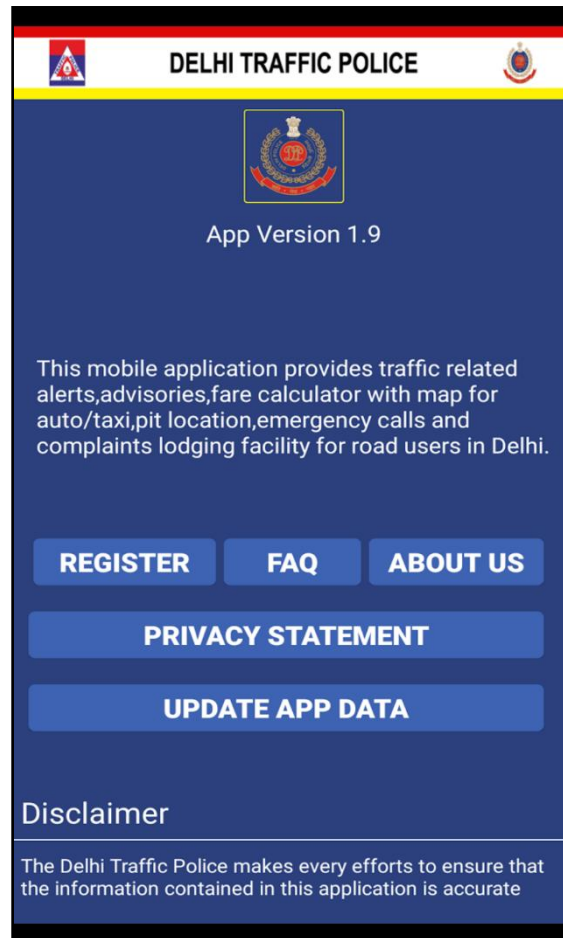


Case Study

Delhi Traffic Police Mobile Application, Delhi

URL - <https://delhitrafficpolice.nic.in/mobile-app/>



Delhi Police

Date – (01/07/2016)

Name of Authors/Content creators

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Abbreviations

HQ	Headquarters
TV	Television
FAQs	Frequently Asked Questions
FY	Financial Year
SMS	Short Message Service
SLAs	Service Level Agreements
MB	Megabytes
G2C	Government to Consumer

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1. EXECUTIVE SUMMARY

Urban population has been increasing steadily over the years and it was 32.7% of the total population in 2015. This puts a tremendous pressure on the various modes of transportation system as the infrastructure does not grow at the same rate as that of the population, hence leading to increase in the vehicular density on the existing infrastructure.

Delhi has seen a steady year on year population growth making it the second most populous city and second most populous urban agglomeration in India.

Growth in the population was accompanied by steady growth in the vehicles on Delhi's roads which increased from 4.72% in 1999-2000 to 6.89% in 2014-15. There was considerable increase in number of vehicles per thousand population from 253 to 487 as illustrated in the table below: (Source: Economic Survey of Delhi, 2014-15).

Sl.	Years	Vehicles		Annual Growth (Per cent)	No. of Vehicles Per 1000 Population
		Number	Increase		
1	1999-00	3163565	142582	4.72	253
2	2000-01	3375153	211588	6.69	244
3	2001-02	3617853	242700	7.19	256
4	2002-03	3886072	268219	7.41	270
5	2003-04	4160760	274688	7.07	284
6	2004-05	4467154	306394	7.36	299
7	2005-06	4830136	362982	8.13	317
8	2006-07	5232426	402290	8.33	337
9	2007-08	5627384	394958	7.55	356
10	2008-09	6026561	399177	7.09	374
11	2009-10	6466713	440152	7.30	393
12	2010-11	6947536	480823	7.44	415
13	2011-12	7452985	505449	7.27	436
14	2012-13	7785608	332783	4.46	446
15	2013-14	8258284	472676	6.07	465
16	2014-15	8827431	569147	6.89	487

However, road length has increased at the rate of 4.53% which is far behind the percentage of growing population. This gap has led to journeys getting longer and more grueling day by day together with increased accident rates, increased air and sound pollution, fuel wastage, increased disruption in emergency services, etc. There was a desperate need for improved and expanded public transport system, however, there was no intelligent system available with Delhi Traffic Police to share and spread critical information with public at the time of any emergency or sudden mishappening which was limiting its efficiency and functioning. To bridge this crucial

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gap which resulted in an information delay, the Delhi Traffic Police has launched the “Delhi Traffic Police Mobile Application”.

The application is a revolutionary initiative which overcame the shortcomings of the conventional method of handling emergencies – Accidents, Breakdowns, etc. This application involves citizens of the state in maintaining traffic discipline, helping police in responding to emergencies quickly and better planning their day to day schedule. This app facilitates more transparency, responsiveness and accountability on the part of the service provider i.e. the Delhi Police, as well as allows feedback from the users for improvement of these services.

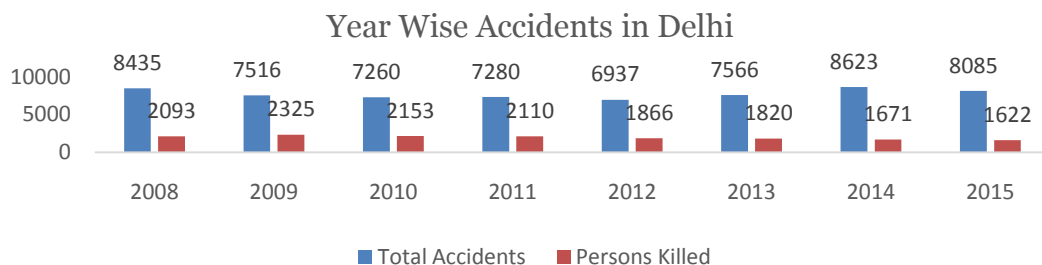
The application development was done in-house with outsourced software development team stationed at Traffic Police HQ under close supervision of Delhi Traffic Police officials. It is an android based application which can be easily installed on android devices and is economical over traditional methods of erecting boards, publishing advertisements and arranging radio/TV broadcast for information dissemination to public.

The app provides single window services of traffic advisory, traffic alerts, and taxi/auto rickshaw/cab fare, complaints, signal faults, towed vehicles, emergency contact, FAQs, offences, lost report and link to Facebook, Twitter and Delhi Police website.

Besides this, the app also has a complaint section where users can lodge complaints regarding refusal, overcharging by taxi drivers, faulty traffic signals etc. and give their suggestions, which will help us to improve the traffic situation in the area. The application has a global reach and removes the geographical and time barriers for assessing these services.

2. INTRODUCTION:

There has been substantial growth in the vehicular population on Delhi roads, an increase of around 6.4% recorded in FY 2014-15. As per the Economic Survey of Delhi, there were 88.27 lakh motor vehicles on Delhi roads as on 31st March 2015. Traffic congestion due to ever increasing vehicular density has led to unnecessary delays and increase in non-productive activity of working population. It has also led to the increase in the number of road accidents.



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Other impacts include air and noise pollution, over speeding, fuel wastage and sense of urgency on all parts of the road.

To improve the quality of public transport and reduce commuting time, an android based application is developed which will provide timely traffic alerts and advisories. This will help the commuters plan their travel accordingly to avoid unwanted congestion and delays. Application will also allow general public to report traffic offences and accidents occurring on Delhi roads, thereby helping quicker action on the incident by the concerned department.

Application is very handy to use and can be easily installed on android devices. This will increase the citizen involvement in maintaining the law and order in the city, thereby making them co- contributor in the administrative system.

3. OVERVIEW OF THE PROJECT OWNER

- **Background of the Owner**

Shri Bhim Sain Bassi, a graduate in commerce from Shri Ram College of Commerce, is currently a member of the Union Public Service Commission since 31 May 2016. A 1977 batch Indian Police Service officer, Shri Bassi started his career as an Assistant Superintendent of Police in Pondicherry, and since then he has served Delhi, Arunachal Pradesh, Chandigarh, and Goa in various capacities.

- **Details of his current position/managing unit**

Shri Bhim Sain Bassi is currently a member of the Union Public Service Commission since 31 May 2016. He was the Commissioner of Police of Delhi from August 2013 to February 2016. Delhi Traffic Police Mobile Application was launched during this tenure and the entire development was carried out under his overall supervision.

- **His experience on the project**

Shri Bhim Sain Bassi had played the pivotal role in the successful launch and implementation of Delhi Traffic Police Mobile Application services. His strong will to implement the project helped the application get developed within 15 days and was launched on 8th May 2014 by Delhi Lieutenant Governor at a function at Vigyan Bhavan.

The success of the initiative depended a lot on public participation and to increase this Shri Bassi introduced an additional feature “Traffic Sentinel” on 3rd December 2015 which allowed the users to upload photo and video of traffic rules violator. According to Shri Bassi, “This will be an empowering tool in the hands of the common citizen who will get a platform to report traffic offences occurring on the roads of Delhi to the authorities.” Citizens were rewarded for reporting violations on road. Shri Bassi has improved the discipline on Delhi roads through his initiative and more features can be seen added from time to time to further reduce the chaos existing on roads.

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4. PROJECT OVERVIEW / HISTORY OF THE PROJECT

Due to limited source of information through SMS, email, helpline numbers, etc. commuters often got stuck in long traffic jams. Police could not respond to emergencies on time and the commutation overall became very unpleasant. There were more incidents of accidents and lawlessness being reported on capital's roads. Hence, the need was felt for a convenient, user friendly and cost effective solution to contain the increasing unrest on roads. Information flow which till now was manual, somewhat less effective and a time taking affair needed a technological shift for quick delivery to all the users. Delhi Traffic Police officials came up with an application for effective and instant communication.

Application was developed in-house with outsourced software development team in a very short period of 15 days under the overall supervision of Commissioner of Police, Shri Bhim Sain Bassi.

Application was launched by Hon'ble Lieutenant Governor of Delhi and Delhi Traffic Police used effective communication strategy for generating solid results with all multiple audiences. Advertisements were given in prominent newspapers to generate awareness among the masses as well as within the organization. This App facilitates more transparency, responsiveness and accountability on the part of the service provider i.e. the Delhi Police, as well as allows feedback from the users for improvement of these services. This inclusive communication strategy ensured that citizens feel they are involved in government decisions that impact their day-to-day life. Citizen involvement is one of the key factors that affect their satisfaction, trust and success.

Delhi Police harnessed the potential of mobile applications to enable round-the-clock access to public services, by launching this online Delhi Traffic Police Application which can be used to obtain traffic alerts, traffic advisories, fare charges to be paid to taxis, calculation of distance travelled and showing the shortest route on map, lodging complaints against taxi drivers, sharing information about traffic signal faults, accessing information about pits where towed away vehicles are kept and making direct calls to emergency numbers in Delhi.

5. SITUATION IN PROJECT OWNER'S STATE/ DISTRICT

While there was chaos on Delhi roads owing to high traffic congestion, the following statistics shed light on the key issues in Delhi:

1. The total number of motor vehicles on road in Delhi as on 31st March, 2015 touched 88.27 lakh, showing an increase of 6.4% over previous year.
2. Average ridership of Delhi Metro was approximately 24 lakh per day during 2014-15.
3. The road length in Delhi has increased at the rate of 4.53% per year, which, of course, is not in pace with the growing population. It is reported that the road density in Delhi is around 155 km per 100,000 population and about 80 vehicles per km.

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4. At the intersections, the cycle time ranges from 120 to 180 seconds, which leads to long queues, especially in the peak hours.

Keeping these facts in mind, a paradigm shift was needed in the way information is communicated to the citizen. The responsibility of maintaining smooth and safe commutation must not be the responsibility of only Delhi Traffic Police, but also the citizens by making them key stakeholder in the process design and feature enhancement.

To crisply lay down the problems with the existing information flow process, the following pain points were identified:

1. Mode of accessibility present – SMS, Website, email and Helpline number had limited information
2. Delivery of services was not in real time
3. There was no privacy and security policy to maintain the confidentiality of the information and the concerned individual
4. Modes of advertisement used like newspaper, radio channels were very expensive

➤ **Stakeholders:**

Stakeholder identification and ranking of the same in order of importance as far as the end goal is concerned is key to implementation of any project. It helps in identifying the degree of change of roles and responsibilities for each stakeholder and planning out an effective roadmap.

Key Stakeholders of Delhi Traffic Police Application were:

1. Delhi Traffic Police
2. Central / State Administration

➤ **Beneficiaries:**

The beneficiary of the project is general commuting public (domicile or visitors) of Delhi, who can use Delhi Traffic Police Mobile Application from anywhere and anytime.

➤ **Steps/ Action taken at the State/ District level to address the problem:**

With ever growing vehicular population and limited road length, Delhi, over the past few years, has been witnessing more frequent traffic jams and a sense of urgency on the part of all road users. It has given rise to incidents of road rage and also traffic accidents in which many lives are lost. One of the main reasons behind such accidents is over speeding due to the haste shown by the motorists in reaching their destination.

The inability of Delhi Traffic Police to share and spread critical information with public at the time of any emergency or sudden mishappening was limiting its efficiency and functioning. To bridge this crucial gap which resulted in an information delay, the Delhi Traffic Police has launched the “Delhi Traffic Police Mobile Application”. This Delhi Traffic Police Application aims at increasing

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public engagements and providing them with easy access to information about traffic situation in Delhi. Currently the e-Services provided include:

- Information about traffic alerts and advisories.
- Fare and distance calculator while using auto-rickshaw, taxi and radio cab
- Lodging complaints against autos, taxi in case of harassment, overcharging and misbehavior.
- Locating nearest pit for vehicles towed away by Traffic police when parked illegally.
- Direct calls to emergency numbers in case of exigency.
- FAQ about Delhi Traffic Police and the provided services.

➤ Design

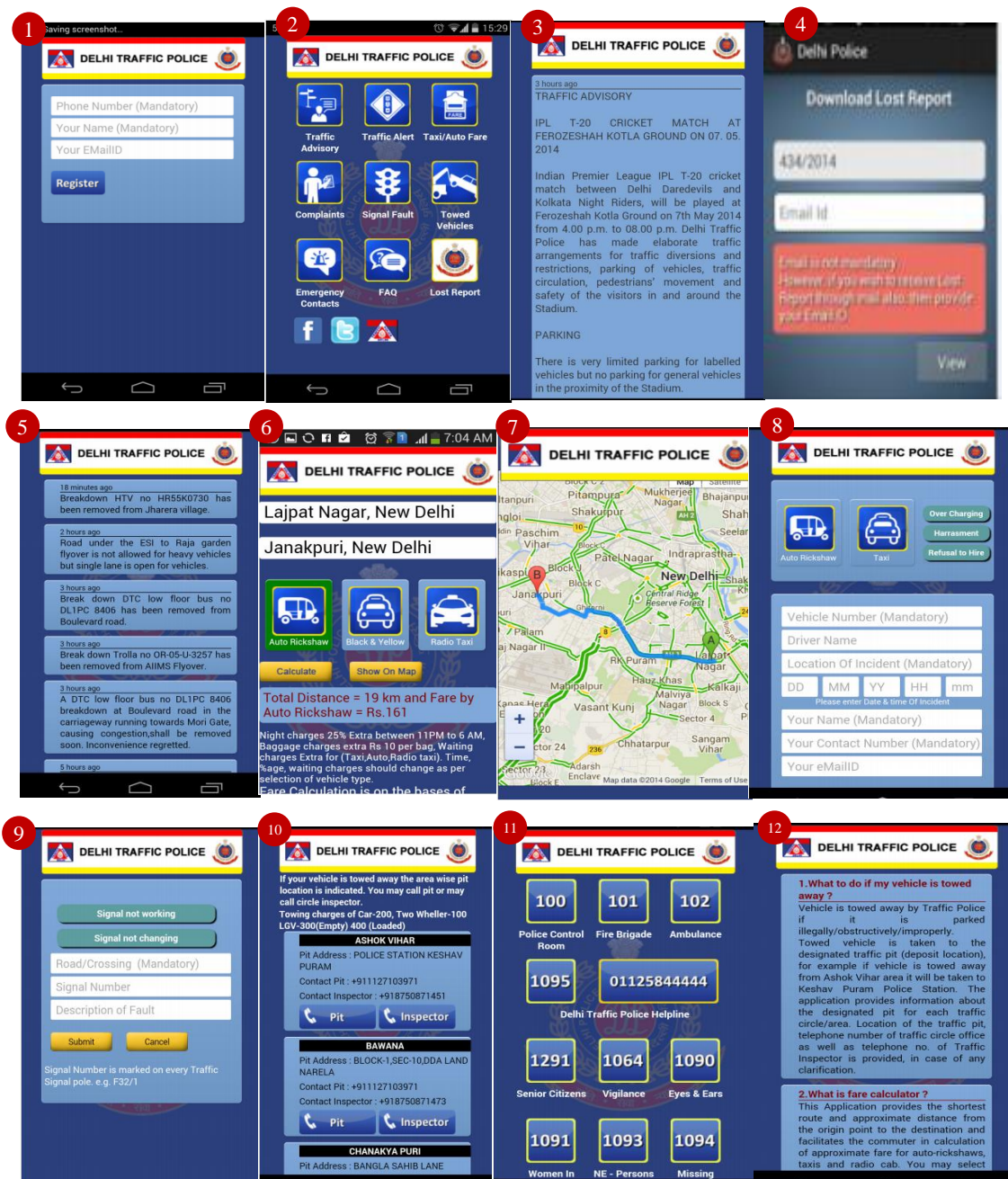
Concept Map of Delhi Traffic Police Mobile Application is illustrated in the diagram below:



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Application features and Design Flow:



1	Registration	5	Traffic Alerts	9	Signal Fault
2	Available Services	6	Fare Calculator	10	Towed Vehicle
3	Traffic Advisory	7	Traffic Route	11	Emergency Contacts
4	Lost Report	8	Complaint System	12	FAQ

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6. MODALITIES OF THE NEW SYSTEM (SOLUTION)

The android based application, soon to be launched for Windows and iPhone, aims at increasing public engagements and providing them with easy access to information about traffic situation in Delhi. The application aims to reach out to maximum number of road users in Delhi, directly through their individual android smart phones and keep them aware of the latest traffic situation in Delhi through timely traffic alerts and traffic advisories, aiming to make commuting in Delhi faster and easier. The app provides single window services of traffic advisory, traffic alerts, and taxi/auto rickshaw/cab fare, complaints, signal faults, towed vehicles, emergency contact, FAQs, offences, lost report and link to Facebook, Twitter and Delhi Police website.

➤ Technology Platform used

- **Description:**The Application's target audience is the general public. As such, it was imperative that the interface of the application is kept user friendly and at the same time the technology supports security and scalability.
- **Interoperability:**Presently available and works with Android 2.2 and above. Further development for iOS and Windows platform is under progress.
- **Security concerns:**The development was done in-house with proper consideration for security features. The backend infrastructure ensures the security concerns through periodic software updates and patches.
- **Any issue with the technology used:**There are no issues till now. In fact, since the time this application was launched; as many as sixty thousand users have used this online application.
- **Service level Agreements (SLAs):**There was a service level agreement with the outsourced software development team ensuring the compliance with software development standards and for timely completion of the project development. Also user feedback from the stakeholders was incorporated during the pilot testing.

➤ Measures to ensure the applicability

Following measures have been taken into consideration for ensuring the applicability:

- User friendly interface
- No cost burden on the user
- Android based application, soon to be launched for windows and iPhone
- Feedback system in the application for increasing the participation
- Services like reporting loss, towed vehicles, traffic alerts, emergency helpline numbers, fares to help citizens in their day to day activities
- Linked with social networking sites like Facebook and Twitter

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➤ **Measures to ensure adaptability and scalability**

Following features have been incorporated in the application for the adaptability and scalability of the product:

- Wholesome information provided to the users like traffic advisory, traffic alerts, penalties, pit locations, minimum distance/fare, route map, etc.
- Online facilities like traffic updates and alerts, fare calculation, route map, complaint system and fault reporting systems
- Offline facilities like list of offences and fine details, emergency contacts and pit locations
- Customizable to add new features in the application

➤ **Measures to ensure replicability:**The application is available on the play store and what one needs is an android mobile and internet connection to download 5.13 MB file on to their device. Very soon it will be available on iOS and Windows together with android platform.

➤ **Restrictions, if any, in replication and or scalability:**There is no bottleneck in scaling the technology platform used. Though it's been developed for the android devices, it can be scaled to other platforms like Windows and iOS. Application is customizable and features can be added/enhanced as and when required. Features like e-challan and Traffic Sentinel are very soon going to be a part of this application.

➤ **Risk Analysis:**Some of the risks associated with android based applications are:

- Malware and malicious software
- Android fragmentation
- Personal data at risk
- Unwanted advertisements

➤ **Capacity Building model used:**There is no special expertise required in using the application post development phase. However, regular training is provided to their staff by Delhi Police for delivering valuable services to the public.

7. IMPACT ON THE STAKEHOLDERS/BENEFICIARIES

➤ **Cost benefit analysis:**Some of the parameters for evaluating cost benefit analysis are as below:

Parameters	Pre Project	Post Project
Installation Cost to be borne by user	Nil	Nil
Running Cost to be borne by Government	High	Very Low

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Reduction in Corruption/Offences	Low	High
Waiting Time of Users	More	Less
Reusability	Low	High
Response to Emergency	Delayed	Quick

➤ **Value delivered(qualitative and quantitative)**

(i) To organization

Application provides the police personnel respite from manual and inconvenient procedures for dissemination of information to public and they get more time to concentrate on their field jobs. It also reduces load and congestion on roads as the informed user would avoid the road having a traffic jam and would take an alternative route instead. Also the information and feedback received from the users can be used for analysis purpose and system upgradation. This truly impacts and improves the efficiency of police functioning.

(ii) To citizen

Application provides very useful information like instant traffic updates, instant alerts, calculation of taxi and auto fares, facility to report/complaint about faulty traffic signals, map for correct and shortest route, detailed description of offences and punishments, Complaints against taxi etc. The users can now plan their journey/routes in Delhi better and save time and fuel which is a personal as well as national saving.

8. FUTURE ROADMAP / SUSTAINABILITY

- This application can be replicated by other states as well and then it can be combined as one application for India.
- In future the number of hits for this application will increase.
- As the application becomes popular, it will put more load on the backend server. Hence the infrastructure would need to be upgraded in the future.
- The Delhi Traffic Police mobile application can be integrated with other Smart Policing Apps in future.
- Successfully integrating the Application with Delhi Police's Traffic Sentinel App (the application is currently being used by general public to report traffic offences).
- The application can also be integrated with Google Map and Google Earth so that users can plan their journey in a more informed way.

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9. ANNEXURE(S):

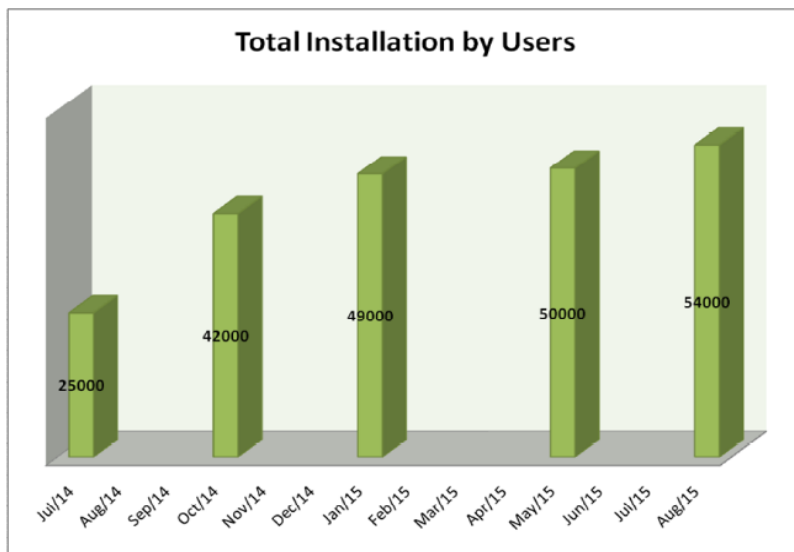
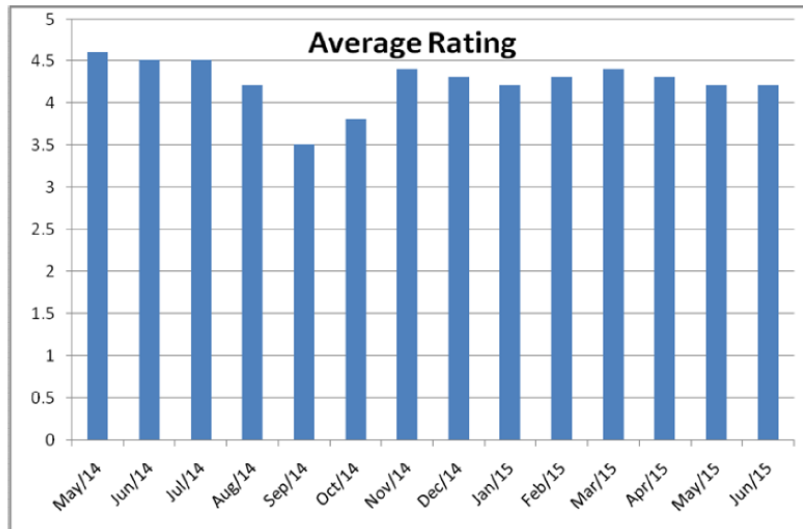
EXHIBIT -1 – Comparative Analysis of earlier Vs new system

Parameter	Pre Project	Post Project
Mode of Accessibility (email, SMS, web etc.)	SMS, Website, email and Helpline were present, but with limited scope of information.	With this App, the public at large can be informed about the traffic situation through regular traffic alerts and traffic advisories. The complaints against taxi drivers can be lodged through this app. Report about faults in signals/blinders can also be made.
User Convenience (accessibility, ease of transaction)	Delivery of services was not in real time.	Delivery of service is possible on real time basis. By having a smart phone and internet facility, people can access traffic related information. G2C transactions are available only with respect to complaints. Money transaction is not involved.
Privacy and Security Policy adopted	Not Available	Secured as laid down in the App.
Local Language Interface	English and Hindi	No change
Cost Effectiveness	Advertisement in newspaper, radio channels was very expensive.	Flashing alerts and any traffic related information on App bears no extra cost. Practically negligible operating cost to the Govt.

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EXHIBIT -2 – Application Performance Metrics



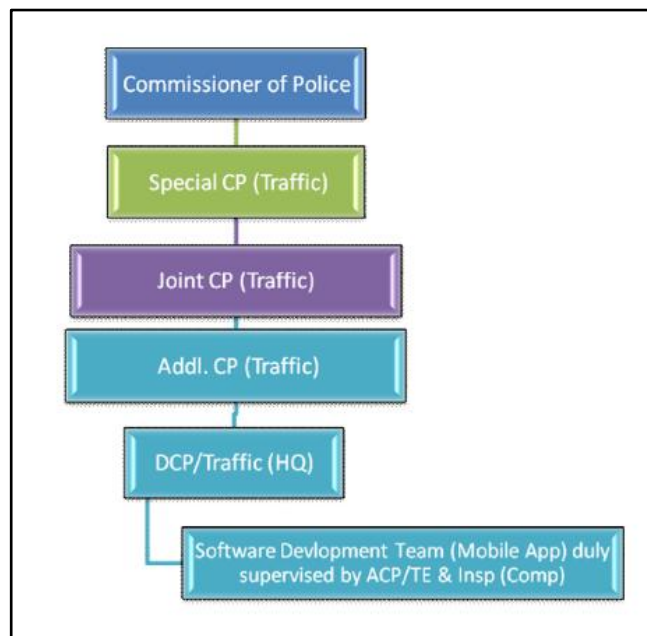
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EXHIBIT -3 – Application Attributes for User Convenience



EXHIBIT -4 – Project Team Structure



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