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MODELING OF ONLINE LOCATION BASED SERVICES IN DAIRY MANAGEMENT SYSTEM THROUGH UML

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ABSTRACT
In the present culture, the combative situation in dairy sector, Prototype is changing speedily. Several new things can be seen in the dairy sector, because it is affirming new concept phrasing and technology to enhance their business & to win the satisfaction of their farmers. Our paper discusses the role of Unified Modeling Language (UML) in location based services in dairy system. Applying some changes in system that affects the transparency in milk purchasing. Location based services in dairy sector provides easily movement of system like tracking the vehicle position ,timing of collection of milk at village level or centre level and for online data. Number of advance designs is being approved for maintaining the best services to their farmers. This paper providing modeling approaches for location tracking process by using location based services in dairy sector. A case study of Online location based services in dairy management System has been taken to explain how various accounts of farmers, their payments, Daily/Monthly milk progress report from Dairy's all milk collections centre can be categorized. It is characterized with the help of Unified Modeling language, Use of -Case diagram, Class Diagram and Sequence diagram and State diagram.

Keywords: UML Diagrams, Location based services, GPS, Information technology, Transparency.

Introduction

Role of location based services in dairy management system.
A deserving role has been played by location based services in dairy sector, milk van monitoring, route administration and report massaging. Location based services are being allowed various service providers in major existing for promoting social and business association. Fig1. is following the working of location based services.

The first story of LBSs is generally "finder based services" which show the user`s presence in a nearly closeness and consider that as only mark of moment. Privacy in station is afforded by an amount of isolation from many of particular systems.

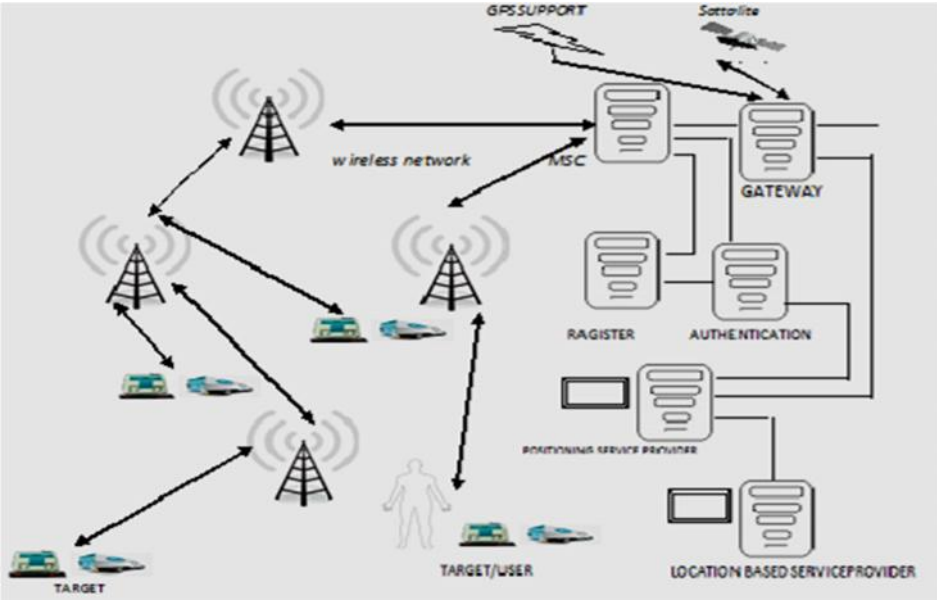

Figure 1: Role of Location Based Services in Dairy Management System

The process of service can be interpreted by consecutive real life examples. An active message is sent to subscriber when our system or vehicle is within sure proximity. The service can be combined with a quick Message system which offers the location message of its sponsor from the location server. We will consider the case in which only the system or vehicle is members of the location information group, i.e., the quick message server is not a member of the location information group. In this case, the server will play the part of the application server in Figure 2 and calls for location information from the location server occasionally. The location servers will produce/provide/supply the information to the server i.e. encrypted, which delivers it to the group server to be dissemination for all members of the system or vehicle list. The end/boundary devices of these subscribers decrypt the message, study it to their own location, and develop an alert locally if a system is within proximity of the device. This expression of the service has two reasonable characteristics. First, the user has complete control over which systems know its location data. Second, the new service of concurrence discovery is seated basically in the boundary device; the server is simply easing the transmission of the data or information. Now consider different case in which the server is a member of the location information group. In this attention, server receives the location information from the location server; it will decrypt the message, study it to the location/system of the other members of the system list, and execute directed alerts to only those possibilities that are within range of each other. This expression has few significant characteristics. Initial, the user must trust the server to only passing its location information to approved systems. Second, the delivery of message is more active, especially for big groups. And third, the server is able to provide extended value to the service without giving burden on the end device [1].

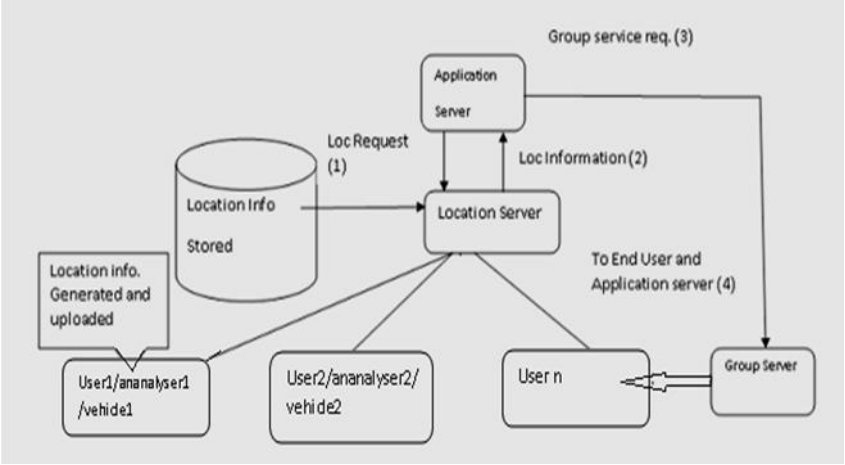

Figure 2:- Working scenario in LBS.

Several kinds of location based services are awarded in present environment. The benefit related with exploration provides route for destination like planning navigation. The agenda related service provides the information around the location of user like list of collections done at collection centres and their farmers. The tracking service provides the location of target object like tracking of routes vehicles, tracking of milk collection timings, tracking of farmer's identity, tracking of farmer's milk quantity and rate of daily milk and milk quality etc. at collection centers. For assisting above function location database is created by resulting example as explained in table-1. The modeling of tracking process in dairy management can be done by using Unified Modeling Language (UML). Feature of database, in Location Based Service similar applications is being reflected through table-1.

Serial Number	Name	Type of Data	Content
1	Register_id	String	ID of Register
2	Device_id	String	ID of Device
3	Time	Bigint	Positioning Time
4	LRS	String	LRS is used by positioning Device
5	Location	String	Location outputted by positioning device
6	Min_Res	String	Minimum resolution of current entry
7	Max_Res	String	Maximum resolution of current entry
8	Latitude	Geometry	Latitude of centre point
9	Longitude	Geometry	Longitude of centre point

Table 1: Location Database [5]

UML TERMS

The UML is a graphical notation for describing software analysis and designs. The U in UML stands for unified because the UML is a unification and standardization. UML can be explained as follows: "The Unified Modeling Language (UML) is a graphical language for picturizing, defining, designing, and documenting the antiquities of a software- comprehensive system. The UML offers a standard

way to write a system's blueprints, including conceptual things such as business processes and system functions as well as concrete things such as programming language statements, database schema, and reusable software components" [4]. UML design techniques and representation are used to graphically depict object-oriented analysis and drawing models. UML is a language for specifying, imaging and creating the artifacts of software systems and business modeling. In recent years, the Unified Modeling Language (UML) has emerged as the defector standard for the representation of software engineering diagrams [6]. The UML class diagram contains classes, interfaces, collaborations, and dependencies, associations and interface relationships [5]. We are going to make a unified modeling language (UML) structure for knowledge support of LBS by defining the use cases, related classes, and activities in the application of dairy management.

MODELING OF DAIRY MANAGEMENT SYSTEM

In today's ongoing functions in dairy division The farmers and employees are the driving decisive forces who are responsible for the survival of dairy industries in the combative environment and for the most part it depends on supplying quality services and distribution of quality service in dairy sector is most important and valuable. LBS in dairy management system and UML concepts are operating a pivotal role in improving the quality of services in the dairy sector. The various services in dairy and logistics sector [9] are MVS (Monitoring vehicle services), SEM (Service of Emergency Messaging), SRTCD (Service of Real time collection data), SRTRF (Services of Real time record of farmers), SRTART (Services of Real time actual rate of milk) and some more real time applications. For providing the transparency in milk purchasing an EKO system plays an important role, our idea is an addition in system like, swap card for every farmer for giving milk to village level collection and a system like, when milk is loading in a EKO system then the quantity, quality and rate immediately generate and provide a mobile message to that farmer for his milk quantity, quality and rate of milk per liter and the same message added to his account no. in bank that provides her payment through organization which is purchasing milk and one message to system admistrator of organization. These services use object oriented concepts in location database to return more transparency, effective and efficient output [10]. The analysis of the Dairy management System operations with relational backend is a new idea. This analysis was done using service providers manuals and then by observing viewpoints of clients. We will model Dairy management System with the object oriented location database model by the use of UML. Information on entities and their attributes and relationships are approached into the Location database management system.

Use Case Diagram

A use case defines a group of functionality providing by the system. The major objective of the use-case diagram is to support development teams to visualize the practical requirements of a system, counting the correlation of "actors" (human beings who will interact with the system) to necessary processes, as well as the correlation among different use cases. Use-case diagrams mostly show groups of use cases — one all use cases for the complete system, or a breakout of a that group of use cases with associated functionality. In given diagram:-3 use case diagram of LBS in Dairy management system two actors Location based service providers and users. The diagram engages an arrangement of messages between the use cases and the actors.

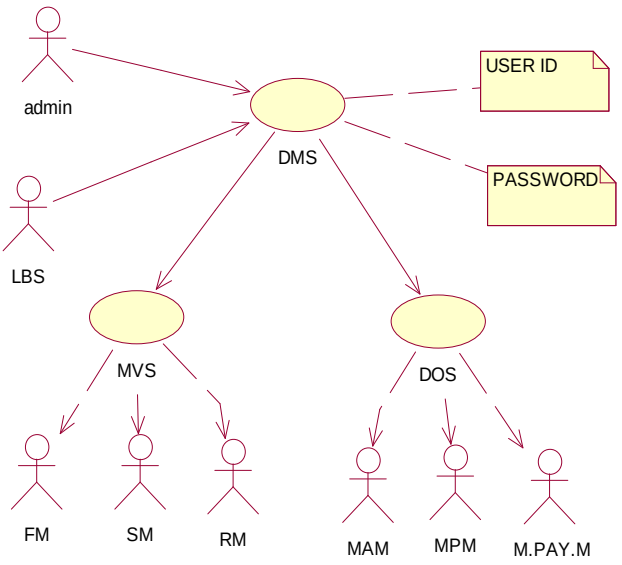

Figure:3 Use Case Diagram of LBS in Dairy management system.

Class Diagram

The class diagram displays the static structure of the system; it shows how the various individuals (data, things, and people) link up to each other. The classes can be linked to each other like they can be dependent, combined, specialized or packed. A system can have a amount of class diagrams because not all classes engage in a single class diagram. In figure 4, class diagram involves the User; LBS service provider, tracking, Monitoring vehicle services, Eko management, Data management control, and monitoring activity at village level collection or milk collection centre and one subclass diagram branch.

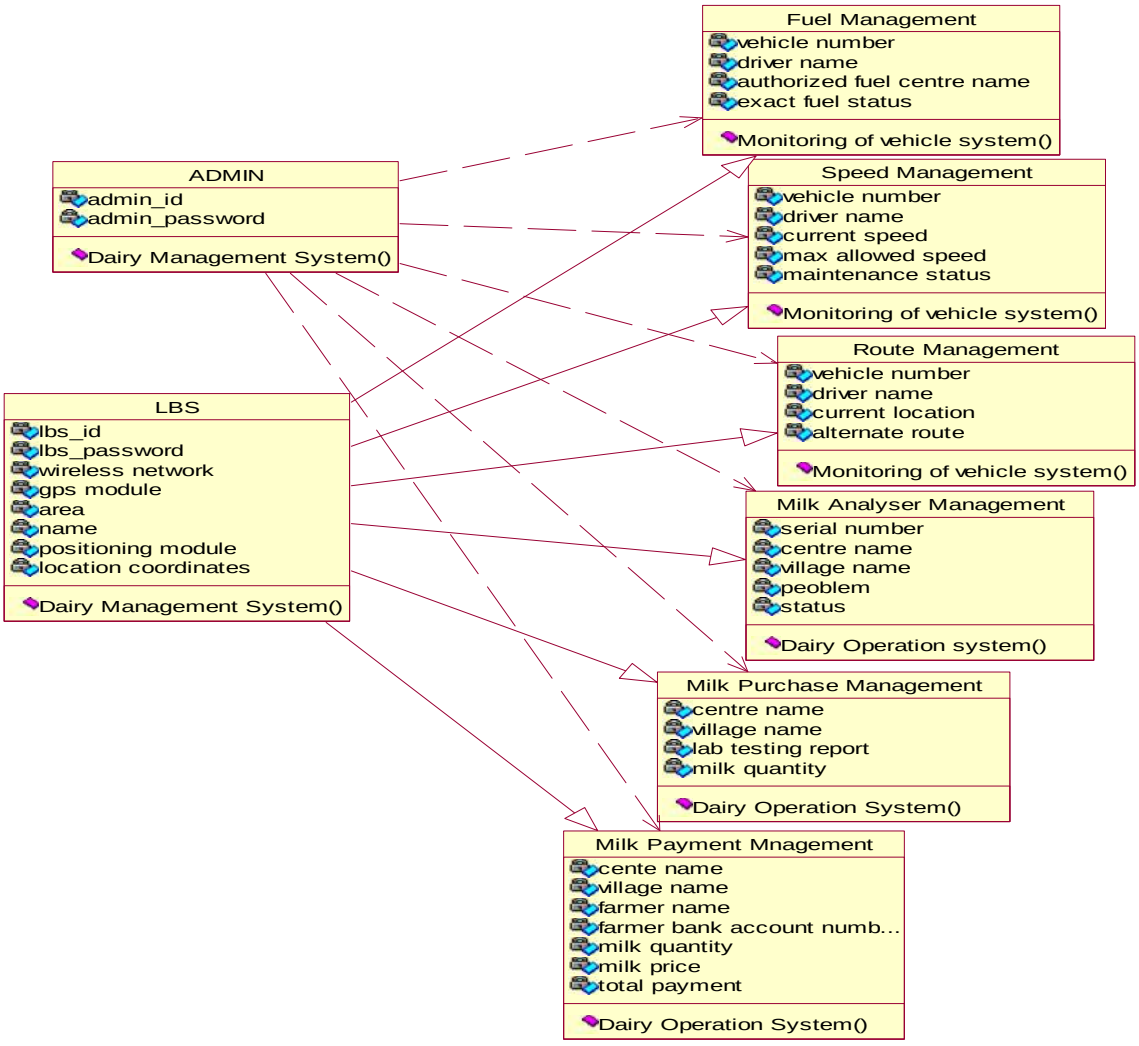

Figure: 4 Class Diagram of LBS in dairy management system

The user makes an account with the service provider and the respecting supervisor who manages all the movements linked with tracking account checking like area, services, and class of user, validness for account and if the user is not suitable then inform to the for not satisfying the requirement of the account, only suitable user can get the tracking service application form for opening the account with service provider. After receiving the application from the user, the application is confirmed by the supervisor for completeness, confirmation of signature, and also the employee confirms the latest address which was filled by the user and the supervisor creates an isolate file for each service account having distinct unique user number. After this the application is permitted by the group supervisor. The entrance of the applications should be done by using the interface software present at the office of service provider. The user's interface directed online through the same software at user`s office. The details of the all services can be viewed via online by entering the user name and Password.

Sequence diagram

Sequence diagram shows an elaborated flow for a specific use case or even just part of a specific use case. They are about self-explanatory. Tells how objects interact with each other i.e. how messages are being sent and receive between objects. A sequence diagram has two dimensions: The vertical axis shows time and the horizontal axis shows the objects.

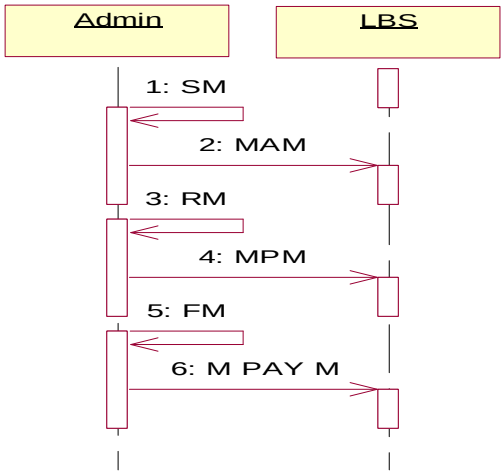

Figure: 5 Sequence Diagram of LBS in dairy management system.

As this diagram shows that how a user handles the activities in the online location based system. The sequence diagram shows the

entire execution process of activities. The four main objects are defined at the higher level of diagram. The connections between two objects are shown by an arrow along with communication messages. The vertical line shows the lifeline of the object. The Supervisor will be provided the account opening other propensity services for opening the dairy service account with service provider. Supervisor determines the form to verify the eligibility criteria for opening the account. If the form is complete in full aspects then supervisor forwards the form to the service provider office. The SPO issues the Client number and forwards the information to the user. The main purpose of this diagram is to speculate the execution user`s operations with dairy system and to check whether it is working in good order or not.

EXPERIMENTAL RESULTS

We have implemented the online location based services in dairy management system using UML. The system uses an Intel Core2 Quad Processor with 5 GB DDR RAM. Linux Redhat6.6 or higher version of operating system can be used and SQL server 2005 or higher version can be used as a DBMS. Rational Rose Software is using for the designing of UML diagrams.

Dairy Management

Milk Purchase Bill

Date From : 01/01/2015 To 08/01/2015 MCC : 103 - BISWAN QtyMode: Ltr

Village : 1030121 - NYAMUPUR [VLC] Route : 10301 - CHANDANPUR

Sr.No	Date	Shift	Type	S.No	Quantity	Fat	Snf	CLR	TFat	TSnf	Rate	Amount	SRate
1	01/01/2015	M	M	1	197.00	5.90	8.30	26.50	11.62	16.35	30.05	5919.85	32.85
2	01/01/2015	E	M	1	75.86	6.90	8.20	25.50	5.23	6.22	32.50	2465.45	32.85
3	02/01/2015	M	M	1	193.40	5.70	8.30	26.80	11.02	16.05	29.52	5709.17	32.85
4	02/01/2015	E	M	20	78.60	6.70	8.30	25.80	5.26	6.52	32.15	2526.99	32.85
5	03/01/2015	M	M	21	196.30	5.70	8.30	26.60	11.18	16.29	29.52	5794.78	32.85
6	03/01/2015	E	M	20	76.10	6.50	8.30	26.00	4.94	6.31	31.62	2406.28	32.85
7	04/01/2015	M	M	21	193.50	5.80	8.30	26.60	11.22	16.06	29.78	5762.43	32.85
8	04/01/2015	E	M	20	86.90	6.50	8.20	25.60	5.64	7.12	31.45	2733.01	32.85
9	05/01/2015	M	M	21	180.90	5.60	8.00	25.50	10.13	14.47	28.73	5197.26	32.85
10	05/01/2015	E	M	20	78.60	6.40	8.40	26.50	5.03	6.60	31.54	2479.04	32.85
11	06/01/2015	M	M	21	156.00	6.10	8.40	26.70	9.51	13.10	30.75	4797.00	32.85
12	06/01/2015	E	M	20	76.20	6.70	8.20	25.40	5.10	6.24	31.97	2436.11	32.85
13	07/01/2015	M	M	80	190.00	6.00	8.30	26.40	11.40	15.77	30.31	5758.90	32.85
14	07/01/2015	E	M	20	85.20	6.50	8.30	26.00	5.53	7.07	31.62	2694.02	32.85
15	08/01/2015	M	M	21	212.00	6.00	8.30	26.40	12.72	17.59	30.31	6425.72	32.85
16	08/01/2015	E	M	20	100.00	6.40	8.30	26.10	6.40	8.30	31.36	3136.00	32.85
Village : 1030121 - NYAMUPUR Total :					2,176.56	6.06	8.27		131.93	180.06	30.43	66242.01	

Item Name	Addition	Deduction
0101 - Cattle Feed	0.00	6800.00
	0.00	6800.00

Deduction :	6800.00	Milk Amount :	66242.01
Addition :	0.00	Quality Incentive :	2,980.90
Chilling Charges :	0.00	Extra Incentive :	0.00
Transport :	0.00	Qty Scheme Amount :	0.00
TDS :	0.00	Net Payable :	62423

Management of vehicle system

MCC Milk Bill Details (Route Wise)

Date From : 06/01/2015 To 08/01/2015 MCC : MCC : 109 - HARPALPUR QtyMode: Ltr

Route : 10901 - KANHARE

Sr.No	Date	Shift	Quantity	Fat	Snf	TFat	TSnf	Rate	Amount
1	06/01/2015	M	1,142.20	6.43	8.20	73.450	93.650	29.90	34,148.21
2	06/01/2015	E	463.20	6.32	8.12	29.270	37.620	29.52	13,672.63
3	07/01/2015	M	1,173.60	6.18	8.17	72.570	95.830	29.22	34,291.56
4	07/01/2015	E	451.50	6.32	8.06	28.540	36.410	29.45	13,296.13
5	08/01/2015	M	1,171.10	6.26	8.19	73.360	95.940	29.46	34,504.53
6	08/01/2015	E	496.00	6.35	8.18	31.490	40.550	29.67	14,718.32
			4,897.60	6.30	8.17	308.680	400.000	29.53	144,631.38

Dairy operation system

Periodic Loss Gain Report Cum Day Book (MCC Wise)

Date From : 06/01/2015 To 08/01/2015 MCC : 110 - NANPARA QtyMode: Ltr

Date	Location / Route	Quantity	Fat	Snf	CLR	TFat	TSnf	TankerNo
	Opening							
	Purchase							
06/01/2015	M Purchase	3481.00	6.01	8.14	26	209.370	283.220	None
06/01/2015	E Purchase	1336.80	6.10	7.96	25	81.480	106.400	None
07/01/2015	M Purchase	3286.50	5.94	8.10	26	195.160	266.320	None
07/01/2015	E Purchase	1369.30	6.05	7.99	25	82.840	109.370	None
08/01/2015	M Purchase	3206.60	5.87	7.98	25	188.300	255.800	None
08/01/2015	E Purchase	1152.30	6.21	7.98	25	71.570	92.010	None
	Total : Purchase :	13832.50	5.99	8.05		828.720	1113.120	
	Inter Branch Trf Recd							
Total :(Opening + Purchase + Branch Transfer In)		*13832.50*	*5.99*	*8.05*		*828.720*	*1113.120*	
	Transfer Out details							
	Sale Entry							
Total :(Sale + Branch Transfer Out)		*0.00*	*0.00*	*0.00*		*0.00*	*0.00*	
Closing Balance :		13832.50	5.99	8.05		828.720	1113.120	
	Closing Entry							
Loss		*-13832.50*	*5.99*	*0.00*		*-828.72*	*-1113.12*	

CONCLUSION AND FUTURE SCOPE

From the reflected research works and explanation, lot of space for research and innovations provided by working framework of LBS. In this paper, we have discussed how the traditional Dairy management system is extending to innovative dairy management system with the help location based system. The presented work can easily extended by implementing this into a working scenario of location-based services. The efficiency of data extraction can also enhanced so that one can easily extract the information in more efficient manner about the user and their service history along with the date of hiring services, date of service renewal. The same work can also be extended for the great Aspect in location based services, Agriculture yield tracking, Retail Banking and Data Mining

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REFERENCES

[1]. Yan Sun, Thomas F. La Porta and Parviz Kermani, "A Flexible Privacy- Enhanced Location Based Services System Framework and Practice", IEEE Transactions on Mobile Computing, Vol. 8, No. 3, March 2009.

[2] Rumbaugh, James, Ivar Jacobson, and Grady Booch (2005) The Unified Modeling Language Reference Manual, 2nd ed. Addison-Wesley, Boston.

[3]. A Case Study of an Object Database Implementation, Billy Gibson, APM. 1608.00.02 Draft 10th October 1995

[4]. Object Management Group, "Unified Modeling Language Specification", OMG Document Formal 2001 – 09 - 67. Available online via: http://www.omg.org, 2001.

[5]. Heemin Kim, Jungwok Song, Miradham Kamilov, Sunyoung Han, "Real – Time u-LBSSystem for Mobile Vehicle in 3G Networks".

[6]. Rumbaing, James, Ivar Jacobson, and Grady Booch, "The Unified Modeling Language Reference Manual", 2nd ed. Addison-Wesley, Boston.

[7]. Rajeev Kumar, Dr. Harsh Dev," Efficiency related Parameters in GPS based Vehicle Tracking System Working for an rganization", International Journal of Computer Applications (0975- 8887) Volume 68-No.19, April 2013.

[8] Fowler, Martin, UML Distilled, Third Edition: A Brief Guide to the Standard Object Modeling Language. Addison- Wesley, Boston, 2004.

[9]. Dr. Harsh Dev , Rajeev Kumar, Suman Kumar Mishra, "Optimization approach for Convergence aspect of wireless communication, positioning techniques and spatial databases in facilitating logistics industry", Proceedings of 8th National Conference Next Generation Computing Technologies & Applications (NGCTA-2013), October, 2013.

[10] Ranjini K., Kanthimathi A. and Yasmine Y."Design of Adaptive Road Traffic Control System through Unified Modeling Language", International Journal of Computer Applications, Volume 14 No. 7, February, 2011