

# CAST- Construction Site Analysis & Tracking

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**Abstract**— India rank second in the population and shelter is the basic necessity of every human being. So there is tremendous construction going on various sites. To keep track of every work we have develop a portable Android application which will help the Supervisor to manage the flow of information easily. Manually entries in Book/ Register's will be completely removed due to this application. User is able to add daily bills/challan in application. In short there is no need to handle any paper or carry paper everywhere. It's a Construction ERP Software for the Business man & busy people in day-to-day's life. According to added data our application can generate daily/weekly report of how much work is done and how much is left. Our application will save time, paper, money as well as the corruption will be reduced as bills are uploaded on daily basis. So it will be easy to user to complete work on time. These application also predict, in available construction material how much construction part will be completed i.e. it will predict how much work related to pillar, ceiling and slab will be done. We have develop database in firebase which is flexible to manage and easier to use so that user can check available data when required. Henceforth automating the whole Civil Industry and Bring a drastic change in India.

**Index Terms**— Digital India, Automation, Civil Industry, Application

## I. INTRODUCTION

CAST is an Android application which will help to reduce on paper work at the construction sites & also reduce the efforts of the proprietor to visit the site every day. With the advancement of versatile systems, worldwide situating frameworks, building site's variables, including human, budgetary, materials and other data, can be assembled progressively, and the enormous information wellsprings of building site are expanding. With the help of developing Internet advances and distributed computing stage, through information gathering, transmission, stockpiling, mining and examination, reconciliation development can be accomplished.

Main Content of Construction Site Analysis & Tracking—

We will develop a Portable Application which will help the Supervisor to manage the flow of information easily. Manually entries in Book/ Register's will be completely removed due to this application. It's a Construction ERP Software for the Business man & busy people in day-to-day's life. Our product will save Time & Paper as well as the Money. Henceforth automating the whole Civil Industry and Bring a drastic change In India. In this system we will use Wait-Sync Technology which will support the application even if there is no Data Connection. For Validation Purpose images of the invoice & Challan will be uploaded to the Server. We will Implement Sun Readability so that supervisor will be able to view the screen with ease. Application will be secured using "And Otp" Concept (While data connection is available). It will also store information of every labour, expenses attendance etc.

## II. RELATED WORK

One IEEE paper mainly focuses on how one can effectively, manageably use construction site[2]. One paper focuses on how to use augmented reality to constantly monitoring of the construction site[1]. By referring conference and journal paper we are come up with this Android Application which is user friendly and saves user time, money, paper.

## III. METHODOLOGY

Looking at the current situation at the construction site very few people use this kind of applications and also while using they find it difficult to perform the task. They are many drawbacks of the existing system, this paper will brief these drawbacks and propose the idea to overcome the same. We have visited various construction sites for research of the proposing system, the following are the drawbacks found in the applications used at these sites.

1. These systems don't work when there is no active internet connection, means it will work properly only when there is live data or else it is of no use.
2. Systems with top-level security lack in choosing better options at that current moment. Elaborating this points means that if a supervisor has best security mechanism i.e. biometrics but still there are some cases where it can be failed so in this failure these applications won't be able to recover unless and until any upgrades are released.
3. The complexity of these applications is a bit higher as compared to the basic knowledge of the particular person, so while using this application a person should be well educated so that he can efficiently use the application and make 100% use of it.

Figure1. Block diagram of Construction Site Analysis &amp; Tracking.

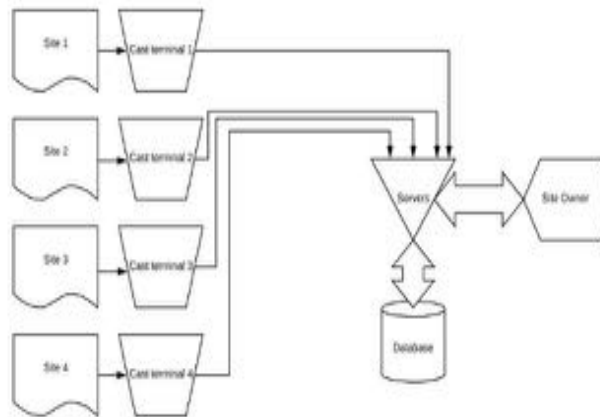


Figure Labels: Step 1, Cast Terminal 1, Step 2, Cast Terminal 2, Step 3, Cast Terminal 3, Step 4, Cast Terminal 4, Servers, Database, Site Owner.

4. When judging an application we should also consider its market value and actual production cost. These products available in the market are not financially feasible, means according to our research if we buy an ERP software then again we have in-app purchases in it.

5. Advancement of the software in projection cases becomes more complex because the parameters to be considered are vast in nature and it makes the use of software more hectic which will be indirectly proportional to the low awareness among the civil industry.

There are various methods which we will be using while developing the application that will overcome the current system's drawbacks.

#### 1. Wait-Sync Technology—

This mechanism will overcome the "Live Data" Drawback which is a major issue in the existing system, there are no such mandatory cases where data connection at the construction site will be available always. Using this technique will save the data in the temporary memory if the live data connection is not available and whenever the data connection becomes active it will be uploading the information to the cloud. This technology is helping to make application 35% more effective than other applications in the market.

#### 2. Improved Challan System—

When working at large scale an owner of the side is not bother about small cuts in their projects, this means the site supervisor somehow manages to get some extra royalties by altering the bills and feeding inappropriate information. Our system has a module that will allow the site supervisor to upload the bills & challans at the time of delivery of the stocks at the site so that probability of the alteration of the bill is reduced and henceforth the owner will get more accurate costing of the project.

#### 3. Multiple Integrated Security—

We don't need to install third-party applications to make application secure. The proposed system will have a security mechanism such as when the data connection is available, automatically He/She can generate OTP and log in into the system else if there is no data connection then when can use biometrics such as "fingerprint" to access the application and at the and if there is fatal accident with a person authorized by biometrics of the application and due to this he/she is not able to access the application then it can be logged in by using an M-Pin.

#### 4. Improvised Intelligence—

Applications with a projection of completion of particular work aren't Existing, the proposed application is having a feature will be estimating the work to be done in the stock at present available. This will be done by analysing the stock and inventory and generating results in such a way that will be beneficiary for the client.

#### 5. Low-Level Terminology—

There are no such constraints that the site supervisor should also from a technical background or familiar with US-English vocabulary so that he/she will be using the application more efficiently. The languages and terminology that are to be used in the application will be easily understood by the site supervisor.

#### 6. Sun-Readability—

The last but not the least, a major issue in applications at a construction site, a site supervisor is not able to sometime read the screen in sunlight due to colour contrast. The proposed system will be having a sun-readability contrast so that the site supervisor will be easily viewing the screen in sunlight too.

## IV. RESULTS AND DISCUSSION

Figure 2. Login Page, Sign-Up Page, Submenu Page, Stock Management



Functions in Construction Site Analysis & Tracking are as follow:

1. Stock Management—

At the construction site in the existing system, it is difficult to manage a track of each and every stock of materials that are used and brought on the site. To overcome this which is our basic motive of the application we will providing an interface which will be at a basic level so that minimum literate people can also interact with it conveniently.

2. Inventory Management—

Stock Management is the common thing that all other existing system provides, the extraordinary feature of the application will be inventory management i.e. the respective person there can manage the figure of machines, mechanism etc. currently being used at the site.

3. Work Projection—

The CAST is an application which is dependent on its prior inputs, in the sense Projection here means, according to the stock it will provide the report that will disclaim "how much amount of work should be done in particular stock". This will be an advancement in the civil industry as we will be using artificial intelligence for estimating the work.

4. Various Site Management—

Not only single Site can be managed but various sites of a client can be managed at the same place no need to mess up with different application and authorization.

5. Report Generation—

Here user add the daily/weekly/monthly data in the CAST application. This will remove the requirement of the admin to visit the site and can get the idea of the progress the site is having.

6. Challan Uploading—

Challan are nothing but bills that the user can upload in this applications which can be viewed at the admin. This helps the admin to make sure no temperament has been done in the bills i.e. corruption can be halted. Also makes easy to budget the things.

Figure 3: Report Entry and Challan Upload Page



Figure 4: Inventory Management Pages



Figure 2 shows Login Page, New Registration, Submenu in the CAST application & Stock Management page. Figure 3 shows Report entry page (Daily, weekly, monthly bases), Challan upload page. Figure 4 shows images related to the inventory management.

#### V. CONCLUSION AND FUTURE SCOPE

The application is developed to overcome the drawbacks and research gap between the existing system & proposed system, henceforth concluding proposed system will be much better in comparison with overall caliber. Looking to a longer perspective and long-term goals this application can also be beneficiary in the concept of "Big Data" cause it will be already holding the pieces of information of various sites of 'n' numbers of site owners. As this system is a cloud-based security mechanism will be also that good enough to provide "CIA" of security. By maintaining security at Client-Server side will be beneficial and also trustworthy which will help in increasing weight of the application by 20% in the market.

Maximum Cost-Cutting will be done so that Costing will be Less as a results sales will be raised drastically hence bringing change in Civil Industry and also under the concept of Indian Govt. "Digital India". Reviewing Feature of the application for the particular site & Site owner will be beneficiary of the genuine customer's, hence they will be able to know "which construction site is legitimate, Trustworthy & Feasible".

Implementing this application on local levels will improve the use of technology in civil industry and also will make site one level up from those who aren't using the same. This application has following application: its Owner do not need to visit site any time, Paper work will be reduced, Digitization of Work, Data cannot be altered after the day ends, Regular Updates of Each & Every Site, No Fake trails can be played by Supervisor i.e. "Security Maintained".

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#### REFERENCES

- [1] S. Zollmann, C. Hoppe, S. Kluckner, C. Poglitsch, H. Bischof, G. Reitmayr, "Augmented Reality for Construction Site Monitoring and Documentation" ,IEEE Transaction, Volume: 102 , Issue: 2 ,pp. 137-154, Feb. 2014.
- [2] T. Liu, J. Hou, G. Xiong, T. R. Nyberg, X. Li "Smart Cloud-based Platform for Construction Sites", IEEE, pp. 168-173, July 2016.
- [3] S. K. Sundararajan, S. Priya D., "Instant record of construction Site Detail through Electronic Signature", IEEE, 2017.