

THE SMART RESPONSES TO COVID-19

How Indian Cities are
Fighting through
Action and Innovation

Volume I



A red rectangular sign with white text. At the top, the word "EMERGENCY" is written in a bold, sans-serif font. Below it, a horizontal white line separates the word from the main text. The main text, "Coronavirus disease (COVID-19) outbreak", is written in a larger, bold, sans-serif font, centered on the sign.

EMERGENCY

Coronavirus disease (COVID- 19) outbreak

India takes preemptive action

The COVID-19 pandemic is undisputedly the greatest challenge we have faced since World War II. A pneumonia of unknown cause was first detected in Wuhan (China) in December 2019. Since its emergence the virus has rapidly spread across the globe.

Thermal screening of incoming international passengers from China and Hong Kong started in India on 18 January 2020. The World Health Organization (WHO) declared it a Public Health Emergency of International Concern on 30 January 2020 – the same day India detected its first case.

On 11 February 2020, WHO announced a name for the new coronavirus disease: COVID-19.

Disclaimer: All inputs provided by the Smart Cities Mission, MoHUA, Government of India and compiled and processed in collaboration with WRI India.

Foreword

The COVID-19 crisis is a bolt from the blue. The first COVID-19 patient in India was diagnosed on March 1st in Kerala. Early on, the administration realized that an unprecedented challenge was brewing. From health concerns to associated socio-economic challenges, COVID-19 pushed India's civic administrations to innovate and act even as the pandemic ran its course.

Over the past three months, civic administrations have had to demonstrate adaptive leadership through times of uncertainty. They have had to employ new thinking and new tools, in a very short time, with scant leeway for trial and error. While responding to an unknown crisis of this scale, cities had to strive to maintain the delicate balance between *jaan* (life) and *jahaan* (economic well-being) as both meant one and the same thing — precious human lives had to be saved at all costs. There was no time to strategize and cities, being the worst hit, had to make innovative choices quickly and efficiently. Although problems faced by individual cities look similar at the macro level, there were crucial differences in how the crisis presented itself in each context.

India's smart cities have been at the forefront of this fight, from testing, isolation, treatment, monitoring, enforcing lockdown and using technological innovations for information processing to situation management, effective communication and predictive modelling.

The Smart Responses to COVID-19: How Indian Cities are Fighting through Action and Innovation (Volume I) compendium is an attempt to showcase how urban India has responded to the challenges posed by the pandemic. The first installment of a 2-part series, the compendium spotlights innovations at the city-level.

Key measures, taken by India's smart cities, have been captured so that those can be shared across other cities as new learnings for the new normal. However, the compendium must not be read as an exhaustive and comprehensive list of actions taken at the city-level. Instead, consider this as a curated selection of the best practices in technology enabled, people-centric responses to COVID-19.

Responding quickly and efficiently is not easy. Many at the forefront of this battle are working tirelessly, night and day, without recognition or expectations. I salute all our unsung warriors and I sincerely hope these learnings help us all in improving our resilience and shaping our country's future in the new normal.

I wish this document ignites hope and inspires confidence in the ability of our civic ecosystems and becomes a milestone in shaping our future engagements in the urban sector.



Kunal Kumar

Joint Secretary & Mission Director

*Smart Cities Mission, Ministry of Housing and Urban Affairs
(MoHUA), Government of India*

Introduction

Difficult times call for difficult measures. Our cities have the unenviable task of tackling a sudden pandemic of a global scale as never seen before. As part of this, Indian cities also had to manage one of the most stringent lockdowns in the world.

The unprecedented nature of the crisis threw most world governments off-kilter as cities scrambled to contain the virus without the luxury of time or the benefit of reflection, analysis, or consultation. India was no different, and our cities, with their high population density and cramped spaces, became hotbeds of infection. Indian cities had no option but to plunge headlong into grappling with this virulent virus.

We were thrust into the battlefield unprepared, and decisions had to be made quickly. Some of the actions taken were unorthodox. In hindsight, certain situations could have been handled differently, but time was of the essence, and the administration had to hit the ground running, learning along the way. Saving lives and reducing human casualties was the priority —everything else came later.

Even as I write this, the numbers are rising, and we have no way of knowing when these figures will taper. Amidst this unfolding scenario, **Smart Responses to COVID-19: How Indian Cities are Fighting through Action and Innovation (Volume I)** buoys hopes. It is representative of our very Indian indomitable spirit – to innovate, to learn, and to tap available resources to make the most of a challenging situation.

A compendium (in two parts) of the innovative practices adopted by cities; this publication offers a window into how 25 smart cities are working to counter the pandemic. The learnings and insights are staggered across five key categories of action — **Tracking & Monitoring, Diagnostics, Sanitization, Awareness & Capacity Building, and Citizen Support**. Many of the practices documented here have the potential for wider deployment and can serve as powerful tools in our arsenal —in our fight against COVID-19.

Tracking & Monitoring

Many smart cities deployed all-in-one mobile COVID-19 tracking apps and repurposed their existing smart city infrastructure such as the Integrated Command and Control Center (ICCC). The Bruhat Bengaluru Mahanagara Palike (BBMP) developed a **Coronavirus War Room**, in a record 24 hours. With academic insights and private partnership, the city was able to control the pandemic quite effectively. The 24X7 War Room maps all positive cases, the quarantined and health workers using GPS and geofencing, and draws up containment plans using heat mapping technology.

Diagnostics

Telemedicine, helplines, free tele-counselling, mobile clinics, and door-to-door surveys are some of the many ways in which cities are ensuring early-stage diagnostics reach its citizens. Telemedicine allowed the cities to avoid any contact with the patients and yet get their medical concerns addressed. Thane Municipal Corporation (TMC) in Maharashtra set up fever outpatient departments (OPD) and drive-through testing booths across Thane. Greater Chennai Corporation (GCC) smartly repurposed an app that was originally meant to crowd-source information on the state of existing civic infrastructure. During the lockdown, the app was converted into a **COVID Monitoring Application** with citizens able to voluntarily report their symptoms to help the administration map likely cases.

Sanitization

The Bharat Heavy Electricals Limited (BHEL) manufactured the **BHELMISTER** — a disinfectant sprayer — in four days. Many cities have adopted the BHELMISTER, which uses water mixed with a sanitizer, atomized through a spray nozzle, and converted into fine droplets. One BHELMISTER can pump out 2000 liters of disinfectant in two hours and can be mounted on a vehicle to access narrow lanes. Some cities have even opted for **drone sanitization** to disinfect areas where manual spraying is either difficult or dangerous. Varanasi *Nagar Nigam* uses drones to disinfectant hot spots, quarantined and containment areas in a bid to prevent unnecessary footfalls.

Awareness & Capacity Building

Cities are using various channels including public announcement systems (PAS) that are controlled and monitored from their War Room. Cities are also harnessing popular social media platforms, such as WhatsApp and Instagram, to raise awareness and dispel misinformation. Surat used creative thinking by carrying out innovate awareness exercises in slums through attractive wall paintings and rangoli art at all entry points. Surat also focused on **staff capacity building** with training being provided by nodal officers to all frontline responders — from medical officers and pharmacists to sanitary staff.

Citizen Support

During the lockdown many cities worked to ensure the needy received shelter, essentials and free food via community kitchens and state-run programs. **Surat's roti-canteens**

served thousands of *rotis* daily to those who needed food. During the lockdown, several cities also tied up with food delivery aggregators such as Zomato and Swiggy to ensure citizens received essential commodities at their doorstep. The Government of Rajasthan employed **GIS based mapping of food distribution points** to optimize allocation of resources. A web page was created to collect food distribution data, and monitor demand, quality and quantity of food being distributed by the government and various non-government organizations (NGOs). This ensured real-time, dynamic mapping of food requirements at distribution points and also captured the views of officers working in the field for real-time analysis.

The initiatives, captured in this publication, show that India cities are not leaving any stone unturned in their fight against the virus. Every single initiative is backed by a team, we will never know, working tirelessly behind the scenes.

Look around you and acknowledge that humble garbage collector, the tired delivery boy/girl bringing your order to your doorstep, or the government functionary rushing to work. As responsible citizens we can serve as the foot soldiers in this battle by following the basic precautions of handwashing, social distancing and wearing of masks. Our commitment to follow these norms is the only way we can break this cycle and get our cities to win this vicious fight.

While adjusting to the post-pandemic new normal, our cities will have to share best practices and learn from each other with a focus on becoming resilient and they need to plan for the residents, migrants and vulnerable communities. I hope this compendium serves as a resource to learn and share the best practices across cities in India.

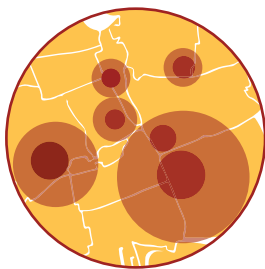
I wish you good health, stay safe.



Dr. OP Agarwal
CEO, WRI India

Tackling the Pandemic through Action and Innovation

How city governments are harnessing the power of technology to track, test, monitor, communicate and contain.



TRACKING & MONITORING

Many cities are utilizing their Smart Cities resources or deploying mobile apps and dashboards for rapid response.



DIAGNOSTICS

From drive-through testing to telemedicine, cities are testing different platforms to lessen the burden on hospitals.



SANITIZATION

All cities are conducting regular sanitization drives across the city and also work to sanitize vehicles for public use.



AWARENESS AND CAPACITY BUILDING

Social media, public address systems, mass media and apps are being used to convey facts along with capacity building modules for officials.



CITIZEN SUPPORT

Websites, helplines and ingenious apps that connect the vulnerable with help are some of the many ways cities are supporting citizens.

Visakhapatnam



City: **Visakhapatnam**
State: **Andhra Pradesh**
Category: **Port & Industrial City, Tier-1**
Population: **17,28,128 (2011 Census)**
Area: **698 sq. km.**

Visakhapatnam is a picturesque coastal port city that is often called 'The Jewel of the East Coast'. Visakhapatnam or Vizag is the administrative headquarters of Visakhapatnam District and home to the Eastern Naval Command of the Indian Navy. To support the district administration in COVID-19 related measures, Visakhapatnam Smart City (VSC) is one of the four smart cities of Andhra Pradesh that is functioning 24x7 — repurposing its tech-infrastructure to counter the pandemic.



TRACKING & MONITORING

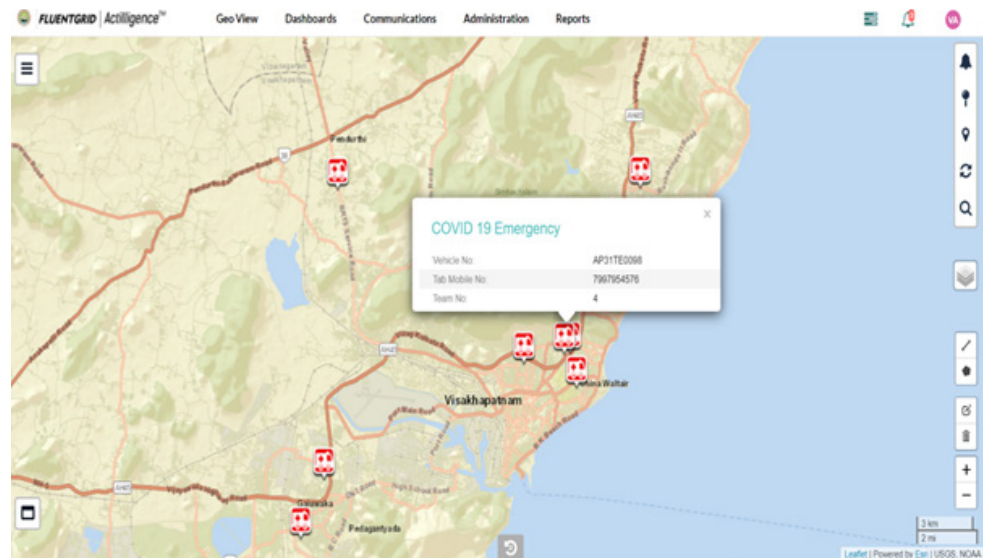
The City Operation Centre (COC)

The COC geo view is enabled with COVID-19 hotspots at the city-level and the same are regularly published in social media by the COC team to ensure citizens are aware of the situation. The geo view is also enabled with foreign returnees and self-quarantine citizens' details corresponding to a COVID-19 dashboard.

The COC team monitors their condition after duly verifying their symptoms. Post validating incidents, actions are floated as per set standard operating procedures (SOPs). SOPs for COVID-19 have been prepared for Preparedness, Responsiveness & Relief, Mild & Moderate Symptomatic cases, Critical Symptoms and Suspected Cases.

The COC team trains the staff team and the Rapid Response Team (RRT) of doctors on how to use the COVID-19 app and interacts with migrant labours to identify their requirements and share action points. The COC platform tracks ambulances in geo view and the same is conveyed real-time to the RRT to ensure speedy action.

Visakhapatnam



COVID - 19 Foreign Returnees

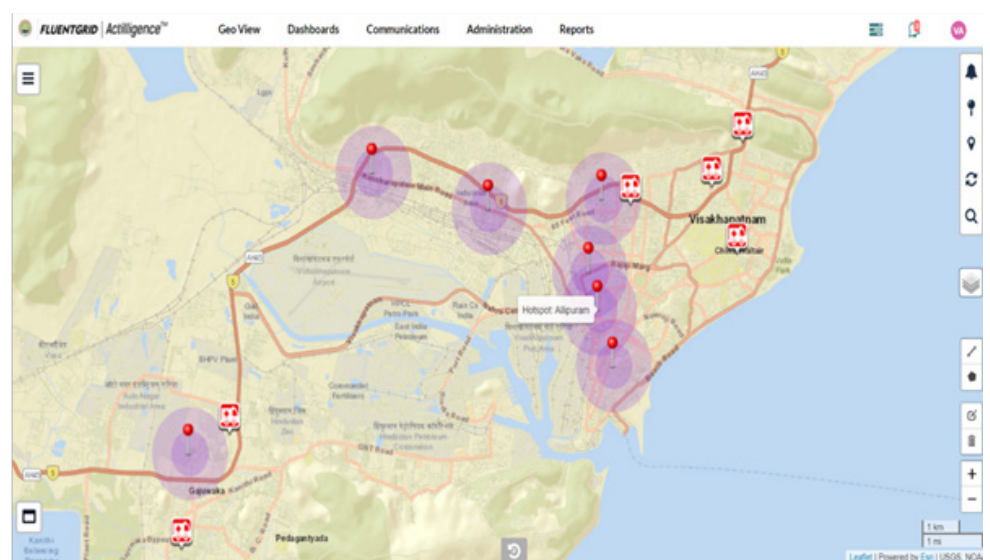
Info		Action	Health Condition
Citizen Name	Danda sudha	Phone Message	MILD
Gender	female		
Age	56		
Mobile Number	7396739945		

Symptoms (Marked ☒ as Identified)

<input type="checkbox"/> Fever	<input type="checkbox"/> Dry Cough
<input type="checkbox"/> Head Ache	<input type="checkbox"/> Body Ache
<input type="checkbox"/> Diarrhea	<input type="checkbox"/> Fatigue
<input type="checkbox"/> Throat Pain	<input type="checkbox"/> Breathing Difficulty

Received Date : 07-04-2020 14:12:29

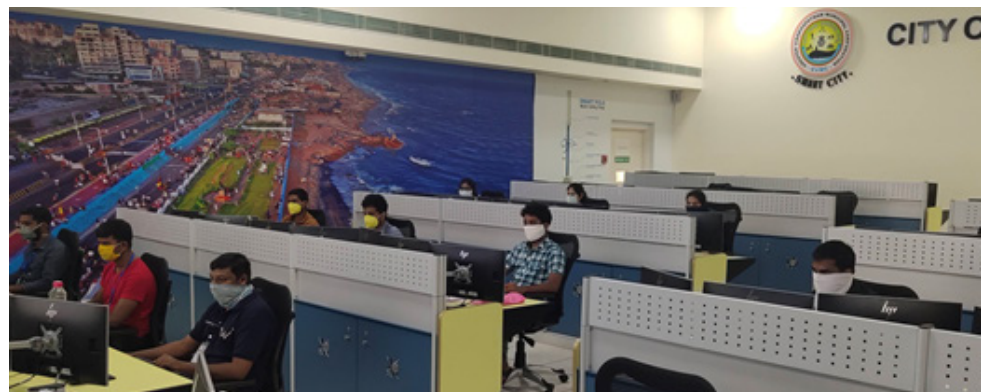
Ambulance Tracking in Geo View



COVID-19 Hotspots



COVID-19 Dashboard



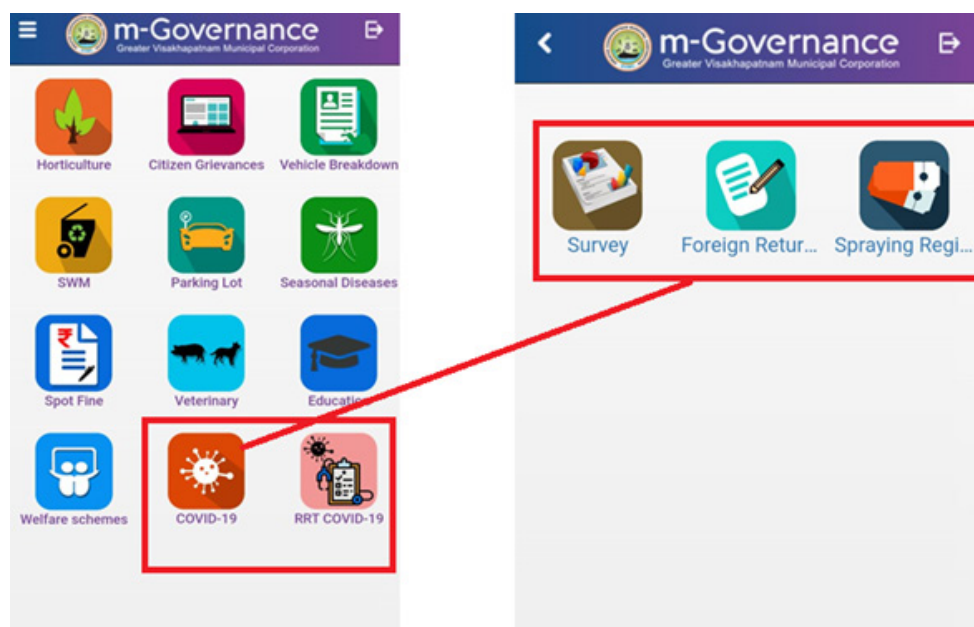
Lockdown Surveillance

As part of the Visakhapatnam Smart City (VSC) infrastructure, 500 CCTVs have been set up at important locations and key junctions. During the lockdown, surveillance video analytics triggered overcrowding alerts that were immediately conveyed to the concerned police officials of the area.

Alert Name	Type	Severity	Category	Source	Date
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr
OverCrowdin...	Alert	Major	Surveillance	Fixed Camera	23-Apr

M Governance App

Accessed by the field staff, this mobile app collects data from surveys conducted in containment areas along with data captured from foreign/out of state returnees. The app also covers the spraying activities being conducted by the Greater Visakhapatnam Municipal Corporation (GVMC) and connects the field team to the Rapid Response Team (RRT) of doctors who attend to emergency cases.





DIAGNOSTICS

Rapid Response Teams (RRTs)

As many as 20 RRTs have been deployed in Visakhapatnam. These teams are accessible via mobile tabs fixed in their ambulances. An RRT application has been developed wherein doctors of each team upload data of possible cases from the field directly. This is monitored in real-time by the concerned authorities. Four mobile teams are also formed for sample collection from symptomatic citizens. The teams are monitored through a mobile tab-based tracking platform.

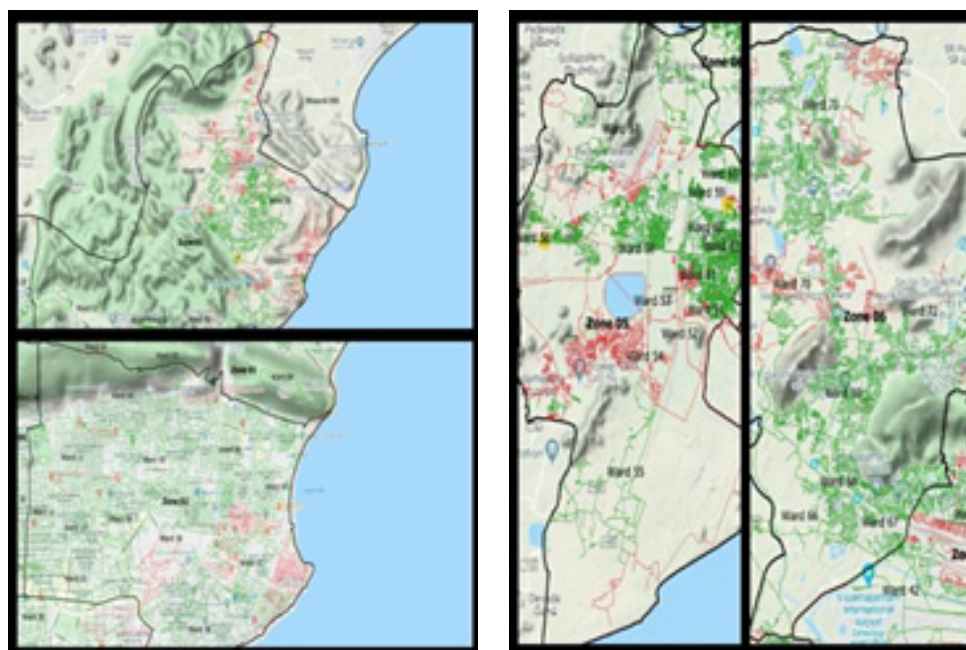
Mobile App with Home Quarantining Features

A mobile app for citizens has been created that integrates the COVID-19 home quarantine feature. Users can take a self-assessment test and the results and GPS location details are monitored with symptomatic cases being geofenced to curtail movement and transmission. Citizens need to submit their condition every few hours during the day when in the quarantine period. Citizens can also use the inbuilt SOS feature to report possible cases or get emergency help.



SANITIZATION

The City Operation Centre's Geographic Information Systems (GIS) layers are enabled with spraying activity status. This provides real-time inputs to authorities on the areas which are, yet to be sanitized.



COVID 19 Spraying Activity in Geo View



AWARENESS

Public announcement systems have been deployed at 90 locations to disseminate COVID-19 related information. Digital signboards/variable message display boards have also been installed at 10 key locations across the city for communication purposes and for monitoring the situation across the city.



CITIZEN SUPPORT

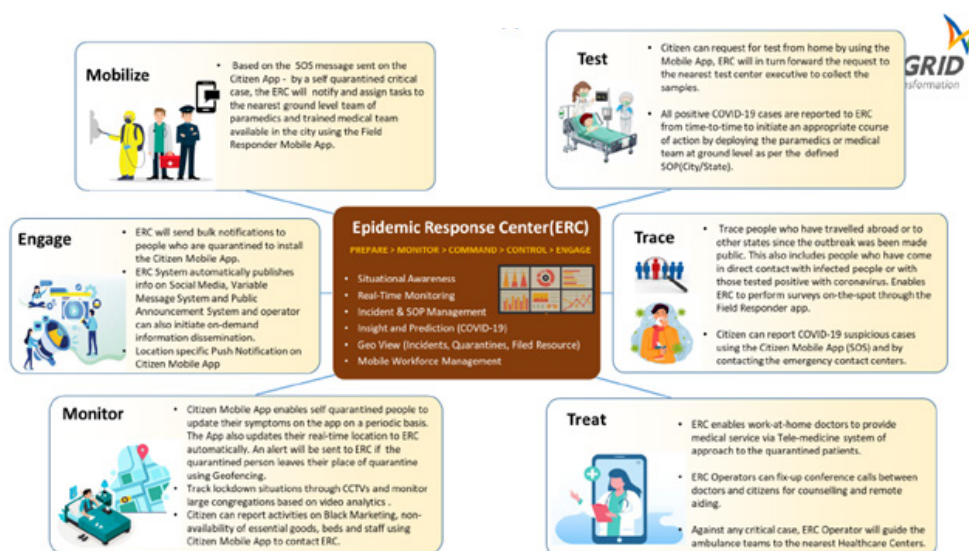
The COVID-19 helpdesk and contact center (0866-2410978, 08645-247185/246600) functions round the clock to coordinate with the public health department and district level officers. The center traces and monitors people with foreign travel history. Public grievances are also registered here.

Lucknow



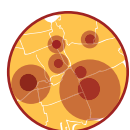
City: **Lucknow**
 State: **Uttar Pradesh**
 Category: **Tier-1**
 Population: **28,17,105**
 (2011 Census)
 Area: **349 sq.km.**

Lucknow is a multi-cultural city famed for its beautiful gardens, poetry, and fine cuisine. Lucknow Smart City Limited (LSCL) has adopted various measures to fight COVID-19. LSCL is using the 3T MEM approach of Test, Trace and Treat followed by Monitor, Engage and Mobilize. The city has incorporated the Integrated Command and Control Centre (ICCC) dashboard metrics to create a platform that offers real-time updates of COVID-19 cases. Creation of the Lucknow One mobile app for citizens, a Field Responder mobile app for staff and free telemedicine are a few of the technological solutions being deployed.



3TMEM Approach

CITIZEN FACING		ADMINISTRATIVE FACING	
1.	Self-quarantine registration and health status updates through the Lucknow-One mobile app and citizen portal.	1.	The ICCC COVID-19 dashboard provides a Common Operating Picture (COP) to enable timely decision and action support by city authorities.
2.	SOS-based incident reporting through Lucknow-One mobile app and helpline for emergencies, test requests etc.	2.	Field Responder mobile app for handling sanitization, isolation, survey of effected areas etc. on a real-time basis for immediate action.
3.	Citizen can report civic issues through the Lucknow-One mobile app such as non-availability of essential goods, unavailability of beds and staff in hospital etc.	3.	ICCC spatial view for hotspot related activities through monitoring activities, sanitization, isolation and surveys. ICC also uses prediction forecasting for the upcoming 14 days for decision-based actions.
4.	Notifications and announcements on the Lucknow-One mobile app, visual media displays, social media etc.	4.	Automatic classification of self-quarantine citizens as mild, moderate and critical. Accordingly arranging conference calls between doctors and citizens for counselling and remote aiding.
5.	Hello Doctor helpline enables citizen to consult doctors online for free.	5.	ICCC dashboard shows the doctor availability based on the online consent taken from the doctor.



TRACKING & MONITORING

Integrated Command and Control Centre (ICCC): Common Operating Picture

The COVID-19 dashboard provides a Common Operating Picture (COP) to enable timely decision and action support. The COP covers key data points such as active, confirmed and recovered COVID-19 cases, the deceased and quarantined trends, age, gender and location-wise distribution of positive cases and real-time classification of quarantined citizens' health status along with notifications of zone-wise citizen grievances such as improper food supply, black marketeering of essentials etc.

The COVID-19 dashboard also highlights the number of COVID-19 tests being conducted with a breakdown of positive, negative, discharged and awaited cases. The monitoring of isolation wards, COVID-19 hospitals and hotspots (covering information such population, number of households, positive cases in that area) are also done from the ICCC.

The ICCC platform triggers a standard operating procedure (SOP), against any incident, automatically notifying the nearest health, sanitation or police team. The field staff have access to a Field Responder mobile app that gives them real-time task updates to ensure quick action.

Standard Operating Procedures (SOPs) for Emergency and Civic Incidents

Lucknow Smart City Limited (LSCL) has set SOPs that are being adhered to for the following situations: COVID -19 positive cases, hotspot isolation, medical emergencies, COVID-19 suspect cases, self-quarantine cases, test requests, medical staff being attacked, improper food supply and gatherings that flout social distancing.

COVID-19 Prediction Model

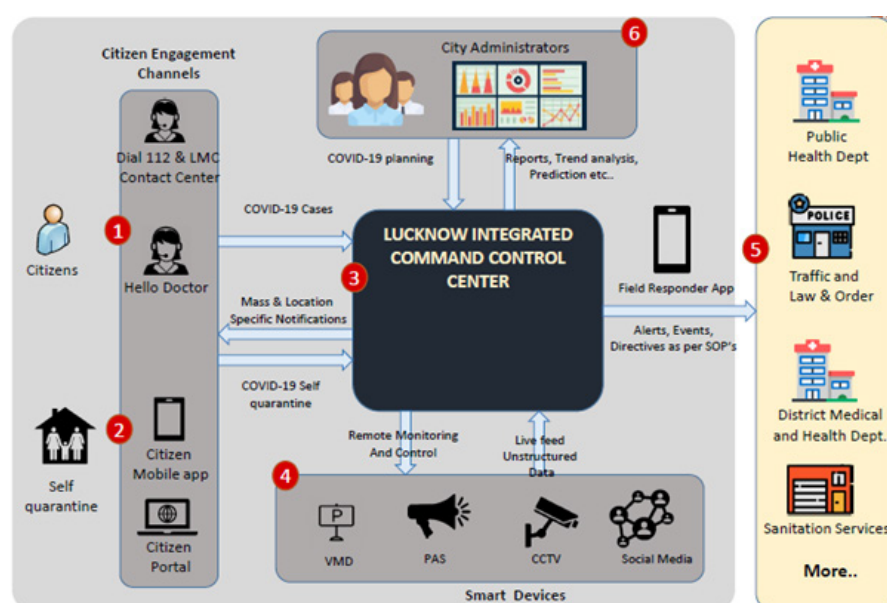
The ICCC dashboard enables real-time prediction or forecasting for 14 days by considering city-level historical data. This enables Lucknow city authorities to plan ahead, and make decisions regarding testing and provision of beds and ventilators along with ensuring required inventory is put in place.

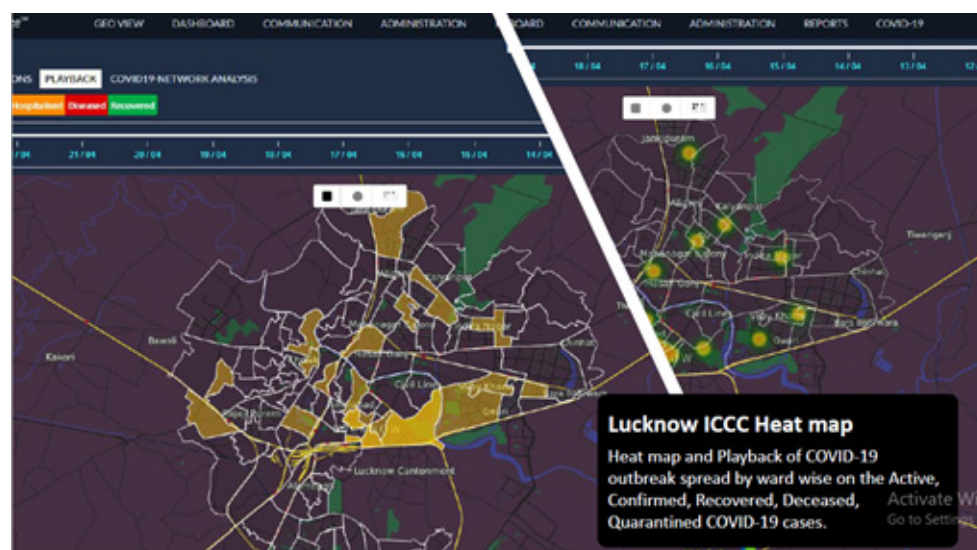
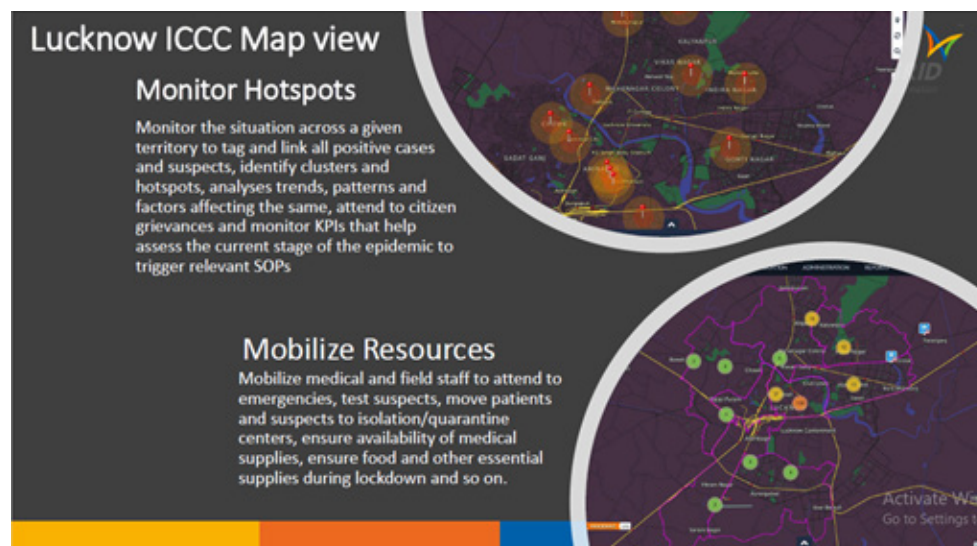
Monitoring Self-Quarantined Citizens

LSCL's Lucknow One citizen mobile app and portal enables self-quarantined citizens to submit their symptoms on a periodic basis and the same is updated real-time on the ICCC dashboard by tracking the user's GPS coordinates. The ICC platform also triggers an alert if a self-quarantined person moves beyond the prescribed geofence. The dashboard visualizes real-time geo-tagging data of self-quarantined persons such as their location and their health condition with appropriate classifications of mild, moderate and critical markers on a map. Authorities can drill down further to know more about the quarantined person such as their name, mobile number and exact symptoms that includes a one-click provision to call the person as well.

Action Taken Reporting (ATR): Medical, Police and Sanitation

Police, medical and sanitation staff use the Field Responder mobile app to take an audio/video recording or an image of the response undertaken along with appropriate remarks. The areas covered for ATR include hotspot containment, sanitization, crowd control at hotspots etc. Hotspot areas are clearly marked up to a distance of 1 km and entry/exit points have barred gates. Furthermore, all citizens in the area are examined for COVID-19 symptoms.





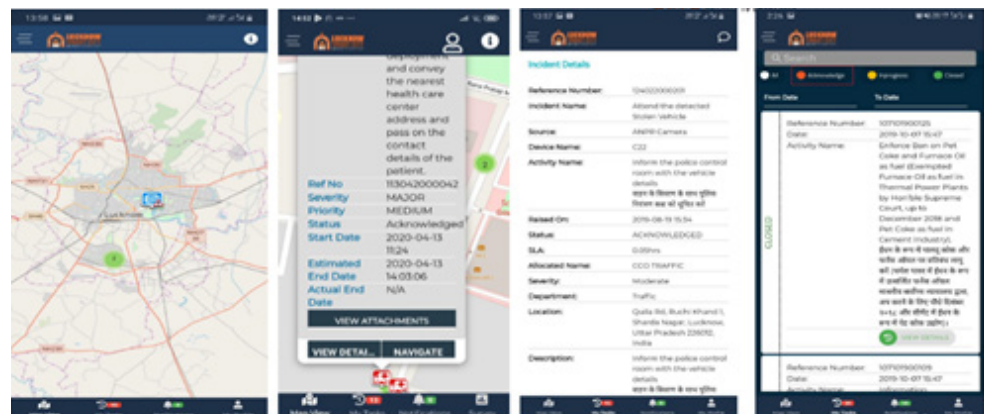
Lucknow



Lucknow ICCC Covid-19 Prediction Model



Lucknow ICCC Covid-19 Reports

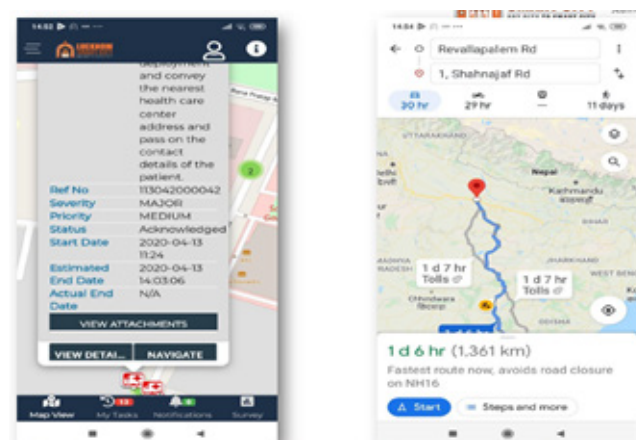


View new incidents & Task details

Lucknow



Incidents related Tasks to field team inline with SOP



Navigation option provided to reach the incident location



Hotspot Sanitization Activity update on Lucknow ICC



DIAGNOSTICS

Actelligence COVID 19 Survey Form

Public health ground level team undertake risk assessment surveys within a 3-kilometer radius of a hotspot. The data collected is matched against possible contacts using the Field Responder mobile app or the ICCC dashboard platform.

Hello Doctor Program

Connecting top doctors from the city's most trusted hospitals, LSCL's Hello Doctor program is a free of cost service for non-emergency medical care. This special telemedicine facility is a single number multi-channel IVR system that offers consultations from 150 doctors across 22+ specialties via chat, audio and video call. The program also offering dedicated psychological care and consultation and citizens are urged to call the toll-free number 0522-3515700. The number also offers home delivery of medicines by connecting users with their nearest pharmacies. Citizens can also book a consultation online by logging onto LSCL's official website - www.lucknowsmartcity.com

COVID-19 Hello Doctor

To Avail the Service Please call:
0522-3515700

E-OPD Seva
<https://tinyurl.com/HelloDoctorLSCL>

LUCKNOW SMART CITY

COVID-19 UPDATES PHOTOS & VIDEOS +91 63893 00367 HELPLINE NUMBER : 0522 351 5700

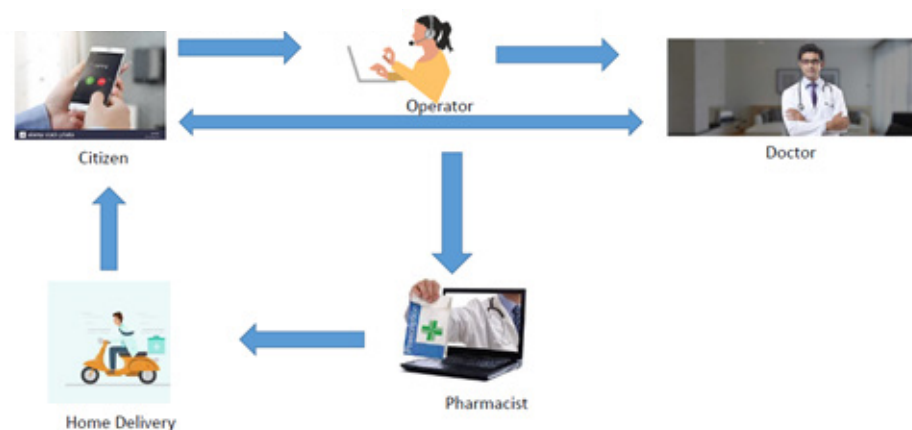
DON'T PANIC. WE ARE WITH YOU

HOME DELIVERY OF MEDICINES FREE TELE-CONSULTATION PATOLOGY DIAGNOSTICS

TELE-CONSULTATION AVAILABLE FROM 10AM TO 5PM (MONDAY TO SATURDAY)

A SPECIAL FACILITY OFFERED BY LUCKNOW SMART CITY COVID-19 CONTROL & COMMAND CENTRE

Hello Doctor - Web Page



Hello Doctor - Web Page

HAPPY CITIZENS

I had this acute pain in stomach and I am thankful to Hello doctor service, they resolved and gave me a home remedy which in turn gave me relief in just 30 min.

SURAJ SINGH
Ashiyana, Lucknow

I recommend this service. Very useful and essential service.

MOHD. AYAAN KHAN
Gomti Nagar, Lucknow

I recommend this service. Very useful and essential service.

MOHD. AYAAN KHAN
Gomti Nagar, Lucknow

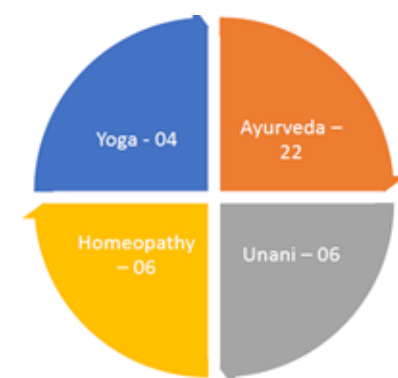
"I was very satisfied after calling Hello Doctor Service number as offered by Lucknow Smart City Ltd. The operator was very quick in understanding my problem and connected me to the right Doctor on the same call. The doctor was also very experienced. I have recommended this service to many of my family and friends."

HARSHIT GUPTA
Aliganj, Lucknow

Hello Doctor - Web Page



Hello Doctor - Web Page



Doctors availability in other Disciplines



Specialty wise Citizens call detail



AWARENESS

LSCL regularly updates their social media channels and uses the ICCC to tap public announcement systems for on-demand information dissemination.

Target KPIs	Target	Achieved		
Overall Reach	15,00,000	Facebook + Instagram	16,13,316	32,52,352
		Twitter	4,78,182	
		App Promotion	9,30,076	
		YouTube	2,30,778	
Overall Impressions	20,00,000	Facebook + Instagram	20,83,024	37,22,060
		Twitter	4,78,182	
		App Promotion	9,30,076	
		YouTube	2,30,778	
Overall Engagement	1,50,000	Facebook + Instagram	2,51,048	3,81,138
		Twitter	52,415	
		App Promotion	21,218	
		YouTube	56,457	
Video Views	50,000	YouTube (Skippable Ads)	56,457	2,85,111
		Facebook + Instagram (3- Seconds Ads)	2,28,654	
Social Media Creatives per Month	150	Total Social Media Creative Published	250+	
Total Video Ads in 90 Days	24	Total Video Ads Published	5 Published	19 Remaining
App Installs	Maximum	Total Confirmed App Installs	1,646	

Fluentgrid Limited

Social Media campaign overview 13th April- 12th May 2020

