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Survey Paper on Vehicle Assistance Systems IVR and Web Based Solutions

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Abstract: *This Paper is based to procure a survey on the existing solutions pertaining to Vehicle assistance systems, the paper points out various problems faced by the types of application currently in use. However the paper also provides critical solutions based on the type of systems in which the future versions of the application can incorporate the changes in technology in alignment with the central aim of the project. The paper also is aimed to provide a one stop solution for budding researchers to find scope of improvement on existing applications. The paper highlights the basic success of telephony based systems and then the drawbacks which led to shift to web based systems. Later the paper also provides methods in which the future versions can incorporate latest trends in the industry like Machine Learning and AI to such systems.*

Keywords: *Vehicle Assistance, Interactive Voice Recognition, web application, HONK.*

I. INTRODUCTION

Vehicle assistance service is an application currently used by many customer's on their mobile or is accessed by the customer via any portable device. The application is widely used in two variants telephony based systems and web application based systems. The paper is aimed to survey and study both the application variants in depth. The paper will provide a jumpstart to many amid researchers who study this paper ahead in the future to understand this industry and the nature of the application currently available in the market.

The paper also aims to provide enough information about the scope for future innovations with respect to the current scope of this application.

II. IVR SYSTEM

Through the use of voice and input via a keypad[1]. In telecommunications, IVR (Interactive Voice Recognition) allows customers to interact with a company's host system via a telephone keypad or by speech recognition, after which services can be inquired about through the IVR dialogue[2][3]. IVR systems can respond with pre-recorded or dynamically generated audio to further direct users on how to proceed. IVR systems deployed in the network are sized to handle large call volumes and also used for outbound calling, as IVR systems are more intelligent than many predictive dialer systems.[1][4][5][6]

IVR systems can be used for mobile purchases, banking payments and services, retail orders, utilities, travel information and weather conditions.[1][6]

The following figure below is the simplified explanation of any working IVR system, the photograph below in broken in multiple stages.

Stage 1: The call – the IVR system is a phone call based system, where the user initiates the system while he connects his telephone system with the application interface.

Stage 2: The Questions – The IVR interface is rich and detailed, however it consist of various questions, the answers provided by the user based on these are taken into account as the current environment around the user.

Stage 3: Sub-questions – The IVR system once switching to the root cause again pulls out a series of questions regarding the problem cited to then understand the exact problem via the custom made questions on the IVR.

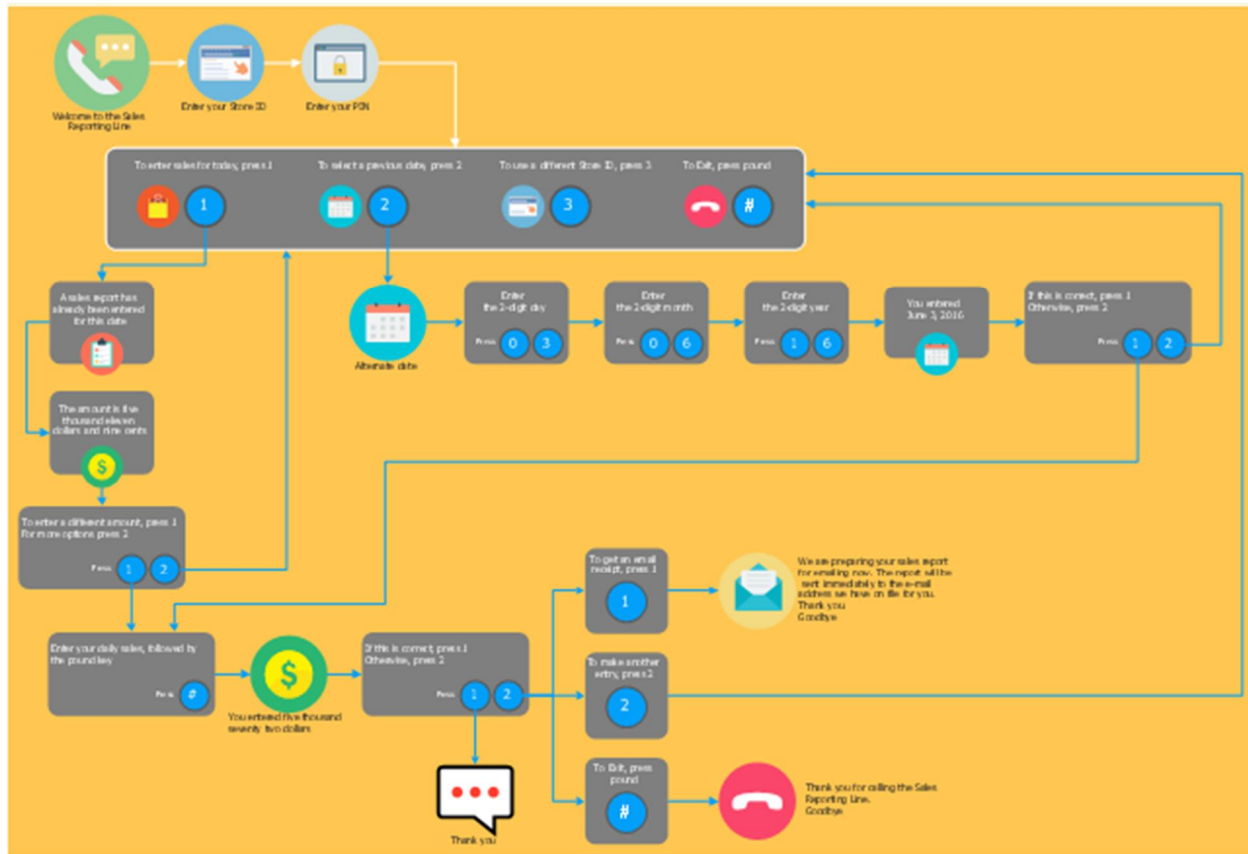


Fig No- 1. The flow of an application via an IVR system

The above figure is a general run through of the whole IVR system.

III. PROBLEM FACED BY THE IVR BASED VEHICLE ASSISTANCE SYSTEM

There are various problems associated with the IVR system, we have listed the most troubling reasons for which IVR systems aren't friendly for the Vehicle assistance system.

- A. Irritates the user with high frequency of questions
- B. IVR system is designed with a uniform English speaking pace hence its slow for many users
- C. Time taken by the system is high
- D. No accuracy and authentication of users
- E. Can be flooded with requests at any given time
- F. The administrator at the central server needs to 24*7 monitor the IVR system
- G. Automatic switching of queries is prohibited
- H. Only supports limited languages
- I. Can only support one to two type of services, cause else the questions can be troublesome

The above limitations have prohibited the use of IVR systems at a large extent for Vehicle assistance systems and the need for better systems is a must.

IV. CURRENT WEB APPLICATIONS

Apart from IVR systems, common webpage based web applications have been developed to move the same system from telephony to mobiles and laptops with a high degree of ease over the Internet.

Let us go through some static webpage based applications already in use around the globe like USA, Canada and Australia.

The company here HONK is used as an example to showcase the type of products available in the market for the customers to shift to web based solutions.

V. EXAMPLE OF A CURRENT WEB APPLICATION

The below figure is the landing page of this particular application, GUI is something which is an added feature, the early based telephony applications never had any UI components

Deconstructing the GUI up, the front landing page comprises of many scrollable options one of which is the figure below, the page is a standard HTML page which contains of various options on the title bar. About, Explore, Partners their services and then 2 buttons of which the one in RED, “Get Help” is of outmost importance to us. The other button is for users to download their Android Application for them to use the same on the go.

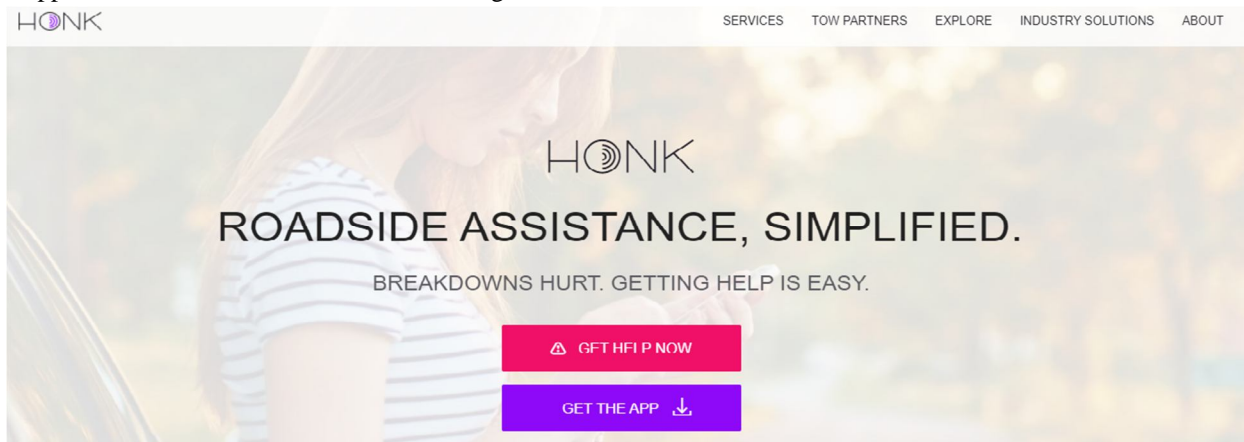


Fig No-2. The landing page of a web based application

The below figure is the list of various services offered by the application the list is everything one needs just perfect for this application. The application on the web allows this while the earlier telephony system never had this ease of use.

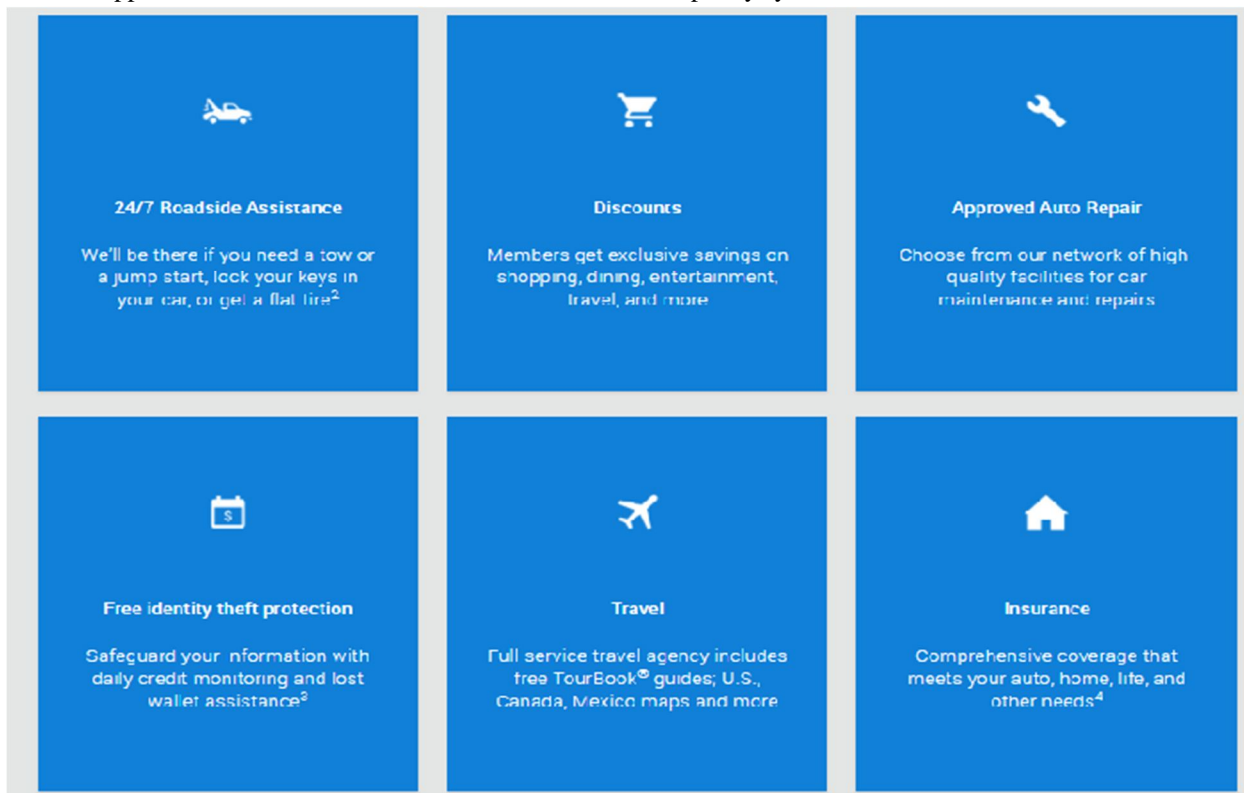


Fig No-3. The list of services offered by a web based application

As per the image the type of services offered by the application are, Road Assistance, Discounts, Approved Auto Repair, Free identity theft protection, Travel and Insurance.

The web application allows the application to be segregated into various component parts here the application has allowed the users to use specific parts of the application as required, while someone can opt for service, one can check out for discounts apply for insurance and even book travel if the assistance required hostiles the user.

Moving on let us now go through the " Road Side Assistance " button we saw on the landing page, on click we get straight to the picture Fig No []

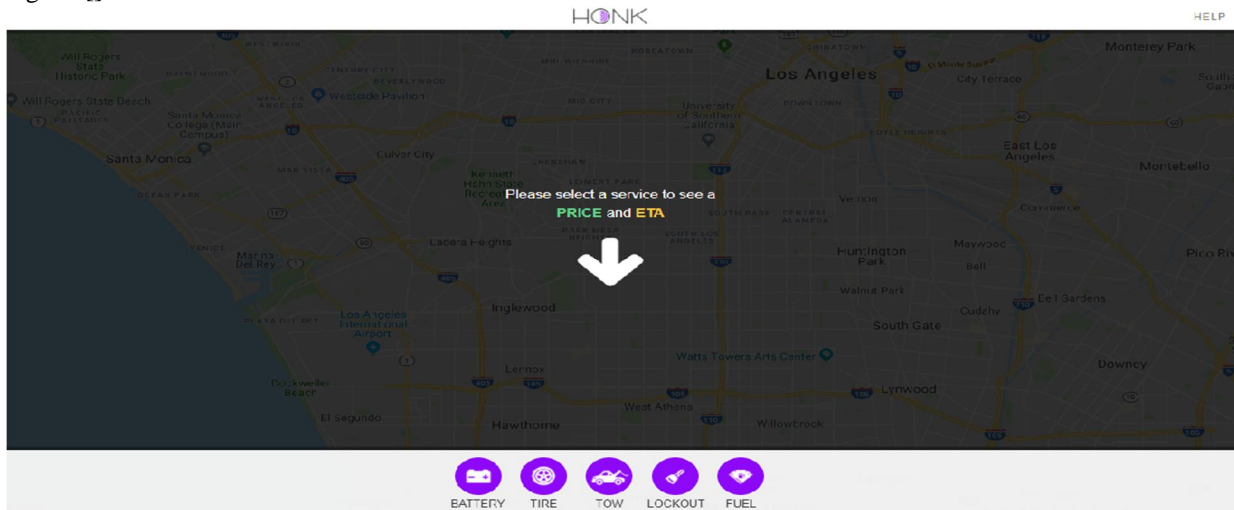


Fig No-4. The landing page of a web based application post accepting to receive service

The application renders a full size map of the location around you, here the application is used for the people of America. Hence, the application is rendering the map for The United States of America. The application is quite user friendly, here the application doesn't store cookies or valuable information of the user. The application allows anyone to freely access the application without any login.

The application thus allows no authentication, no session management and no clarification of who its users are, it truly is a module which connects a user with a service provider.

Next before we move on, the user needs to choose the type of service the user wishes to use, the application then moves to the next stage.

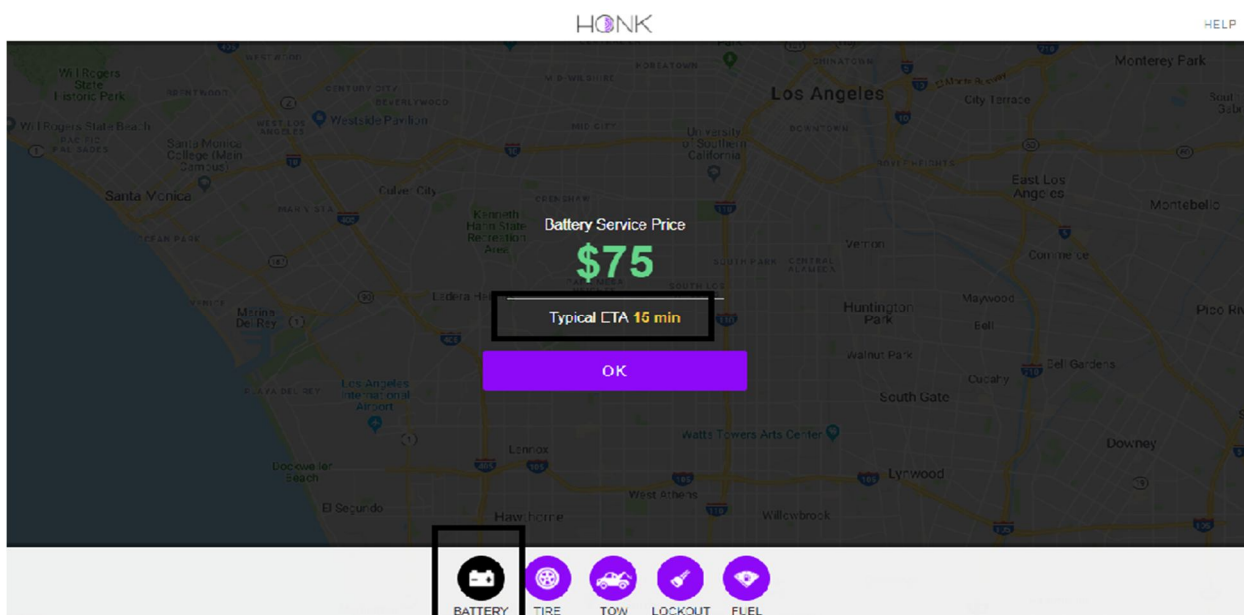


Fig No-5. The landing page of a web based application post selecting a service – Battery

The above figure is the next stage of the application once the user has specified the desired service, the application also provides precise cost the user would have to dish out for the service.

For an instance here the user has opted for Battery as a service requested. However, the user has 5 options only to choose from. Battery, Tire, Tow, Lockout, Fuel.

On click we see the application provides information regarding a charge of 75Dollars that the user will be spending on the service.

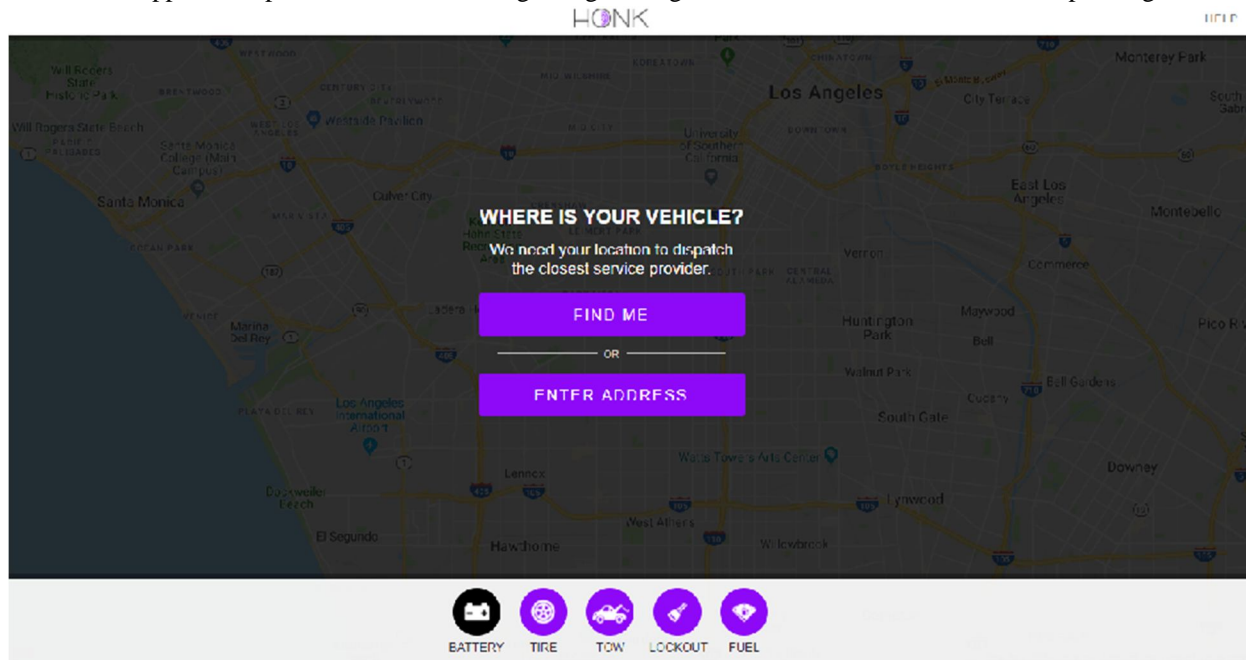


Fig No-6. The landing page of a web based application post accepting the charge levied

Moving on, Once the user clicks “ Okay “ on the previous slide webpage he finds the above page. The above page requests the user to map himself on the maps of the United States.

Currently we cannot test the “ FIND ME “ option as this application doesn’t allow the map to render any location apart from the United States.

Once the user pin points his location on the maps the user gets a notification about the service provider ready to provide service, before this, the application collects the said amount Ie. 75Dollars here to avoid fake users.

VI. PROBLEMS FACED BY A STATIC WEB APPLICATIONS

There are a few problems associated with the Static web application system, we have listed the most troubling reasons for which Static Web application systems need a few modifications.

- A. The application doesn’t manage user accounts
- B. The application doesn’t map the user sessions
- C. The application has no dynamic components
- D. The application has no recovery model

The application however is swift and easy to use, can be added with various other features which have recently been in the buzz.

VII. FUTURE SCOPE OF PROJECT GROWTH

The application translated well from the Telephony system to the webpage based application, not only it allowed users to make the based application to adhere to multiple services.

The application can adapt a model of Machine Learning allowing the application to predict the need based on the traits of a single user over the past instances, map sessions, store user profiles, allow login – logout features – Tie up with various service providers and allow synchronized utilization of the application. Can incorporate renewal of insurance and other allied features that are specific to the automobile industries.

VIII. CONCLUSION

The translation of applications from IVR systems to Web Applications have been a success for Vehicle Assistance, the industry is readily allowing various changes in its prospective towards modern technologies. A sector dominated by the recorded voice based system have adapted well to the webpage based systems. Not only this saves quite a lot of time for the customer also saves money and provides an opportunity for the companies to provide higher customer satisfaction to their patrons by allowing them to choose their way to approach a service apart from restricting the users to pre-set questions and trouble users at the hour of need.

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