Streamlining the Process of Medical Representative in Pharmaceutical Industry using GPS Technology

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Abstract:-Android is on its way to become de-facto Mobile Operating System of choice in all Non-i Phone markets. With a choice of handsets and price range from INR 4500 to INR 35000, Androidoffers a Smart Phone for all. Google predicts that total number of users on Android Smartphone will be over 750 million by 2014. With an intend to offer a solution on Android platform to make a company Smarter with relevant, timely and digestible information is the objective. The paper presented focuses on development of an Android App which is an integrated GPS/portal solution with an objective of enhancing control and visibility of the user using this application thus improving the productivity of the company to a great extend without increasing the cost.

Keywords: Real-time tracking, mobile technologies, Android OS.

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I. Introduction

Mobile technologies such as Global Positioning Systems (GPS), General Packet Radio Service (GPRS) and Geography Information Systems (GIS) coupled with advanced Internet solutions provide transparency and more specific information in terms of instant localization and traceability [1].

GPS are space-based radio positioning systems that provide 24-hour, 3-dimensional position, velocity and time information to suitably equipped users anywhere on the surface of the Earth [2].The impact of these mobile technologies can be seen in logistic companies to track their fleets. However the same technology can also be used in Pharmaceutical sector.

The Pharmaceutical Industry is facing a difficult time due to following issues.

- Lack of Real Time Location of On-Field Staff.
- Keep a track on the number of visits made by the MR per day.
- Lack of tools to verify attendance of On-Field Staff.

Pharmaceutical marketing, sometimes called medico-marketing or pharm marketing is the business of advertising or otherwise promoting the sales of pharmaceuticals or drugs. Medical Representatives are the sales channel of the product of the pharmaceutical company. On behalf of the company, they visit a wide range of people and organizations like pharmacists, doctors, nursing homes and hospitals. Their job may involve extensive travelling to small towns and villages. Inshort, their physical presence in the company is limited.

II. Research Problem and Aims

From the literature review, we can summariesa Medical Representatives (MRs) makes routine trips to the doctors, medical shops daily 5 to 8 visits.

Using Geofencing we can define geographical boundaries to each and every location to be visited by the MRs on the particular day.

Geofence can be in any complex shapes like polygon or circle. With the help of Web based maps a manager for the particular MR can create geo-fence according to the location of their clients[3]. The MR thus can view number of

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locations on the map available on its application knowing the trip to be made on that day. Thus an optimized schedule is created for each MR,that can help in streamlining the process and efficiency of each Medical representative knowing the exact route to travel to the next closest location from his current location. Once the MR device crosses a geofence and enters (or exits) the boundaries defined by the administrator, an SMS or email alert is sent.Thus having a proof that the MR visited the client.

The important technology features which can be used in the system to solve the above problems are

Placemarks: They are the location markers on Google maps. This place marks can highlight the current location of the user which can be reflected on the web portal.

Geo Fencing: Virtual Boundary of any shape and size which can trigger an alert on entry / exit of boundary. A utility which is made available on the Web Portal to Geo Fence all the pharmacy's and Doctor clinic. Alerts can be generated in the form of SMS's when the user enters or exit the geo fence area. For e.g. Mr. ABC entered Dr. ABC clinic at 12.00 p.m. on 21st Feb.

Battery Percentage: The application can on/off the GPS receiver active on the mobile phone to reduce the drainage of the Battery. And also the operator available on the Web Portal can monitor the battery percentage of the user and can send him alerts if the battery level is below critical level e.g. 20%.

Automatic Start/Stop: Integrating the application with the phone time the application can implicitly resume its service at the start of work hours of the day and stop it service at the end of work hours e.g. 10 to 7 p.m.

Alert/Travelling Expense: As GPS technology can provide real time dataon the current location and distance travelledof the user enabled with GPS device. The application can give on timely alerts to the client to provide the Estimated Time of Arrival (ETA) at the client location. The distance travelled by the user in terms of KMs can help the company to give travelling allowances to their employees.

Daily Reports: The raw data available on the data centre can be mined into useful reports for analyse and

visualization of routes of users.

III. Application in Other Domain

Another interesting application of Real Time Tracking can be found immensely in the field of logistics. Currently the, Logistic Supplier Providers (LSP's) make use of GPS device to track their thousands of fleets. Thisapplication can be a replacement to the high cost GPS device which can serve the same purpose in minimal cost. Thus the information on the latest delivery status, the expected time for the arrival (ETA), the velocity of the fleets on their way and many other features related to their needs can be integrated and achievedthrough this application as well.

IV. Real-time tracking Solution

Harnessing the inbuilt GPS feature of Android phones along with the web portal can address the issues faced by the Pharmaceutical sector. The system is based on an application which is running on any android phone and transmits regular status updates back to web portal (figure 1). This application after regular specified intervals will hit the data centre to populate the current location of the user through web service. The logic implemented either on the web portal or on in the application to check whether the user has entered the geo fence so that timely alerts can be send.
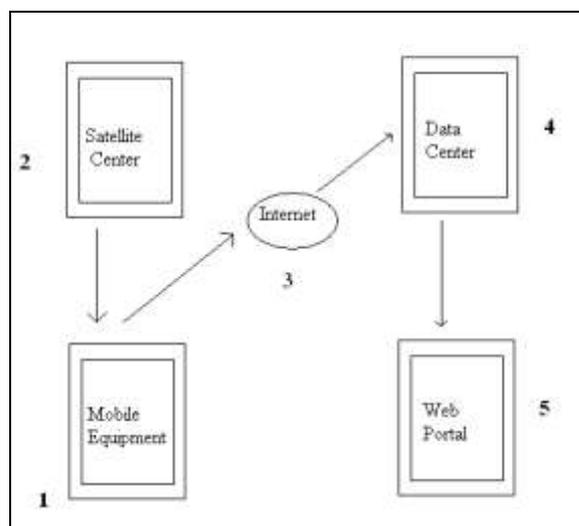

Figure1: Real Time Tracking Solution.

The mobile tracking application as well as the web-portal is based on the SaaS concept (Software as a Service) which means that the application is hosted as a service provided to customers across the Internet.

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The advantage of using SaaS is that it eliminates customer effort of software maintenance, security updates and support as the actual application is installed on a service host. In addition to the above, the company incurred no up-front cost and benefited from virtually unlimited computing power with a reasonable monthly service cost.

V. Conclusion

The paper helped to gain an understanding of the challenges involved in a pharmaceutical operation and to interpret these in a real-life setting. Furthermore, through this the benefits of using GPS tracking and integration portal technologies within the context of the pharmaceuticaland logistic industry have been demonstrated. New business contracts could be won from the client market that demand tracking systems to be in place for security as well as customer services purpose.

Future research will focus on enhancing tracking functionality in where live notification can be send to the application user for change in today's route, dynamic allocation of new client on the trip, optimization on the routes to reach the nearest client first and so on etc.

VI. References

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