

Train Signalling For Railway Operations

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ABSTRACT

Indian Railways, the leading rail network in Asia and the world's second largest under one board, spanning over 6000 stations, carries 18 million passengers every day. Only a million passengers travel with reserved tickets, and the remaining 16 million passengers travel each day without a confirmed seat. While reserved ticketing technology is enabled, unreserved ticketing was done primitively using printed cards [1]. Using different technologies we can provide services through application that will use API to get railway data.

Keywords: IRCTC services, Application programming interface, Digital Ocean, apigee, Security

I. INTRODUCTION

The passenger reservation system of Indian Railways is one of the world's largest reservation models. Daily about one million passengers travel in reserved accommodation with Indian Railways. Another sixteen million travel with unreserved tickets. Apart from ticket booking there are different services that are vital in day to day life, such services include PNR (passenger name record) enquiry, live train status, seats availability, fare, train routes. Such functionality is made available to the passenger through IRCTC operated by Indian railways. Applications are being developed to provide services in more convenient manner. Both online and offline services are provided through messaging services to the user.

In this vast system, it is a herculean task to proficiently handle the passenger data, which is a key point of consideration now-a-days. In this paper, the authors have explored different issues of smart computing in railway systems pertaining to reservation models.

For the development of such application we have used

Tools- ATOM as an integrated development environment

Services- For the development of such application we have used ATOM as and, services like Apogee and

Digital Ocean which is a server for API

Framework- Angular.js, Ionic and Codova

Technologies-HTML, CSS and JS

II. DEVELOPMENT IN THIS DIRECTION-

Railways recently launched a SMS-based ticketing service with two committed numbers -139 and 5676714. In order to give improved customer service and empower the common man who does not have any access to the internet and cannot afford to buy smart phones, Indian Railways Launched the SMS ticket booking service. This service will mainly be useful for ordinary man staying away from home as they will find the service suitable as well as cost-effective and they will not have to travel to booking counter and forgo the earnings for a day. Ticket booking through non-internet based mobile, launched as a pilot project by Indian Railways Catering and Tourism Corporation (IRCTC), will also help Railways overcome the menace of touts who fleece unsuspecting public. This will also help to reduce touting actions. Since the mobile access in India has enlarged rapidly and more than 80 per cent people now have a mobile phones, the innovative system will be helpful in enabling booking of tickets by masses themselves. In order to facilitate easy access, railways have been making

efforts by expanding the passenger reservation system counters' network. The online booking through IRCTC has now grown up to about 45 per cent of total reserved tickets. This has eased the rush at counters to a great extent. While internet access in India is only about 10 percent, mobiles are now in easy reach and more than 80 percent public in our country use mobile phones for different purpose. Railways' initiative of launching the ticketing through a mobile phone would further enhance the scope of ticketing since it has huge potential to tap the power of mobile phones. This service will improve further with provision of more payment options, user-friendly interface and value added services like alerts and updates. Payment through mobiles is still in an evolving state and RBI, commercial Banks and National Payment Corporation of India are working on providing a safe, secured and quick payment mechanism through mobile, with passage of time this mode of booking would surpass booking through website due to the convenience and the wider reach of mobile phones as compared to the internet

III. API SERVICES-

The foundation for digital business

Edge API Services bring together the best of Internet and enterprise technologies to provide solid reliability, Internet scalability, and enterprise-grade manageability for the API lifecycle—from modelling and design to deployment and production.

API Management

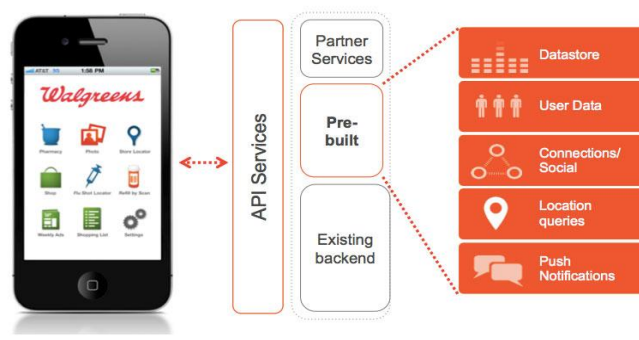
API Management enables the transformation of existing backend services to APIs with over 25 policies designed for configure-not-code deployment, simplifying customer self-service also reducing time-to-value.

- Transform from any API protocol to any other, including REST, SOAP, JSON, XML binary or custom protocol
- Secure and protect your customers and organization against XML specific threats and sensitive data exposure
- Manage API version to simplify change management and assure that applications will not break
- Control and throttle API traffic using quotas or design a “safety valve” using API rate-limiting

API BaaS-

The API Backend as a Service provides mobile and web application developers with a cloud data store and services that simplify building applications including user management, push notifications, and social networking and geographical location services.

- User Management: Core services are necessary for secure registration and log in, including O Auth 2.0-compliant client authentication
- Data Store : It Store any type of data as collections of data entities and performs complex queries or full-text searches on any field
- Location: Captures data from GPS enabled devices and associate with places, activities, people, events and devices
- Social: Embed social features in apps - user location, activities, comments, tweets, activity streams that enable publishing of user actions
- Push notifications: Reach app users with messages they care about with targeted and effective notifications and events.



Security

In this world of digital business, the IT mandate is still to provide secured access to services while protecting customers and the business from several threats, back-end overload, and service issues.

Edge provides an enterprise-grade security infrastructure.

- Role-based access control (RBAC) policy management for authorization
- Authentication for developers, users and administrators
- Authentication for APIs via OAuth, LDAP and SAML
- Threat protection against XML, JSON, and DoS attacks is available.
- Content-based routing, rate-limiting, and traffic spikes protection
- Performance optimization and throttling on back-end connections
- Manage access to APIs via OAuth or other security schemes

API Programmability

API Services can be extensive with JavaScript, Java, Python, and Node.js. With the combination of Edge and Node.js, modify existing APIs for the web, social, and different mobile devices, merge legacy systems, and add new API services.

- Extension policies enable us to add custom logic and tailor an API for business requirements.
- Build API and app back ends and reconcile and orchestrate back-end systems
- Enrich apps with security, traffic management, and protocol transformation logic using the 30+ existing policies
- Build "mash-ups" and composite services by orchestration or aggregation of existing APIs and other web services
- Rapidly mock up and prototype new APIs are quickly using a web framework like Express or an API framework like Argo also.
- We can Take advantage of the tens of thousands of third-party modules that the Node.js community has already created

IV. WHO IS DIGITAL OCEAN FOR?

Digital Ocean is a innovative platform created for developers who need to launch and scale their applications quickly and efficiently. Additionally, Digital Ocean will provide the perfect environment for developers to play around on the command line and study more about customizing their own servers.

CONCLUSIONS:

Indian railways are considered as an essence of the India for transportation of passengers as well as goods. It is the most inexpensive and trustworthy for travelling anywhere in the country. Using mobile application we can provide online as well as offline notification to users that don't have internet access. Such functionality saves a lot of time and provides instant access to railway data to make our travel more convenient.

REFERENCES:

1. www.irctc.co.in
2. www.indianrail.gov.in
3. www.indiamrailways.gov.in
4. www.erail.in
5. www.trainenquiry.com
6. www.indiarailinfo.com
7. www.irfca.org
8. www.indiamrailways.in
9. www.ireps.gov.in
10. www.irfc.nic.in
11. www.cris.org.in
12. www.irts.org.in
13. ETMA, “electronic ticketing in public transport”, M. Mezghani
14. Indian Railways Vision 2020 (Reinventing Passenger Services with Change for a better tomorrow as the motto)
15. Mari-Klara Oja, “Ubiquitous computing”, (4.5-Ubiquitous Transport Ticket, Page 57-60)
16. Intel easy Steps – Online Railway Reservations
17. Vikram Chopra, “The Unreserved Ticketing System of Indian Railways” Sinha et al., International Journal of Advanced Research in Computer Science and Software Engineering 3(8), August - 2013, pp. 543-548