

SE ISE 1

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Feasibility Study for Metro Software System

Economic Feasibility:

- The Metro Software system is going to be a web-app, which will help and guide customers regarding the information of metro trains and fares related to it.
- The web-application will have the cost of the domain as well as hosting cost.
- No additional or hidden cost will be levied to the customers for using the application or viewing the system.
- As more number of users are going to use this software, the storage required is going to be high, which in turn will increase the expense for storage from the company's point of view.
- No extra cost for using the points system or redeem the points after having cashbacks/offers in user's account.
- The extra benefits that customers would experience are the additional details they would be getting as information and timings of metro system.
- There will be invoice generation, information about upcoming projects, reports and statistics and all automated features will be included within the system at no extra cost.
- No additional charge would be taken from customer who wishes to buy a membership card or becomes a member.
- Installation of plastic collecting machines would add up to the cost of the system.
- E-Ticketing would reduce customer's effort and time as compared to physical buying of tickets.
- Number of daily commuters or frequent travellers using daily pass or metro-cards are more than the number of people who travel by metro occasionally since more than 55% users use smart cards and hence our system will be used more.
- There is a cost incurred by companies in providing salaries to the admins, software engineers who maintain and look after the system but is minimal.
- There will be storage cost associated to store such huge data and also there will be cost for maintaining the copies and backup of the user data.
- Being a web application, the SCOPE course management system will have an associated hosting cost.

- Since the system doesn't contain any multimedia data transfer, bandwidth required will be very low.
- The system will follow freeware software standards. No cost will be charged from the potential customers.
- Besides the associated cost, there will be benefits for the customers. The extra effort associated with registration, issuing invoices, generate statistical reports will be reduced and the effort to issue verified certificates will be eliminated, since the system is automated.
- Since there is no prior unified system for the same, better efficiency is expected due to the streamlined procedure.

Technical Feasibility:

- The Metro Software System is a complete Web Based system which is going to be implemented using the following technologies and frameworks:
 - Angular(Front End Framework)
 - Node JS(Back End for Business logic)
 - Express.js(For Creating RESTful APIs in Node JS)
 - MongoDB(Database)
 - HTML(For Basic Page Layout in Front End)
 - CSS(For Styling the Front End)
 - Bootstrap(To make the application responsive)
 - JavaScript(To run basic logic at front end and for Back End Connectivity)
- All Technologies mentioned above are available freely to install and use directly as well.
- Developing & Managing the software will not be difficult as the technologies used are famous and have wide applications throughout the world and has a supportive ecosystem.
- The above mentioned technologies are scalable to a large extent, as per our study we observed that there can be 72 transactions per minute(considering current mumbai metro statistics) on an average and the system will be able to handle them easily.
- We will use external APIs for Location, Payment. Etc.
- The system will be hosted on the metro company servers if any or if not then hosting services like firebase.
- The System will be a Web Application and hence there won't be compatibility issues with any system/OS. etc.

Operational Feasibility:

- The method of data collection will be through Case Studies and Surveys or Forms and actual user interactions with the system.
- The Metro website will have a very user friendly interface which will be very easy to navigate through the website and an efficient database with high data security.
- The database and the website will be maintained by skilled software engineers.
- There will be a very sophisticated user manual provided which will include the roles and the domains of every end user like the customers, admins, etc.
- The user manual will also give a detailed description of the steps to follow to create a new account and use the different functionalities of the application.
- The user manual will include the procedure to avail offers and claim reward points.
- The user data will be collected on registration.
- Every user will get a metrocard where he will have to scan every time while depositing plastic in the plastic collecting machines. Depending on the weight of the plastic and other constraints the corresponding number of reward points will be credited into the account.
- The card can also be used to pay for the ticket using the walk through facility.
- The plastic collection machine is a very accurate state of the art machine used for detecting the weight of the plastic and is installed at multiple places at every metro station.
- There are approximately 320000 users for Mumbai Metro per day(Maximum) and 65000 users(Minimum).
- 60% of the commuters tend to use the smartcards and e-tickets coming to around 120000 users per day on an average.
- Therefore the load handling requirement comes from 30 to 130 users per minute which the system will be able to handle easily.