



गृह मंत्रालय
MINISTRY OF
HOME AFFAIRS



Project Report on

UP-100

(Project No.04/MM:04)

Prepared by
Micro Mission 04 (Infrastructure)
National Police Mission
2017-18

Bureau of Police Research and Development
Ministry of Home Affairs
Govt. of India

‘Promoting Good Practices and Standards’



DOCUMENT INFORMATION

Project	UP-100
Project No	04/MM:04
Project Leader	Shri Anil Agrawal, IPS ADG(Traffic)
Project Members	-
Version No.	1
Approved on	27.11.2017

(139)

37

Information and Police Emergency Response

विषय: अपराध और अपराध - 139

यूपी

UP

Submitted by:

ADGP (Traffic & ITECCS) - Lucknow, UP



Document Source

Version No.	Date	Summary of changes	Revision Marks

Approvals

Name	Function	Date of approval	Signature

Distribution

Name	Function

138

35

Contents

1. Introduction / Background.....	4
2. Overview.....	4
2.1 Project Title: UP 100 - Uttar Pradesh Police Emergency Management System.....	4
2.2 Vision.....	4
2.3 Project Objective	5
3. The Project.....	5
3.1 Purpose of the Project	5
3.2 Sponsor	6
3.3 Financial Benefits of the Project.....	6
4. Situational Assessment and Problem Statement.....	7
4.1 Problem Statement.....	7
4.2 Situational Assessment of Pre-existing Systems.....	7
5. Critical Assumptions and Constraints	9
5.1 Critical Assumptions	9
5.2 Constraints	15
6. Implementation Strategy.....	17
6.1 Implementation Details	17
6.1.2 UP 100: Process	17
6.2 Implementation: Project Specifications	20
6.3 Deliverables and Status Report.....	23
6.4 Stakeholders	25
6.4 Related Projects.....	25
6.5 Work Plan	26
Annexure: Presentation for 100 days completion of UP100 Project	27

Uttar Pradesh, the fourth-largest state in India, spans across an area of approximately 243,286 sq. km. and supports a population of more than 220 million. To maintain law and order in such a large state, one of the largest Police forces under a single command worldwide, is continuously at work. The Director General of UP Police commands the force of approximately 2.5 Lacs personnel, spread over 75 districts, 33 armed Battalions and other specialized wings/ branches relating to intelligence, investigation, anti-corruption, and Technical, Training, Forensic Science and others.

UP Police has undertaken a large number of initiatives to modernize its police force in the last decade. It is also scaling up its infrastructure to match the requirements of police force including equipping the force with all the technical tools required to cope up with the requirements of safety and security.

Prior to the current UP 100 initiative, there were Dial 100 numbers in different cities of the state to cater to Police emergency services. The system was implemented in a distributed environment and was working independently.

Considering the large population of the state, it was imperative to build a strong emergency response service along with the supporting infrastructure. The Government of Uttar Pradesh conceptualised the Uttar Pradesh Police Emergency Management system to provide a coordinated and centralized emergency response to provide better Police emergency response and services to the citizens. This would also lead to the coverage of entire UP state including rural, urban and remote areas under the Call 100 services.

2. Overview

2.1 Project Title: UP 100 - Uttar Pradesh Police Emergency Management System

The Uttar Pradesh Police is about to launch the organization's largest, and one of the most ambitious projects in its history, the 'UP100'. 'UP 100' is the official name of the Uttar Pradesh Police Emergency Management System, also previously called the Uttar Pradesh State-wide Dial 100 Project.

Police Emergency Systems have been operational in the form of distributed district level 'Dial 100' systems till now, where public calls in police emergency situations are handled by Police Control Rooms established at the District level. With increasing demands, many of such control rooms find available resources inadequate. Need has been felt to reorganize the functioning of the district police control rooms to be able to respond to the increase in volume of calls, variety of connectivity technologies and diversity of responses required including many specialized services.

UP 100 has been established to provide integrated emergency services relating to public safety across the State of Uttar Pradesh on 24x7 basis. A centralized contact centre has been established at Lucknow for receiving all emergency calls directly from across the State, including remote rural areas. The centre will receive not only the mobile or phone calls, but will also respond to all other modes of communications like email, social media etc. All dialects of Hindi in the large State, major Indian and even some foreign languages will be supported. Persons with special needs will be able to connect through video calls where interpreters of sign language will transcript their issues and actions will be taken.

2.2 Vision

The system was conceptualised with a vision to provide prompt integrated emergency response for public safety and security to all persons anytime, anywhere in Uttar Pradesh. Police Emergency Management System (PEMS), which provide prompt, uninterrupted round the clock, integrated police emergency response services, for public safety and security for all persons, anywhere in the State of Uttar Pradesh by synergizing Leadership, Innovation, Skilled people and Technology

UP100 will be beneficial not only for better response & timely action for distress citizen but also improve multi-agency emergency Response e.g. (Police, Medical, Fire etc.). UP100 will aid to use robust solution with language support and logical distribution of calls with improved communication links to citizens. Also, UP100 will be beneficial for Police department as it will lower crime rates acting as deterrent and round the clock availability with proper information dissemination. Police will ensure public safety - efficiently and cost effectively with real-time tracking, movement and location of response vehicles.

2.3 Project Objective

The primary objective of UP 100 is to reduce the response time to provide emergency services to the citizens. Response time includes the time when the call was first answered by the Central Contact Center at Lucknow till the time Police Response Vehicle (PRV) reaches the incident site. With the implementation of new technology, aim is to achieve the below mentioned response times:

Urban Regions of Uttar Pradesh – 15min

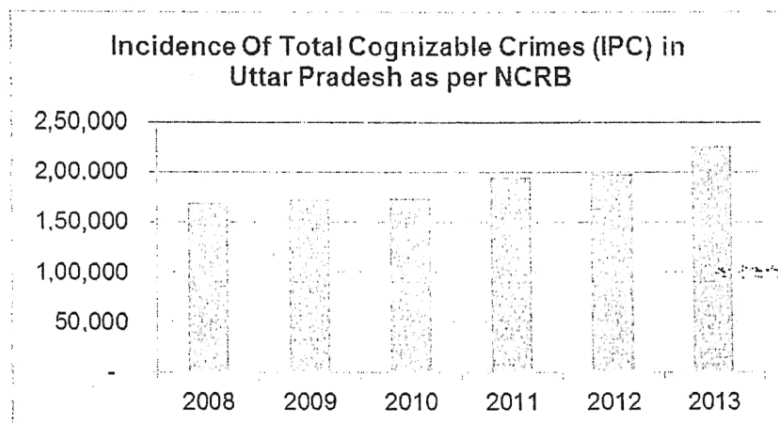
Rural Regions of Uttar Pradesh - 20 min

UP 100 is a robust solution with language support and logical distribution of calls with improved communication links to citizens. It will help in lowering the crime rates by acting as a deterrent through round-the-clock availability of response system with real-time tracking, movement and location of response vehicles.

3. The Project

3.1 Purpose of the Project

When the project was conceptualised, Uttar Pradesh was witnessing increasing crime trend. The trend of crimes from the years 2008 to 2013 can be seen in the chart below:



The Government envisaged UP 100 as a system which would act as a deterrent to crime and help in providing immediate relief and prompt action for citizens.

The following purposes are planned to be solved by the UP 100 system:

The objectives of the project also include:

- Ensuring state-wide coverage of the State-wide Call 100 service including urban, rural and remotest areas of the state

- Providing 24x7 operational centralized State-wide Call 100 number

- Providing 24x7 efficient and effective Police emergency response system. Citizens shall be able to connect to the system through multiple media, like SMS, email, Chat etc.

- Handling Police emergency requests from citizens through skilled manpower

- Improving response system for timely dispatch of field personnel (police) to the location of incidence

- GPS enabled quick dispatch of vehicles to location of distressed person

- Analysis of trends and optimize the use of Police personnel to handle emergency situations

Creating a scalable system to handle increased number of citizen requests and integrate with other services in future

3.2 Sponsor

The project is being funded by the Government of Uttar Pradesh as part of its multi-fold initiatives to curb crime and improve law and order situation in the state.

The approved budget for the project is:

Sl. No.	Item	Revised Year 0	Revised Year 1	Revised Year2	Revised Year 3	Revised Year4	Revised Year5	Revised Total
		(CAPEX)	(OPEX)	(OPEX)	(OPEX)	(OPEX)	(OPEX)	In Cr- INR
1	PRV	335.23	165.76	192.92	209.62	225.64	154.88	1284.05
2	Technology solution	127.42	49.68	52.17	53.22	54.63	56.41	393.53
3	Information, Education, Communication		32.85	2.82	2.82	2.82	2.82	44.13
4	Training costs		33.93	37.33	41.06	45.16	49.68	207.16
5	Manpower Costs (ITECCS, OMCs)		21.82	23.99	26.23	29.01	31.74	132.79
6	Operations of ITECCS		5.91	6.5	7.15	7.86	8.65	36.07
7	Operations of OMC- Allahabad		0.4	0.44	0.49	0.54	0.59	2.46
8.	Operations of OMC- G.B. Nagar		0.4	0.44	0.49	0.54	0.59	2.46
Year-Wise Total (in INR crores)		462.65	310.75	316.61	341.08	366.2	305.36	
Total Project cost in INR Crores								2102.65
Contingency on project (1%) in INR Crores								21.03
Total Project cost in INR Crores (including contingency) in INR Crores								2123.68
Total Project cost in INR Crores (including taxes) in INR Crores								2123.68
Sl. No.	Item	Year 0 (CAPEX) (in Crore)		Year 1 (CAPEX) (in Crore)			Total	
9	Land	33.55		100.62			134.17	
10	Building	26.99		40.49			67.48	
Total inclusive of Land , building, ITECCS and field services for 5 years in Crores								2325.33

3.3 Financial Benefits of the Project

The UP 100 is being operationalised for 220 million citizens of the state. The project is being implemented at a highly economical price point of **Re. 1 per month per citizen.**

Prior to the operationalization, there were 4 Modern Control Rooms in Kanpur, Ghaziabad, Lucknow and Allahabad. An initial study found that establishing individual Modern Control Rooms would require a higher budget without the advantage of the centralised system of aggregated and consolidated reporting, accountability, transparency and data analytics. If independent systems were implemented in different

(136) 31

districts, additional cost would have to be incurred by the government by setting up a central system of reporting, analytics, training and monitoring of the system.

Thus, the UP 100 system has provided immense financial benefits to the government exchequer apart from the citizens and the taxpayer of the state.

4. Situational Assessment and Problem Statement

4.1 Problem Statement

Prior to UP 100, there were 100 number provisions in different cities of the state to cater to Police emergency services. Any call to this emergency number would be routed to a communication officer/ dispatcher in that particular district where the call originated and was handled by the concerned personnel. Independent systems were implemented in a distributed environment. Modern Control Rooms were only existent in 4 out of the 75 districts of the state and the rest of the state relied on primitive systems for their operations.

The following problems existed because of the primitive or independent systems in the districts:

1. Lack of accountability and transparency of system
2. Slow response to emergencies especially in case of rural regions
3. Absence of electronic documentation of issues for scrutiny
4. Provision of only voice channel for communication
5. Discretion of local police for crime which may result in biases
6. Issues in identification of location of incidence and reaching the spot on time for emergency relief
7. Lack of independent or aggregated data for analytics improvement in policing and crime prevention
8. Lack of standardized response for all citizens and all regions of the state
9. Lack of feedback mechanism from citizens for incorporation in policing
10. Absence of multiple dialects, languages, special languages for communication. Thus, support to people from outside the state and people with disabilities was delayed
11. Absence of real-time data for vehicles while patrolling and responding to an emergency

The UP 100 service was designed to ensure that all the aforementioned problems were solved by leveraging technology and process improvements. The new system is a marked up gradation of the current systems and it is expected to improve with improving telecommunication channels, rural network coverage and increased awareness of citizens about the service.

4.2 Situational Assessment of Pre-existing Systems

Uttar Pradesh Police Department had already taken initiatives in designing district level Modern Control Rooms at 4 locations prior to UP 100. The situational assessment to understand the current processes/ functions of existing UP 100 system at Allahabad (25-seater), Ghaziabad (25-seater), Kanpur (25-seater) and Lucknow (25-seater) was conducted prior to UP 100's project report. The total number of calls per day ranges from 3,500 to 4,000 in these cities and Actionable Calls (ACs) are around 400.

The tables below list the information about Dial 100 in Allahabad, Ghaziabad, Lucknow and Kanpur:

1. Assessment of Dial 100 Centre in Allahabad

Particulars	Details
Cos	15
Call Dispatcher	10
Area Covered	Allahabad(Urban and Rural)*
PRI Lines	2
Screens for CO	2 (ACS+ GIS)

Particulars	Details
Screens for Dispatcher	3 (ACS + GIS + Dispatch)
Screen for Supervisor	3 (ACS + Analysis + Dispatch)
Staffing (CO and dispatchers)	Not Outsourced (All are Police officers)
Response Time (as per May 2015 statistics)	22.7 min (Rural) 11.94 min (Urban)

2. Assessment of Dial 100 Centre in Ghaziabad

Particulars	Details
Cos	15
Call Dispatcher	10
Area Covered	Ghaziabad (Urban and Rural)*
PRI Lines	2
Screens for CO	2 (ACS+ GIS)
Screens for Dispatcher	3 (ACS + GIS + Dispatch)
Screen for Supervisor	3 (ACS + Analysis + Dispatch)
Staffing (CO and dispatchers)	Not Outsourced (All are Police officers)
Response Time (as per May 2015 statistics)	28.8 min (Rural) 23.94 min (Urban)

3. Assessment of Dial 100 Centre in Kanpur

Particulars	Details
Cos	15
Call Dispatcher	10
Area Covered	Kanpur(Urban and Rural)*
PRI Lines	2
Screens for CO	2 (ACS+ GIS)
Screens for Dispatcher	3 (ACS + GIS + Dispatch)
Screen for Supervisor	3 (ACS + Analysis + Dispatch)
Staffing (CO and dispatchers)	Not Outsourced (All are Police officers)
Response Time (as per May 2015 statistics)	24.0 min (Rural) 22.70 min (Urban)

4. Assessment of Dial 100 Centre in Lucknow

Dial 100 Centre in Lucknow, being the latest Dial 100 system among the major cities of UP has been setup with modern infrastructure and latest technology. The table below provides statistics of various aspects of the centre:

Particulars	Details
Cos	15
Call Dispatcher	10
Area Covered	Lucknow (Urban and Rural)*
PRI Lines	2
Screens for CO	2 (ACS+ GIS)
Screens for Dispatcher	3 (ACS + GIS + Dispatch)
Screen for Supervisor	3 (ACS + Analysis + Dispatch)
Staffing (CO and dispatchers)	Not Outsourced (All are Police officers)
Response Time (as per May 2015 statistics)	24.05 min (Rural) 14.09 min (Urban)

The average cost for building up of one modern control room was around INR7 Crore for single district without vehicles. In terms of scalable system and seamless integration the previous system were lacking in Innovation, Process, Seamless Technology, Performance Measures, Research and Analytics, Capability Building of employees and motivational leadership

(133) 29

5. Critical Assumptions and Conclusions

5.1 Critical Assumptions

Firstly, On the basis of global experience 2.5% of population calling once a year for all emergencies and 40% of them are for Police Emergencies which works out to $0.025 \times 0.4 \times 200 = 2$ Million Emergencies per annum in UP i.e. 5,500 per day. If 5% are effective calls, we expect to receive 110,000 calls a day

Secondly on the basis of UP experience, it is estimated that:

Average large city emergencies are 400 per day

Average small district emergencies are 30 per day

Hence total emergencies for the state can be estimated at 4,100 per day ($400 \times 5 + 30 \times 70$)

Effective calls in cities at 13% and in smaller districts at 4% and weighted average works out to 4.9%

Hence total calls will be 84,000 per day

- Based on A&B we estimate that the demand will be:

Calls per day will move from 84,000 in the 1st year to 110,000 in 3rd year

Effective emergency calls per day will move from 4,100 in the 1st year to 5,500 in the 3rd year

With promotion and good service, the demand will increase substantially

5.2 Functional and Operational assessment

Manpower assessment has been done based on following assumptions:

1) General assumptions

Monthly call volume is considered as 6,000,000

The Call 100 center would be operational for 24X7 in 3 shifts

Operation timings for Lucknow, Agra and Varanasi Call Centre:

- o Shift 1: 9 AM to 2 PM: with 80% capacity
- o Shift 2: 2 PM to 9 PM: with 100% capacity
- o Shift 3: 9 PM to 9 AM: with 40% capacity

Buffer of 35% manpower is assumed for continuity in the Call 100 center in case of absentees, leaves, drop outs etc.

Average call waiting time is assumed as 0 in all cases which means that there is no call which would be waiting in queue

2) Assumptions for Communication Officer (CO)

Daily call volume has been taken as 200,000 (2 lakhs) and is assumed that most of the calls will be received by Call 100 between 2PM-9PM

Busy hour call volume percentage for inbound voice CO is taken as 7% of the total calls

Average call handling time:

- o Communication Officer (inbound calls): 30 seconds
- o Communication Officer (outbound calls): 120 seconds

Daily outbound call attempts are assumed as 5% of busy hour call volume i.e. 700 with a connect rate of 80%

Total number of non-caller CO for SMS, e-Mail and Chat etc. is taken as 5% of Total Inbound Voice CO and Total Outbound Voice CO i.e. 8

Total number of HC (Communication Unit) is 1 per 15 COs

3) Assumptions for Dispatch Officer (DO)

8% of the calls received at CO would be forwarded to DO

Busy hour call volume for DO is 80% of 8% of calls terminating at CO. It is assumed that out of each 100 calls terminating at CO desk, 8% calls are actual emergency calls and out of those, 80% is handled by DO and remaining 20% are from Special Dispatch Unit

Efficiency level of DO is assumed to be of 80%

Average call handling time:

- o Dispatch Officer: 180 seconds

4) Assumptions for SI (Special Dispatch Unit)

Busy hour call volume for SI (Special Dispatch Unit) is assumed to be 20% of 8% of calls terminating at CO desk i.e. 224

Average handle time of calls at SI (Special Dispatch Unit) desk is assumed as 300 seconds

Efficiency of CO, DO and Special Dispatch Unit is taken as 80% and 20% time is released for other activities like lunch and recreation etc.

Based on the assumptions provided above, manpower requirement is calculated.

Table 1: Manpower assessment at Call 100

Manpower	Lucknow	Agra	Varanasi	Total	Category
Communication officer	515	79	79	673	Outsourced
HC (Communication Unit)	37	7	7	51	Police (HC)
SI (Communication Unit)	7	0	0	7	Police (SI)
Dispatch officers (HC/HO/AO)	168	27	27	222	Police (HC/HO/AO)
SI (Dispatch Unit)	19	4	4	27	Police (SI)
SI (Special Dispatch Unit)	72	13	13	98	Police (SI)
Inspector (Special Dispatch Unit)	15	4	4	23	Police (Inspector)
R-SI	6	0	0	6	Police (SI)
ARO Maintenance	1	0	0	1	Police (Dy. SP)
ARO (RoIP)	1	0	0	1	Police (Dy. SP)
ARO (Operations)	1	0	0	1	Police (Dy. SP)
Addl. SRO	2	0	0	2	Police (Dy. SP)
DIG Telecom	1	0	0	1	Police (DIG)
Dy. SP/ ARO (Shift In-charge)	4	4	4	12	Police (DySP/ARO)
Total	849	138	138	1125	

5.1.1 Field service manpower assessment

PRVs would be deployed at field level which would be manned by police personnel. These police personnel providing field service to the citizens need to be well trained and well equipped with technology. Field manpower has been planned based on the number of vehicles to be procured under the project.

1) Assumptions for field service

2W vehicle would be driven by 1 HC and 1 Constable

4W vehicle would have 1 HC, 1 Constable and 1 pilot (outsourced)

Buffer of 35% has been considered to cater to leaves, drop outs, absentees etc.

Vehicles would be operated in 2 shifts of 12 hours each

1 District PRV Manager for each district is considered who would be responsible for the entire fleet in respective district

1 SI (Field) would be responsible for 15 4W and 40 2W. SI (Field) would not be required in shifts.

1 Inspector (Field) per district to monitor the function of District PRV manager and all other PRVs

1 Range Dy. SP per range would monitor the districts under him and report the same to SP (FS)

Based on the assumptions provided above, manpower requirement for field services is calculated.

Table 2: Manpower assessment at field service

Manpower	2W	2W (with buffer)	4W	4W (with buffer)	Total 2W + 4W (with buffer)	TOTAL (in 2 shifts)
Head Constable	1500	2025	3000	4050	6075	12,150
Constable	1500	2025	3000	4050	6075	12,150
Pilot (Outsourced)	0	0	3000	3200	3200	6400
District PRV Manager (Outsourced)	75 (1 per district)				75	75
SI (Field)	1 per (15 4W and 40 2W)				238	238
Inspector (Field)	75 (1 per district)				75	75
Range Dy. SP	8 (1 per range)				8	8
SP for field services	-				1	1
Total						32,823

5.1.2 Other manpower assessment

Besides UP100 operations, manpower for other sub-units of ITECCS is also considered. Approximate number of manpower for LDI and ARC are provided below.

Table 3: Manpower assessment at LDI and ARC

Department	Manpower (SP and above)	Category
LDI	15	Police
ARC	15	Police
Total	30	

Table 4: Manpower assessment for Vigilance unit

Type of officer	Number of officers
SP HQ	1
Inspector	10
Sub Inspector	20
Total	31

5.1.3 Support staff manpower assessment

For all the Dy. SP and above personnel, support staff of driver, steno, OP and constable would be provided. Based on this assumption, below mentioned support staff has been identified.

Table 5: Support staff requirement for officers Dy.SP and above

Type of officer	Driver	Steno	OP	Constable
Lucknow				
ARO Maintenance	1	1	1	1
ARO (RoIP)	1	1	1	1
ARO (Operations)	1	1	1	1
Addl. SRO	2	2	2	2
DIG Telecom	1	1	2	1
Dy. SP/ ARO (Shift In-charge)	4	4	4	4
ASP (Call 100)	1	1	1	1
SP (Call 100)	1	1	2	1
Range DySP	8	8	8	8
SP (FS)	1	1	2	1
ASP (Fin)	1	1	1	1
ASP (HR)	1	1	1	1
ASP (Training)	1	1	1	1
ASP (IT)	1	1	1	1
ASP (IEC)	1	1	1	1
ASP (Q&A)	1	1	1	1
ASP Operations and FMS	1	1	1	1
ASP Strategy and Analytics	1	1	1	1
ASP Procurement	1	1	1	1

(13) 25

Type of officer	Driver	Steno	OP	Constable
SP (Admin)	1	1	2	1
IG UP100	1	1	2	1
IG FUST	1	1	2	1
IG ARC	1	1	2	1
IG LDI	1	1	2	1
DIG Admin	1	1	2	1
ADGP ITECCS	1	1	2	1
Varanasi				
Dy. SP/ ARO (Shift In-charge)	4	4	4	4
Agra				
Dy. SP/ ARO (Shift In-charge)	4	4	4	4
Total	45	45	55	45

5.1.4 PRV Assessment:

Average speed of 40 kmph has been assumed for a 4W-PRV operating in rural areas and average urban speeds of 20 kmph and 30 kmph have been assumed for 2W-PRV and 4W-PRV respectively. There were assumption that 4W PRV will run 150km in a day while 2W will run 100 km in a day.

Assumptions

Parameters governing the area covered by individual vehicle categories									
#	Vehicle category	Response time (Min)- Rural	Response Time (Min) - (Urban)	Avg Speed Rural (Kmph)	Avg Speed Urban (Kmph)	Distance Travelled Rural (Km)	Distance Travelled Urban (Km)	Distance between 2 vehicles (Rural)	Distance between 2 vehicles (Urban)
1	4 W	17	12	40	30	11.33	6.00	16.03	8.48
2	2 W	0	7	0	20	0.00	2.33	0.00	3.30

Other assumptions for distribution of Urban and Rural area

General			
Item	Assumptions	Category	Urban Area Percentage
Rural Urban Categorisation	CATEGORY-WISE URBAN AREA PERCENTAGES - ----->>>>>>>>	Category - 1	12%
	Area served by a vehicle is hexagonal in shape to fit the geography perfectly	Category - 2	9%
Average Speed	Average speed of 4 W has been assumed to be 30 Kmph and 40 Kmph in urban and rural settings respectively and could be changed	Category - 3	8%

	Average speed of 2 W has been assumed to be 20 Kmph in urban areas	Category - 4	7%
		Category -5	3%

Category-1				
Serviced Area in a district	100%	of rural area of the given district has been assumed to be inhabited		
	100%	of urban areas have been assumed to be inhabited for all categories		
Vehicle Serviced area	0%	Of the rural area has been assumed to be served by 2 Wheelers and the remaining	100%	by 4W
	30%	of the urban area has been assumed to be served by 2 Wheelers and the remaining ...	70%	by 4W

Category-2				
Serviced Area in a district	60%	of rural area of the given district has been assumed to be inhabited and rest farm land		
	100%	of urban areas have been assumed to be inhabited for all categories		
Vehicle Serviced area	0%	Of the rural area has been assumed to be served by 2 Wheelers and the remaining	100%	by 4W
	30%	of the urban area has been assumed to be served by 2 Wheelers and the remaining ...	70%	by 4W

Category-3				
Serviced Area in a district	60%	of rural area of the given district has been assumed to be inhabited and rest farm land		
	100%	of urban areas have been assumed to be inhabited for all categories		
Vehicle Serviced area	0%	Of the rural area has been assumed to be served by 2 Wheelers and the remaining	100%	by 4W
	25%	of the urban area has been assumed to be served by 2 Wheelers and the remaining ...	75%	by 4W

Category-4				
Serviced Area in a district	40%	of rural area of the given district has been assumed to be inhabited and rest farm land		
	100%	of urban areas have been assumed to be inhabited for all categories		
Vehicle Serviced area	0%	Of the rural area has been assumed to be served by 2 Wheelers and the remaining	100%	by 4W
	20%	of the urban area has been assumed to be served by 2 Wheelers and the remaining ...	80%	by 4W

(132) 23

Category-5				
Serviced Area in a district	28%	of rural area of the given district has been assumed to be inhabited and rest farm land		
	100%	of urban areas have been assumed to be inhabited for all categories		
Vehicle Serviced area	0%	Of rural area has been assumed to be served by 2 Wheelers and the remaining	100%	by 4W
	16%	of the urban area has been assumed to be served by 2 Wheelers and the remaining ...	84%	by 4W

5.2 Constraints

In the operationalization phase of UP 100 project, some of the observed constraints were:

1. Lack of trained manpower within the UP Police Department

UP 100 project uses state-of-the-art technology for the centralized contact center and field operations. On the field, Mobile Data Terminal devices (Tablets) are used for real-time response and updation for incidents. Due to the large scale of operations, there were major constraints in finding manpower within the UP Police Department with the requisite skillset. Thus, a large scale capacity building exercise was undertaken to train individuals for the process. However, the skills need to be regularly updated and improved to create a robust and sustainable system.

2. Inadequate Infrastructure (Network and Telecommunications)

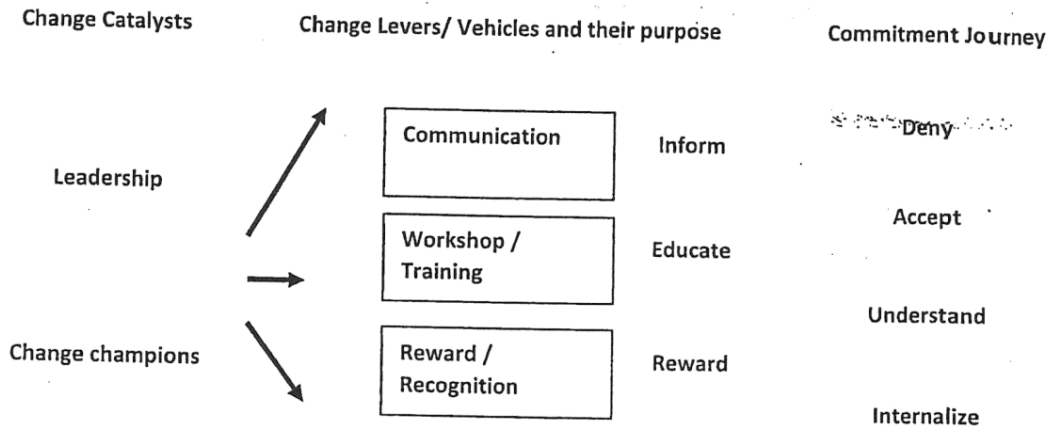
The UP 100 system is reliant on data channels as well as telecommunication channels for different parts of the process. The 3G Penetration in particular is below standards in Uttar Pradesh, and has resulted in lag in real-time updates in location and incident response. According to a report in 2015, the 3G penetration in UP was less than 5%. The infrastructure has improved since then, and there's renewed focus by the Central as well as the State Government on improving connectivity especially in the rural regions. This will in turn help in improving the emergency response of the service.

3. Resistance Management during operationalization

For the success of the UP 100 project, it was crucial that UP Police Department focus on designing resistance and change management strategies along with a pragmatic training plan.

The change management and training plan was prepared to assist UP Police in taking due approvals from competent authority. The adopted process of change management with its key players, methods and phases can be depicted in the diagram as below:

Figure 1: Process of change management

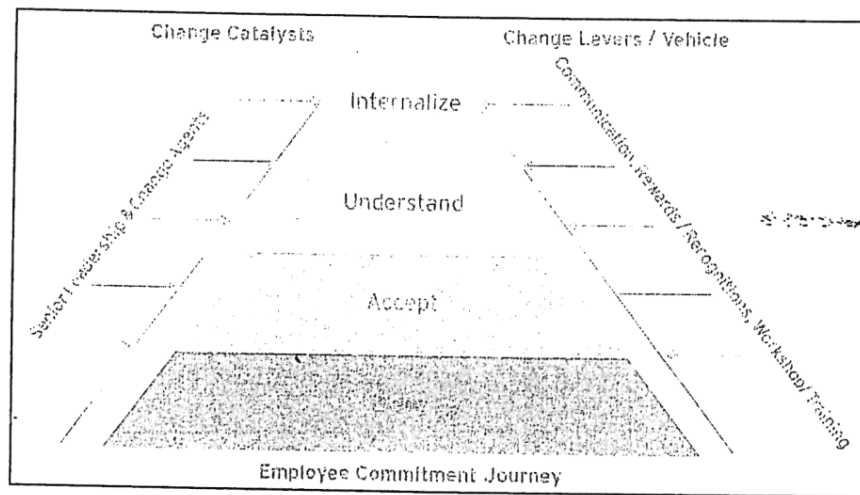


Process of Change Management – Key Players, Methods and Phases

Leadership of senior level officials from the UP Police Department, Home Department, State Government has played a large role in change management. The following underlying principles were following during operationalization:

- Communicating the need for this change and involving all participants equally to be a part of the same
- Taking ownership for driving change at all levels within the police departments
- Identification of change catalysts from district level so that they can drive the change management initiatives through-out the state

Figure 2: Resistance Management Framework



These constraints will be overcome over a period of time and require infrastructural improvements apart from capacity building and institutional support. For the UP 100 service, the 1st and the 3rd constraints

(2)

have already been tackled to a large extent. For the infrastructural constraints, a time period of 3 months are envisioned for marked improvement.

6. Implementation Strategy

6.1 Implementation Details

6.1.1 Background

The UP 100 Service has been established with a centralised Contact Centre in Lucknow with an all-female staff of communication officers for empathy at first point of contact with the citizens. Additionally, two Operational Mirror Centres (OMC) at Allahabad and Gautam Buddh Nagar have been setup. These OMCs would be 100% operational with 15% capacity at each centre. Any call queueing at Lucknow would be routed to Allahabad and Gautam Buddh Nagar. In any unseen circumstances when Lucknow centre would not be operational, Allahabad and Gautam Buddh Nagar would act as the emergency response centres. This operational mirror /back-up concept has not been introduced in any other emergency service in India till date – a unique aspect of the project. The service has been designed to provide standardised response to anyone in rural or urban areas and citizens can upload pictures, videos, documents which will be tagged with the calls.

Box1: UP 100 Contact Center - Salient Features

- Anytime: 24 X 7
- Citizens can connect through any medium of communication – Landline, Mobile, SMS, Email, VoIP.
- Call answering in all regional dialects of Hindi, English and major Indian & foreign languages
- Provision for effective communication with Persons having Special Needs.
- Empathy at first point of contact - Women Communication Officers
- Voice Recording of all calls to ensure accuracy and transparency.

6.1.2 UP 100 Process

6.1.2.1 Operational Process

The process for running the project has been envisaged and more than 500 Standard Operating Procedures (SOPs) have been developed. The SOPs are developed to cater the service of Police, Fire, Medical and GRP starting from communication of distressed citizen with centre to feedback against call. The operational process followed for implementing the UP100 Service in 3 categories:

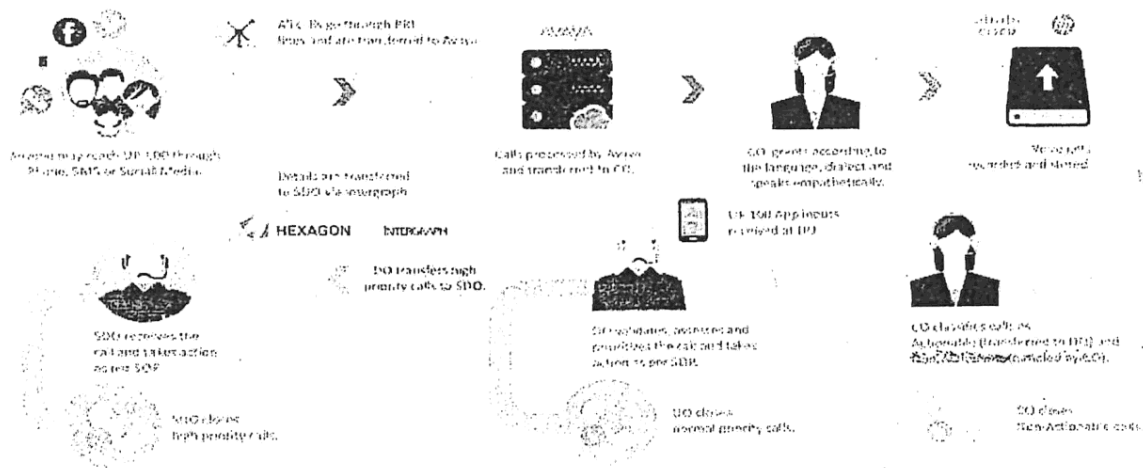
1. Sense

The caller may call the 100 number for any emergency service through different channels such as phone, SMS, social media etc. The calls are received at the centralized contact centres where the communication officers classify the calls as Actionable/Non-Actionable and transfer it to the Dispatch Officers. All calls are recorded for transparency and there is a provision for multiple languages, dialects and sign language through video etc.

UP

UP

SENSE



The following modes of communication can be used for contacting UP 100:

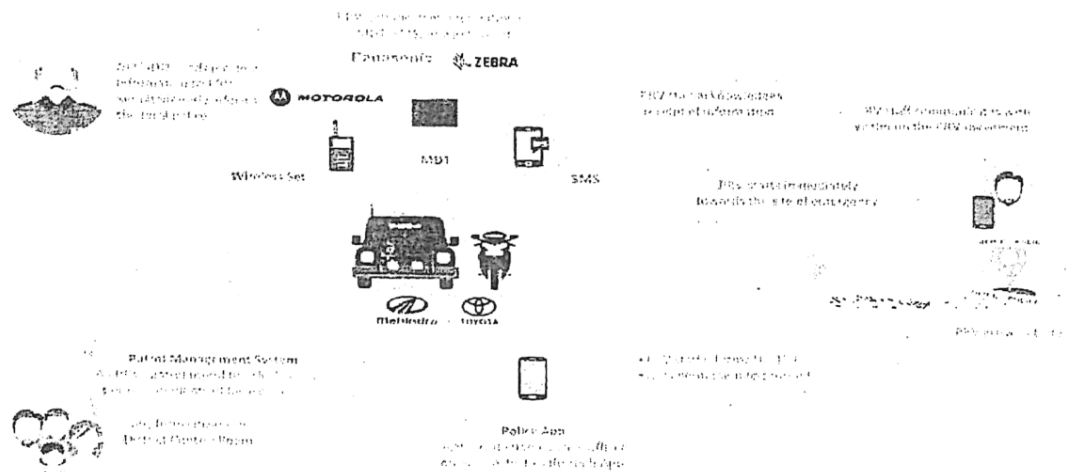
Citizen requiring assistance		Landline phone	100	Communication Officer (CO)	
		Mobile phone	100		
Witness to an incident		SMS	100	CO SMS	
		e-Mail	help@uppolice.in	CO email	
Intermediary reporting on behalf of distressed citizens		Social media	Help page	CO Social media	
		Chat service/VoIP	help@uppolice.in	CO Chat	
		Public transport/IoT	Panic button/CCTV	CO IoT	
		Mobile Application	help@uppolice.in	CO mobile app	
		Wireless	100	CO Wireless	

2. Reach

Once the DO ascertains the emergency and the location, the nearest vehicle is located through on the Computer Aided Dispatch-Geographical Information System Maps available at the DO screens. The vehicles are tracked through the GPS systems installed on the PRVs. The nearest vehicle gets the information through multiple communication channels and reaches the location of incidence. PRVs are patrolling across the state 24*7 and the Patrol Management System is used to manage the route charts of the vehicles.

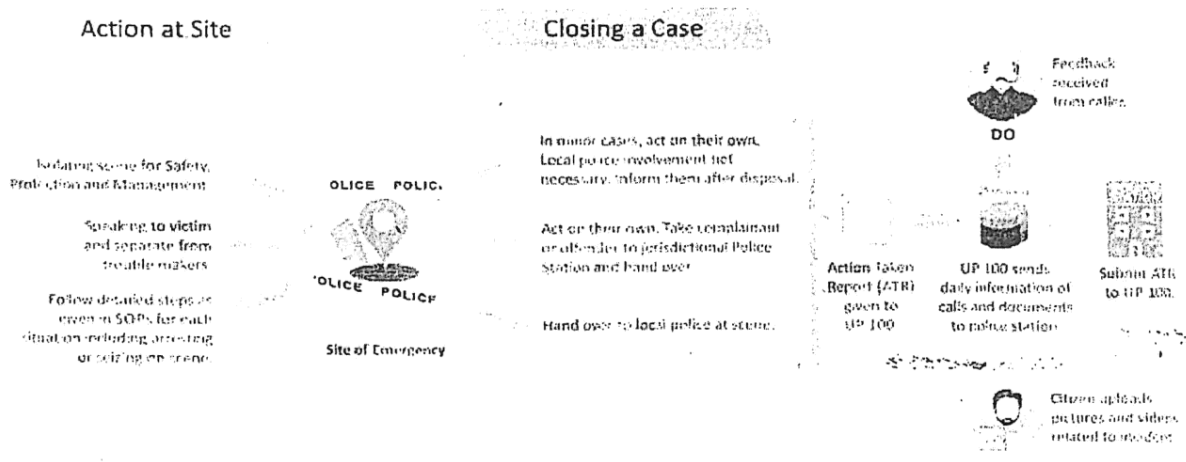
130

179



3. Secure

This is the last phase of the operational process. In this phase, after reaching the location of incidence, the PRV takes action at the site. The drivers have been trained to deal with empathy and UP Police Department has created Standard Operating Procedures for the UP 100 project to ensure that proper action is taken. On the MDT, a real-time Action Taken Report is submitted which is received by all stakeholders including central center and local police. The case may be closed or handed over to the local police for further action.



6.2 Implementation: Project Specifications

This section covers the specifications for different modules of the UP 100 Project.

6.2.1 Police Response Vehicles

To achieve these response times, currently 3200 Police Response Vehicles have been deployed across 75 districts of the state. The vehicles are equipped with state-of-the-art equipment including GPS, Mobile Data Terminal (Tablets) for real-time updation of incident status, radio etc.

UP 100 team selected the series – UP 32 DG 0000 to UP 32 DG 3200 for the vehicles. In order to ensure operational ease, the MDT, Mobile and Fuel Cards of a vehicle have been provided the same last 4 digits as the vehicle and can be easily identified or contacted.

The patrolling of the vehicle is conducted at the discretion of the local police and the vehicles cover the entire state including highways, expressways and highly remote locations. The box below elaborates on the vehicle and equipment specifications.

Box2: Vehicle and Equipment Specifications

Vehicle Models (Vehicle Number: UP 32 DG XXXX)

- Toyota Innova – 700
- Mahindra Bolero – 2500

Equipment Details

- Lights / PA System : 80 LEDs
- Radio: Motorola XIRM8668
- MDT: Panasonic FZB2 (Number - ABCDEF XXXX)
- Mobile: Karbonn Fashion Eye (Mobile Number: 731115 XXXX)
- Fuel Cards: HPCL and IOCL ((2 with each vehicle; Card Number: XXXX)
- Crime Scene Protection Kit
- First Aid Kit
- Fire Extinguisher

6.2.2 Technology Solution

UP 100 has used state-of-the-art technology and the infrastructure is at par with the best emergency response infrastructures in the world. To build the CAD-GIS system, UP Police undertook a mammoth exercise and mapped more than 20 lakh Places of Interest in the entire state. The exercise has greatly helped in improving the quality of the mapping of vehicles and in turn improving the response time. Other novel initiatives include the Isoline Routing which helps in optimising the route chart for PRVs have also helped in improving the outcomes of the service.

The technology refers to a wide range of solutions for different IT software, hardware, DC-DR architecture, applications etc. Robust IT solutions have been deployed for gathering emergency information, further communicating the information and promptly responding to the citizen. The solution has been deployed with the ability of scaling-up the architecture according to future requirements of the Police Department.

Key highlights of Technology Solution

Scalability and appropriate redundancy in the architecture

Storage of all voice recordings and other data for 5 years

Access to real time information on Mobile / Webapp by field Police personnel

Mobile application for citizens to raise alert/panic button

Multiple redundancies for connectivity at field level:

- o Wireless devices with PRVs
- o Mobiles phones with PRVs
- o MDT with GPRS connectivity
- o VHF connection at 75 districts, Police ranges and zones
- o Connectivity-Primary and Secondary at 125 field offices

Two Operations Mirroring Centres (OMC) at Allahabad and Gautam Buddh Nagar with 100% functionally and 15% capacity each

DC-DR in Active-Passive mode with DR at Bangalore

Connectivity – Primary and secondary from different ISPs at ITECCS and OMCs

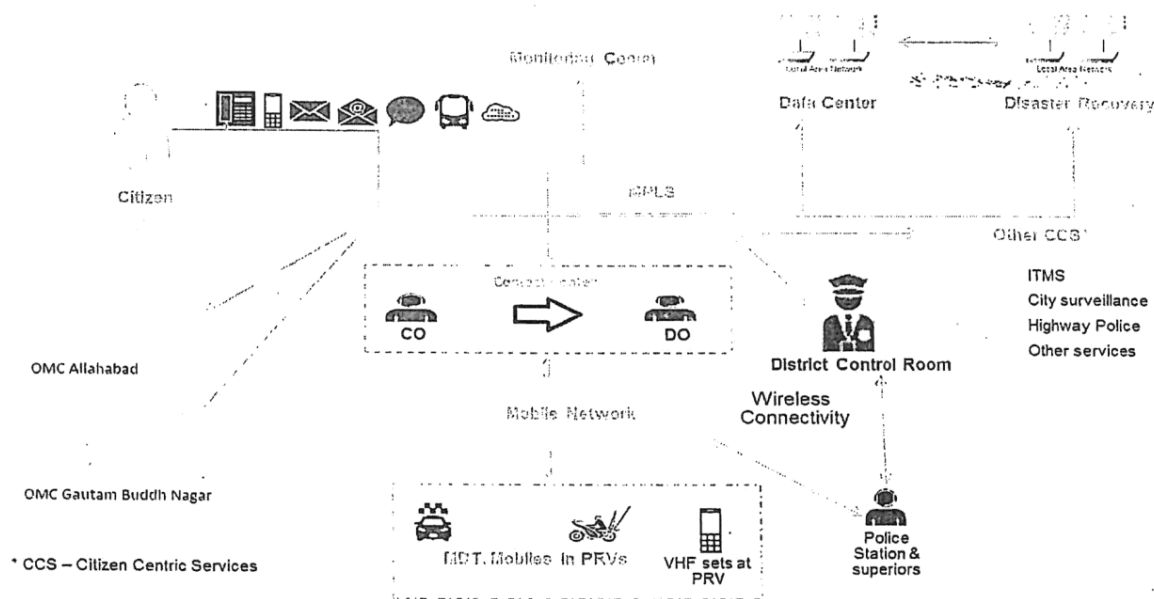
PRI lines from multiple Telecom Service Providers

Geo-fencing of Police boundaries

Platform to integrate with other emergency services

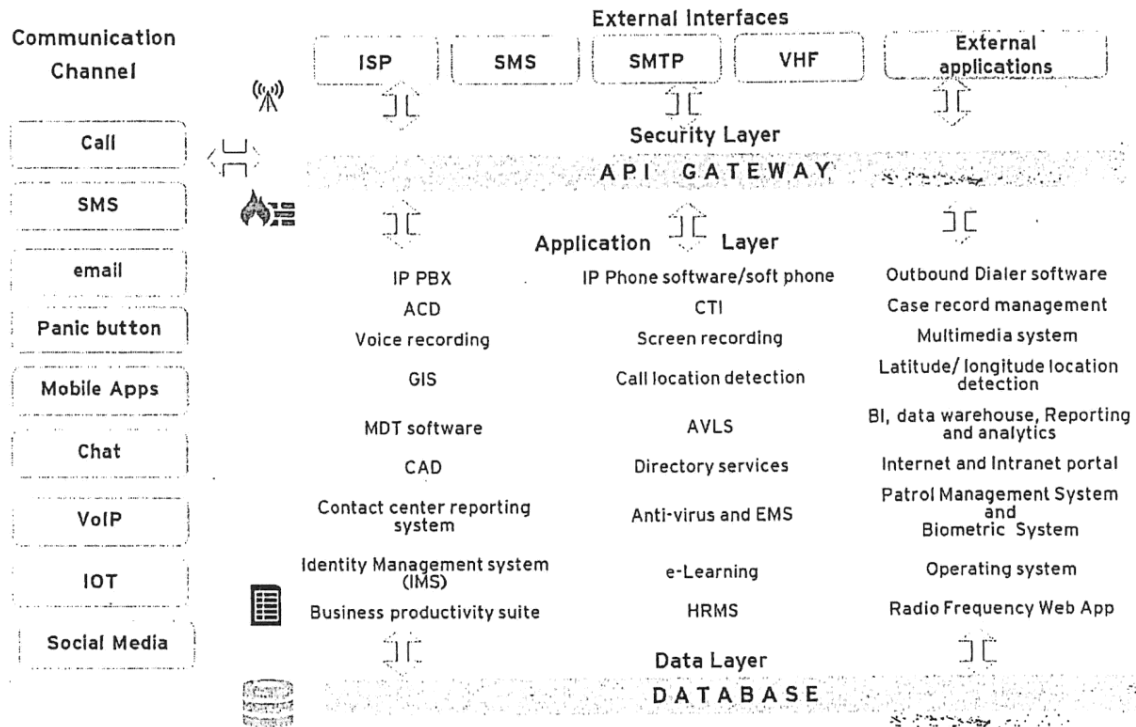
Iso-line Routing to optimise the routes for UP 100 patrolling vehicles

Figure 1: Technology Solution Overview



The indicative representation for the Application architecture is presented below. It elaborates the application integration at DC, DRC, and Call 100 and field level.

Figure 2: Application architecture



*LBS Location Based system: ACD : Automatic Call Distribution, CAD: Computer Aided Dispatch
CTI: Computer Telephony Integration, GIS: Geographical Information System AVLS : Automatic Vehicle Locating System

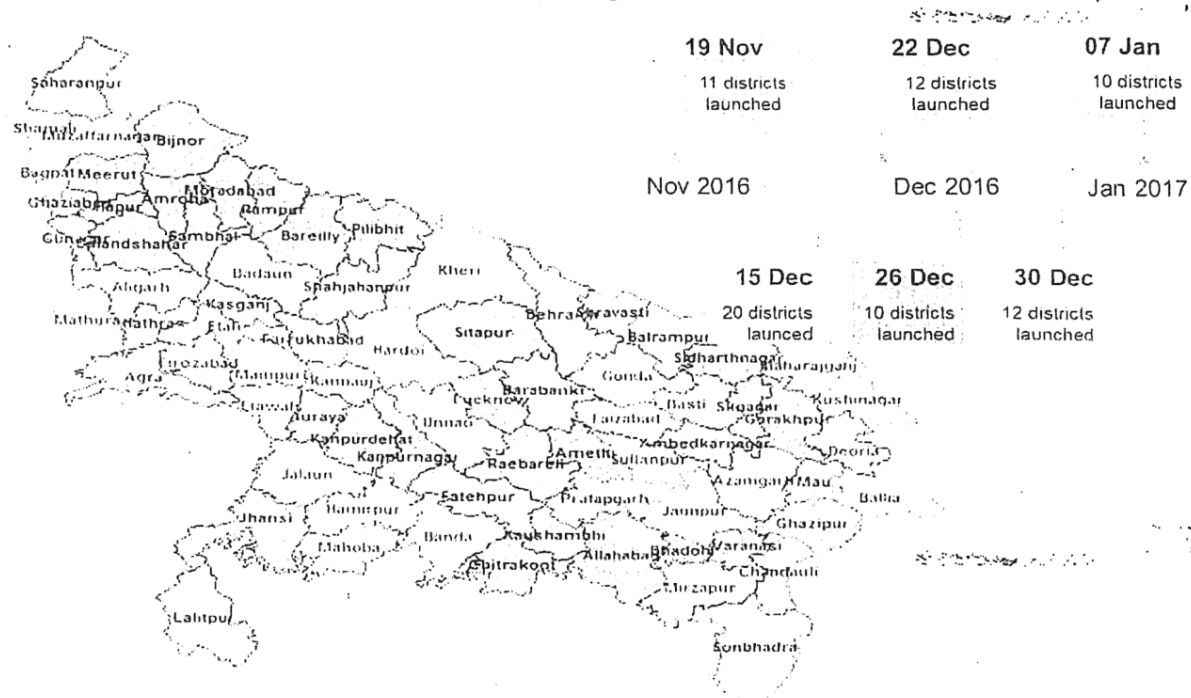
3.4.3 Manpower

The UP 100 project has been deployed across the state and thus the manpower deployment has been at a very large scale. The project also has a very strong focus on new technology adoption and implementation with many different solutions being deployed for the first time in India. Thus, large-scale capacity building initiatives were imperative and were undertaken for all levels of police personnel. More than 24000 personnel were trained for the service and there are 23,000+ personnel currently involved directly in the functioning of the UP 100 service. Additionally, there are senior police officers in different zones and districts who are monitoring the system.

HQ Unit	Numbers
Police	359
System Integrator	650
Total - HQ Unit	1009
District Headquarters	Numbers
UP 100 Inspector	75
UP 100 Radio Inspector	75
Total - District HQ	150
Field Manpower	Numbers
Head Constable	7,425
Constable	7,425
Pilot/Driver	7,425
Total - Field Manpower	22,275
Total Manpower	23,434

6.3 Deliverables and Status Report

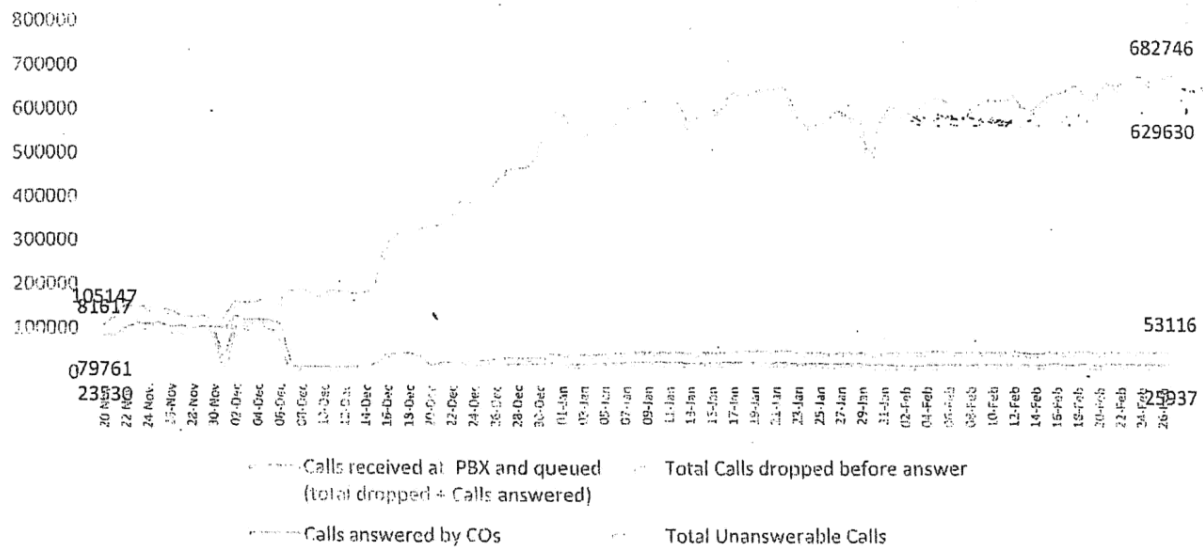
The project deliverables and technical specifications have been mentioned in the previous sections. The service delivery was rolled out in phases in the state. The phasing of the UP 100 service can be seen in the map below:



UP 100 began operations on 19 November 2016. As of 28 February 2017, the service is active in all 75 districts of the state. On an average, more than 6 Lakh calls are received by the system daily. However, a majority of the calls are blank due to various reasons such as call drops, prank calls etc. Daily, the communication officers at the UP 100 Contact Centre in Lucknow answer more than 50,000 calls of citizens in distress.

The daily call trends can be visualised with the graph below:

Figure: UP 100 Call Data

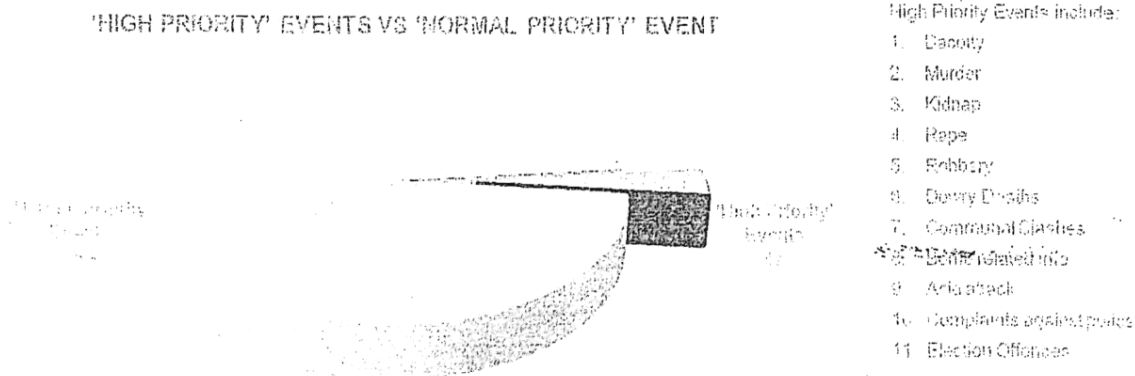


In the first 100 days of operationalization, police assistance has been successfully rendered in more than 6 lakh events.

Category	Cumulative figures
Total events in which police assistance rendered	6,32,528

The figure below reflects the high priority events attended by the UP 100 service in the first 100 days:

Figure: High Priority v/s Normal Priority Events



The following statistics reflect the importance and effectiveness of the service in the first 100 days:

1 – UP100 has provided emergency assistance to citizens in 6,32,528 cases in 100 days. UP100 has helped in resolution of cases of 1,98,398 Dispute through quick response and arbitration. In some cases, quick investigation and action resulted in prevention of potential and serious communal disputes.

2 – Immediate assistance was provided in 46,904 cases of Road Accidents. In some cases, the criminal vehicles were caught in addition to the injured citizens being taken to the hospital for necessary medical assistance. Information of 1779 cases of suicide attempts was attended by the system. UP 100 personnel reached the location of incidence on all occasions and were able to save lives of 151 people by reaching the location quickly and taking prompt action.

3- It is worth noting that there a large number of Domestic Violence cases were received by UP 100. UP 100 took action in 75,968 cases of Domestic Violence and 18,251 cases of Female Harassment in the first 100 days. This way, UP 100 has been successful in winning the confidence of women in the state.

4 – UP 100 has reached the incident location and arrested of criminals in many high-priority and critical cases such as dacoity etc. This has resulted in capture of criminals in addition to prevention of future crimes by the gang members. In many cases, the criminals have been caught red-handed at the crime location. UP 100 personnel have caught a large number chain snatchers and have been successful in returning chains, purses and other items to the owners in many cases. The personnel are also providing invaluable emergency services to the citizens in cases of Road Accidents. In many such cases, UP 100 has caught the criminal vehicles which caused the accident apart from saving the lives of the injured by taking them to the hospital timely.

5 – Citizens can call the 100 number through landline or mobile from any rural or urban area of the state. Apart from this, citizens can use 7233000100 for SMS, 7570000100 for WhatsApp, www.facebook.com/callup100 for Facebook, @up100 for Twitter and up100-up@gov.in for email to contact the UP100 centre for any help required. Information related to the UP 100 project can be accessed on the website up100.uppolice.gov.in. Through the portal, citizens can check the status of any telephone calls made by them. They can also report and upload information about any incident in which UP 100 assistance is required. Through the uploads, the concerned Police Stations will be provided information of the incident for necessary action.

6.4 Stakeholders

The table below lists the key stakeholders along with their needs and expectations from the Project:

Key Stakeholder	Key Needs and Expectations
Government of Uttar Pradesh	1) Improved safety and security of the citizens 2) Improved perception of safety and security of the citizens 3) Improved response time for any distress/ emergency situation 4) Effective usage of technology enabled systems to reduce the response time for emergency 5) Appropriate awareness creation and branding of the project to maximize its benefits 6) Scalable solution to meet future safety and security needs of the State 7) Development of Managerial and Leadership capabilities of Police personnel at various levels 8) Availability of Statistical reports/ MIS reports for policy and decision making 9) Hindi language oriented system
UP Police	1) Change in citizens perception of UP Police in responding to the Police Emergency requests 2) Effective usage of technology enabled systems to reduce the response time for emergency 3) Increase in transparency and efficiency in functioning of UP100 4) Integration of IT initiatives like CCTNS, Forensic, National Highway Police with Call100 solution as a futuristic overview 5) Create a motivating environment for the staff which helps the ITECCS personnel to be self-driven and meet the objectives of the project 6) Response time for any distress/ emergency to be defined appropriately 7) Proper segregation of emergency and non-emergency calls with actionable calls (ACs) and non-actionable calls(non ACs) 8) Differentiators to be created in terms of vehicles, branding and technology in comparison to other emergency systems in India / abroad 9) Availability of Statistical reports/ MIS reports for senior officers 10) Ensure commitment of appropriate personnel during the project implementation 11) Set-up of analytical capabilities for data mining 12) Design SOPs to handle various emergencies 13) Procurement of vehicles for PRV management 14) GIS maps should be enriched and sensitive zones to be marked in GIS maps. Police boundaries to be defined using geo-fencing tools 15) Ground knowledge of maps and dialect training for officers for appropriate handling of calls 16) No frequent transfer of ITECCS staff 17) Implement Paperless office capabilities at ITECCS to enhance efficiency of day to day functioning
Citizen	1) Anytime Anywhere availability of prompt and efficient Police Emergency Response services 2) Assurance of optimal response time in Rural as well as Urban areas of the State

6.4 Related Projects

State of Uttar Pradesh has already taken initiatives in designing district level initiatives and understanding the performance of these initiatives was required to provide practical inputs for the DPR. Thus, a current state assessment was conducted to understand the current processes/ functions of existing Dial 100 system at Allahabad (25-seater), Ghaziabad (25-seater), Kanpur (25-seater) and Lucknow (25-seater) and identify the project stakeholder needs. It also included understanding of the existing work flow of call-taking, recording, dispatching and follow-up of the incident related calls. The Communication Officer (CO) and Dispatcher roles are played by the Police officers in these centers. The total number of calls per day ranges from 3,500 to 4,000 in these cities and Actionable Calls (ACs) are around 400.

6.5 Work Plan

List of activities and prepared timelines

Sl. No.	Description	Indicative Timelines where 'T' is the date of start
1	Inception Report of Project	4 weeks (T+4)
2	Study of requirements (Fleet Management, technology and Call 100 operations)	7 weeks (T+7)
3	Submission of Detailed Project Report	8 weeks (T+21)
4	Change management and capacity building strategy	12 weeks (T+12)
	Leading practice study and design of SoPs	
5	Design RFP of Vendor for Call 100 software development	18 weeks (T+18)
6	Submission of RFP for SI	19 weeks (T+19)
7	Technical and commercial evaluation of bids received for Call 100	25 weeks (T+25)
8	Drafting contract agreement for SI	25 weeks (T+25)
9	Design RFP for fabrication of Police Response vehicles (2W & 4W) including operations and maintenance part of fleet management	20 weeks (T+20)
10	Submission of RFP for approvals and publishing	21 weeks (T+21)
11	Technical and commercial evaluation of bids received	28 weeks (T+28)
12	Drafting contract agreement	29 weeks (T+32)
13	Design RFP for operationalization of Command and Control Center	20 weeks (T+20)
14	Submission of RFP for approvals and publishing for Command and Control Center	21 weeks (T+21)
15	Technical and commercial evaluation of bids received Command and Control Center	28 weeks (T+28)
16	Drafting contract agreement	29 weeks (T+32)
17	Implementation, Project Management Support, Change Management & capacity building, Impact Assessment	48 weeks from the start of implementation
18	O&M of Project	70 weeks from the start of implementation