV. DISCUSSION

This study is aimed to solve the problem found during construction field study. It was a major gap in

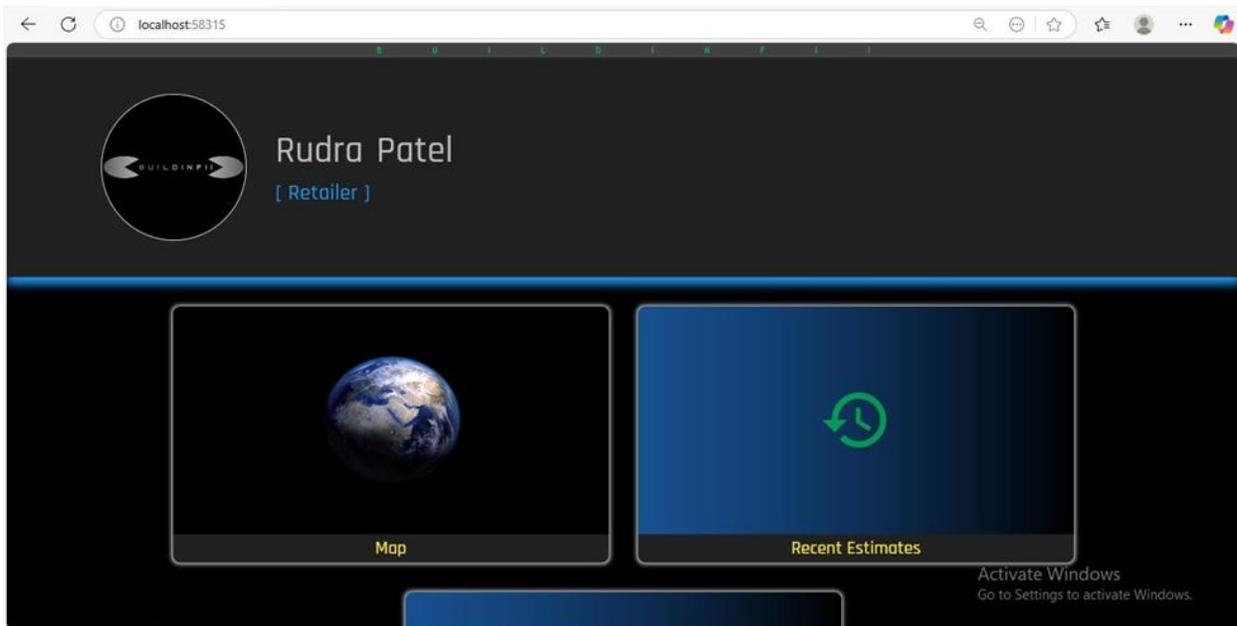
the technology which we tried to expose and perform necessary actions to overcome the problem with an affective solution. There were major challenges faced during research in understanding needs of retailers and builders and understanding the working as there are many alternatives or settings going on in the market between Builders and Retailer like "BARTER" system. In "BARTER" system retailers do not take money of the materials supplied but asks for property in the same project in return. Still we tried to solve the issue with the optimum solution possible according to our research.

V. CONCLUSION

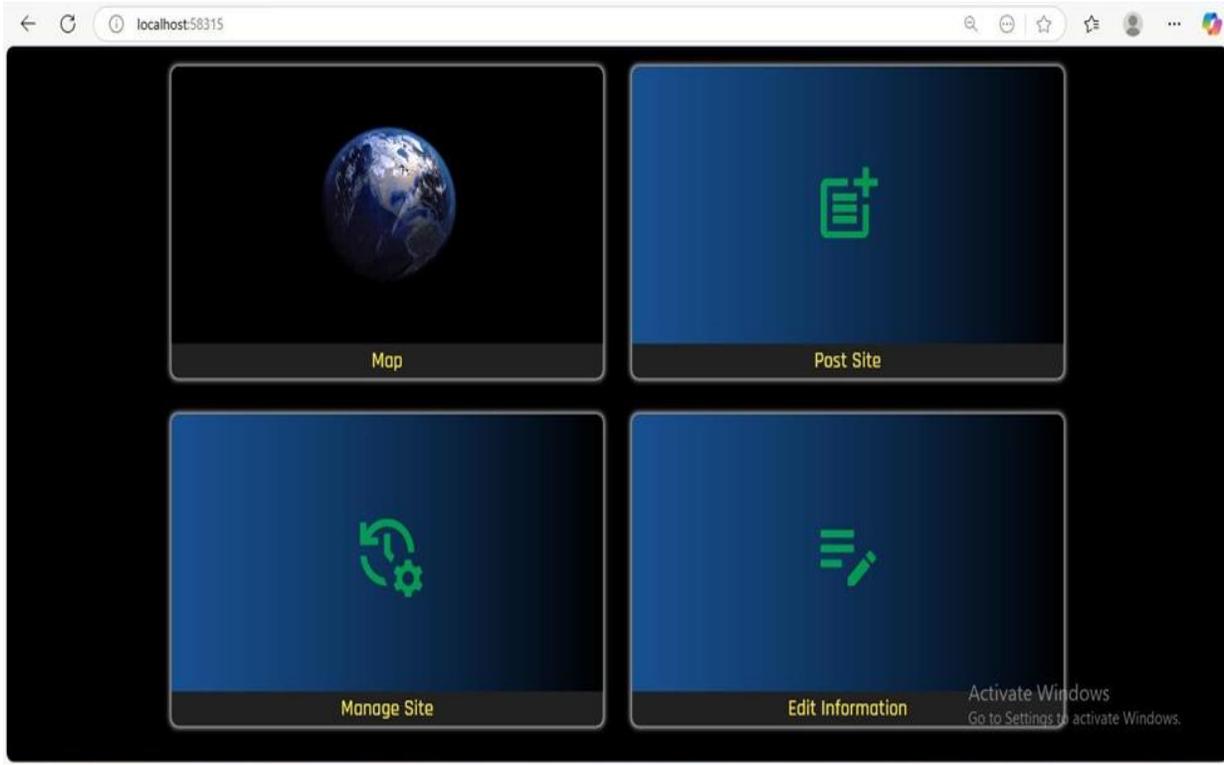
In a nutshell, this research unlocks a new dimension of research to be carried out and many more things are there to be developed technically in construction field making process easy, efficient and more beneficial. Using such web-app Builders and Retailers can easily coordinate with each other in effective manner without any mediator. BUILDINFII is a conceptual web-app or a novel system that is not yet launched. Every information mentioned in this research paper is gathered only using field study.

VI. RESOURCES

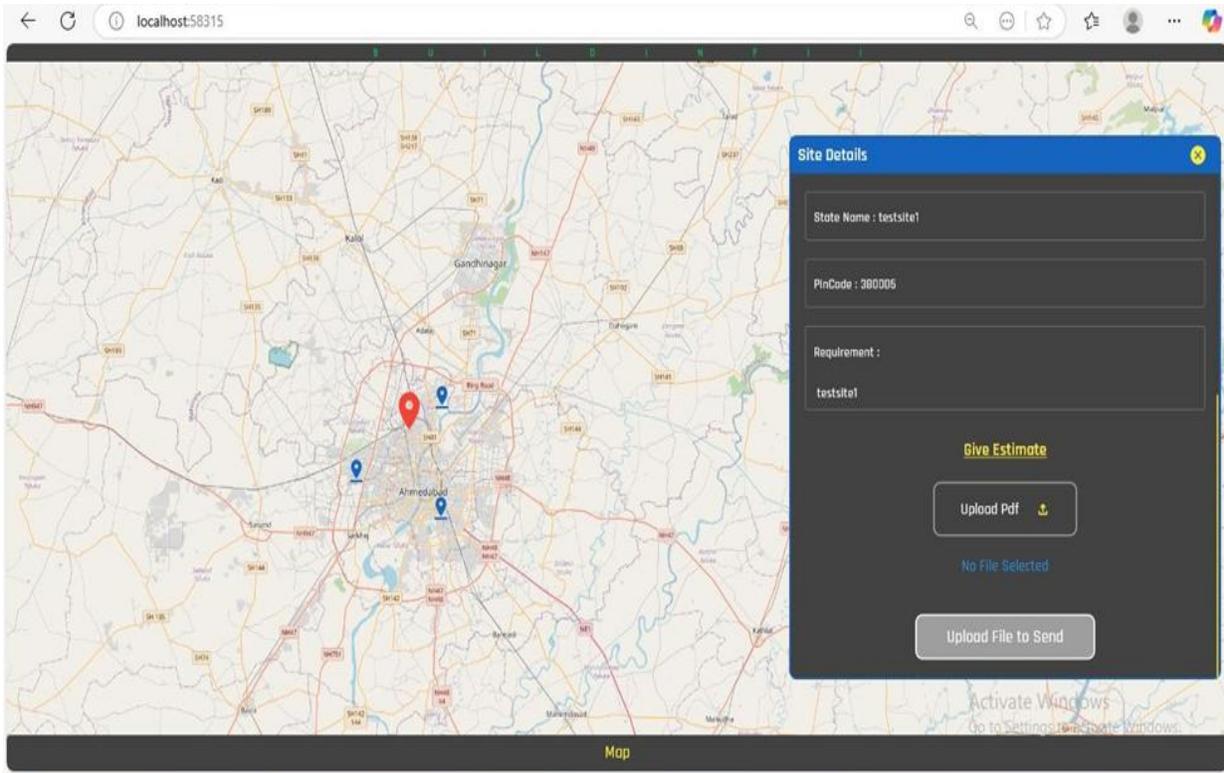
Retailer Dashboard



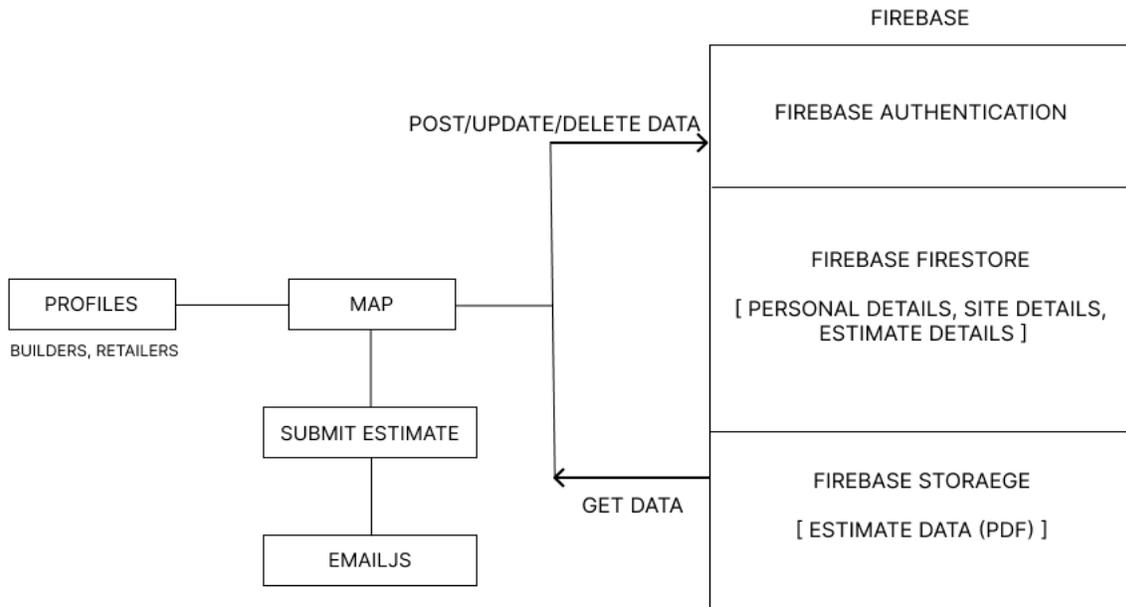
Builder Dashboard



Map Service



Architecture Diagram



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