



SMART CITY UNIFIED OPERATIONS PLATFORM - OPERATIONAL INTELLIGENCE DRIVEN STANDARDIZATION

Presented By-

Dr. Chinmay Hegde, ASTRIKOS CONSULTING PVT LTD

Astrikos has developed an expertise in the areas of Technology (ICT/IoT) intervention via Machine Learning, Artificial Intelligence driven capability to Enterprise/Public Policy. Areas of primary expertise and focus are Next Generation Data Centres, Smart Cities, Urban Analytics, Smart Infrastructure, Smart Industries and Smart Healthcare Administration. The organization provides design, development, managerial and implementation expertise to industries on migration/implementation of Industrial Digital Transformation, Industry 5.0 and IIoT through cognitive intelligence and data science product lines under **Astrikos.ai**. We have grown multi-fold during last few years in the Indian as well as international market space by acquiring the clientele & partners across geographies.

Unique Perceived Benefits:

- Recognized as one of the Eligible Innovative Startup out of about 200 selected companies (out of over half a million startups) by Govt. of India to avail three years income tax holiday
- Patent pending with a provisional approval for **Astrikos SlaP** – AI/ML Platform
- Successful Go-Lives of **three** Smart City projects and **four** Crisis Response platform implementations
- Key personnel of Astrikos are currently on mentorship boards of renowned universities
- Recognized as one of the Smart Cities Framework and Business Model expert corporate

QUALITY MATURITY CERTIFICATIONS



ISO/IEC
21823-1:2019

ISO/IEC
20000-1:2011

ISO/IEC
27001-1:2013

ISO
9001:2015

SMART INDUSTRY

AWARDS AND RECOGNITIONS



INDIA 600 STARTUP
AWARDS



THE ENTERPRISE OF THE
YEAR - 2019
Standard Chartered Rating



5th NATIONAL SMART
CITIES SUMMIT - 2019



6th INDIA SUSTAINABLE
CITIES SUMMIT - BLR



6th INDIA SMART CITIES
SUMMIT - DELHI



BRING GREEN SUMMIT -
BANGALORE

PRODUCT MATURITY CERTIFICATIONS



ISO 37122:2019

Sustainable Cities & Communities - Indicators for Smart Cities

ISO 37120:2018

Sustainable Cities & Communities - Indicators for City Services & Quality of Life

ISO 22320:2019

Security & Resilience - Emergency Management - Guidelines for Incident Management & Response Mechanism



Application Filing Receipt

Government of India Patent Office

Intellectual Property Office Building,
G.S.T. Road, Guindy,
Chennai -600032
Phone- 044-22502081-84
Fax: 044-22502066
e-mail: chennai-patent@nic.in

CBR Number : 17889

CBR date: 17-05-2021

Application Type: ORDINARY APPLICATION
Priority Number:
Priority Date:
Priority Country: Not Selected

**Patent
Pending**

To,













Astrikos Consulting Private. Limited

Astrikos Consulting Private. Limited #129 KR ROAD, BASAVANAGUDI, BENGULURU KARNATAKA INDIA 560004

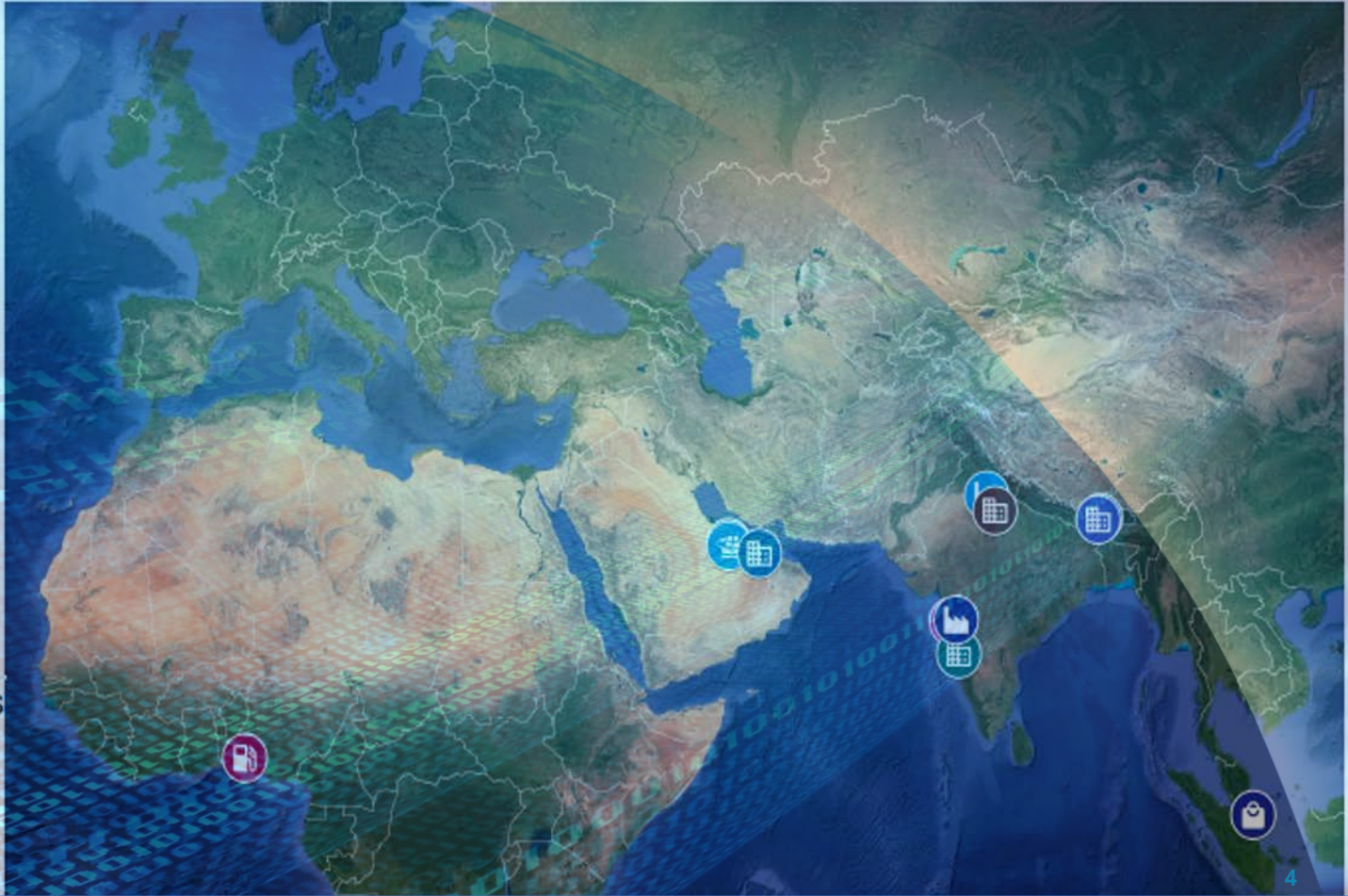
Received documents purporting to be an application for patent numbered 202141022044 dated 17-05-2021 by Astrikos Consulting Private. Limited of #129 KR ROAD, BASAVANAGUDI, BENGULURU KARNATAKA INDIA 560004 relating to COGNITIVE INTEROPERABLE INQUISITIVE SOURCE AGNOSTIC INFRASTRUCTURE OMNI-SPECIFICS INTELLIGENCE PROCESS AND SYSTEM FOR COLLABORATIVE INFRA SUPER DILIGENCE

Global Footprints...

Our Footprint On The Global Map

-  Gangtok
-  Namchi
-  Pimpri-Chinchwad
-  Belgaum
-  Ranjangaon
-  Baraut
-  Aligarh
-  Singapore
-  Doha
-  Hamad Port
-  Masdar City
-  Lagos

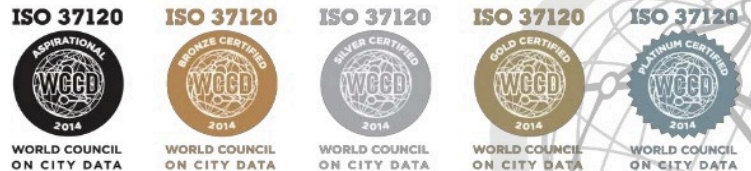
Astrikos has executed projects across multiple countries.



Global Standards – Essential References

WCCD CERTIFICATION LEVELS

WCCD certification levels are based on the number of indicators reported by the city. The WCCD offers a wide range of certification levels.



ASPIRATIONAL	BRONZE	SILVER	GOLD	PLATINUM
30-45 Core Indicators	46-59 Indicators	60-75 Indicators	76-90 Indicators	91-100 Indicators
	46 Core + 0-13 Supporting	46 Core + 14-29 Supporting	46 Core + 30-44 Supporting	46 Core + 45-54 Supporting

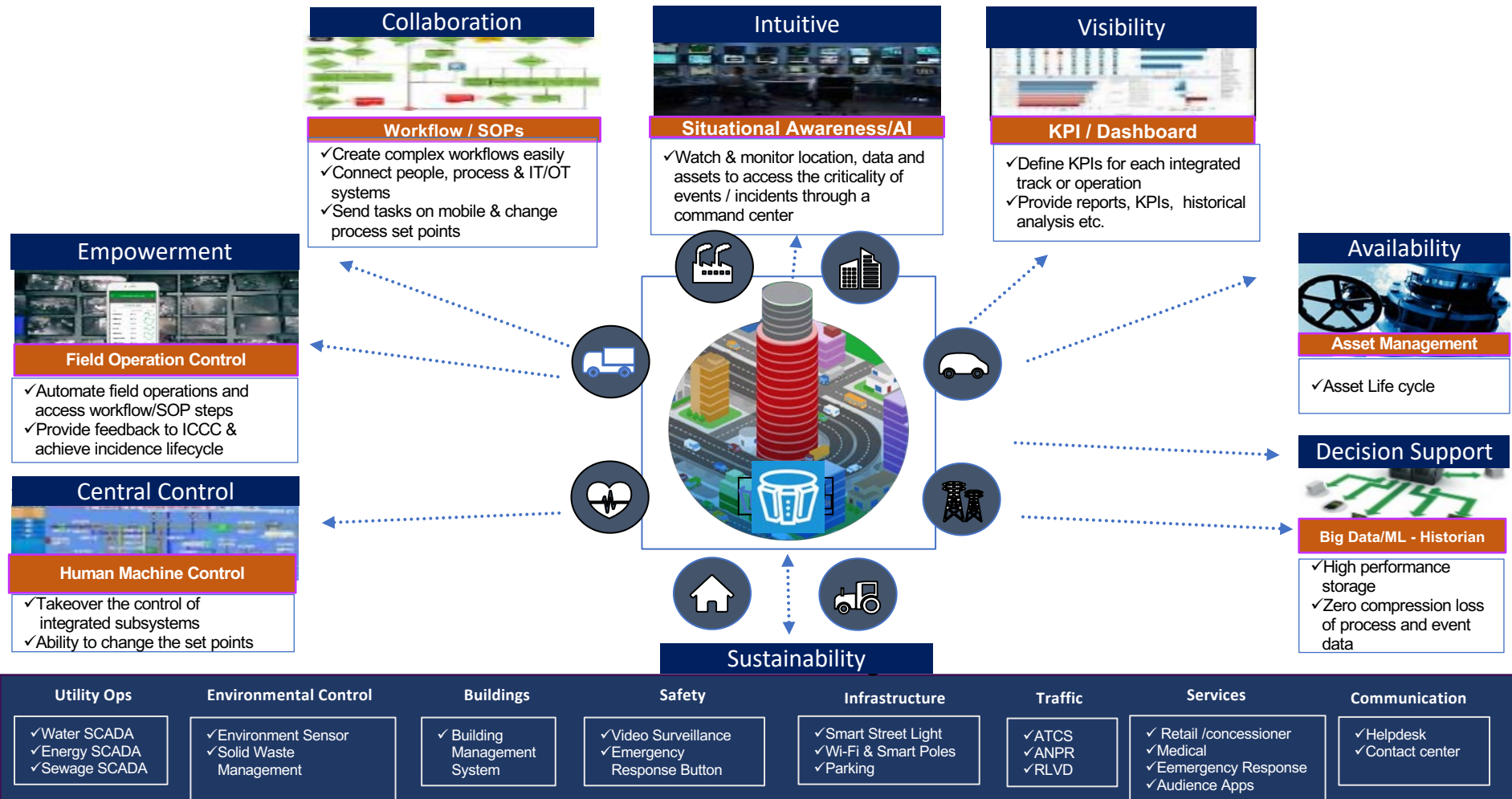


WCCD | WORLD COUNCIL
ON CITY DATA

@wccitydata

- **ISO 37122:2019** | Sustainable cities and communities — Indicators for smart cities
- **ISO 37120:2018** | Sustainable cities and communities — Indicators for city services and quality of life
- **ISO 22320:2018** | Security And Resilience — Emergency Management — Guidelines For Incident Management and Response Mechanism

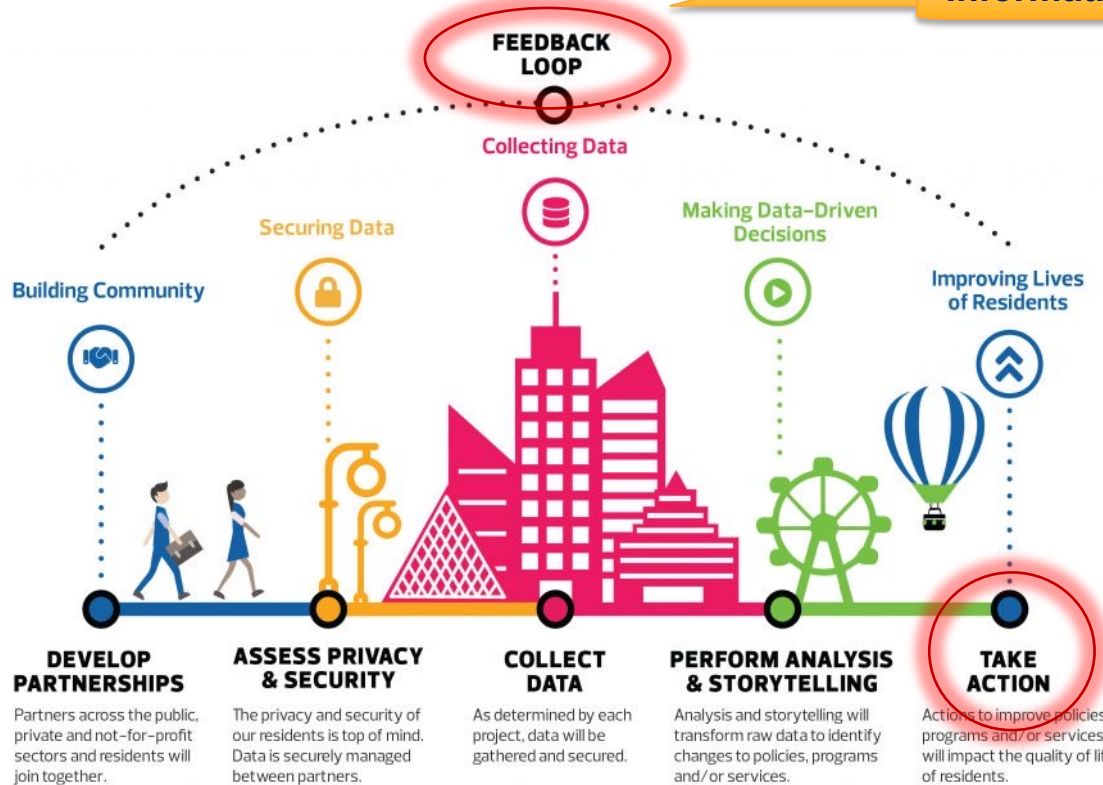
ROLE OF ICCC: UNIFIED OPERATION CENTRE FOR THE CITY ADMINISTRATION



GSCF – KNOWN FRAMEWORKS & MODELS

SMART CITY FRAMEWORK

Information – to – Action



- **NIST (USA) Frameworks** – CPS (Cyber-Physical Systems) and IES (IoT Enabled Smart City) - <https://pages.nist.gov/smartcitiesarchitecture>
- **European Smart City Model** - <http://www.smart-cities.eu/model.html>
- **Spain's Smart City Model (matured compared to EU standards)** - <http://www.agendadigital.gob.es/digital-agenda/Documents/Spanish-Smart-Cities-Model.pdf>

GSCF – KNOWN FRAMEWORK MODELS

Performance Measurement Metrics



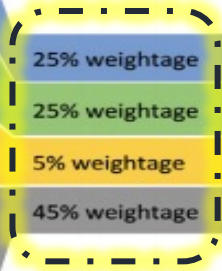
The Balanced scorecard is used for managing strategy

Smart City Livability Index – Weighted KPIs

Four pillars of comprehensive development

Category Indices

Liveability Standards Performance along set benchmarks



Cardinal Lapse...!!!



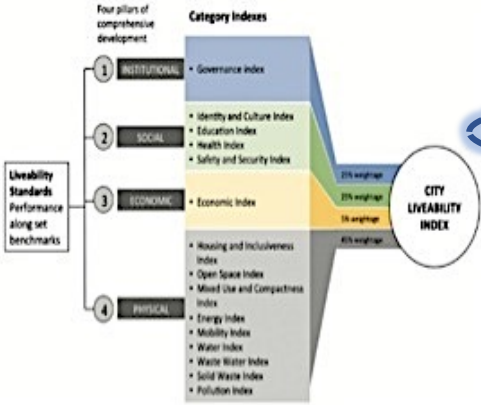
Cause - Effect...

Covid wake-up call: Health infrastructure only 1 per cent of Smart City projects

Lesson Learnt

5-6 minutes

Written by [Karishma Mehrotra](#) , [Harikishan Sharma](#) | New Delhi | Updated: May 25, 2020 7:23:38 am



Governance

- Percentage of services integrated through Command Centre (Supporting)
- Extent of cost recovery (O&M) in water supply services (Core)
- Average delay in grievance redressal (Core)

Identity and Culture

- Number of cultural/sports events hosted by city authority (Supporting)

Health

- Average response time in case of health emergencies (Supporting)

Power Supply

- Average length of electrical interruptions per customer per year (Supporting)
- Average number of electrical interruptions per customer per year (Core)

Safety and Security

- Number of streets, public places, junctions covered through surveillance systems (Core)
- Transport-related fatality per lakh population (Supporting)

Water Supply

- Quality of water supplied (Core)
- Level of non-revenue water - NRW (Core)
- Per capita supply of water (Core)



PRASHANT NADKAR

Of the 17 hotspots that are also smart cities, Delhi has spent the most on health-related projects (Express Photo by Prashant Nadkar)

As urban centres struggle to put down the outbreak of Covid-19, creation of health infrastructure seems to be very low priority in projects for 100 cities being developed as smart cities under a central government scheme.

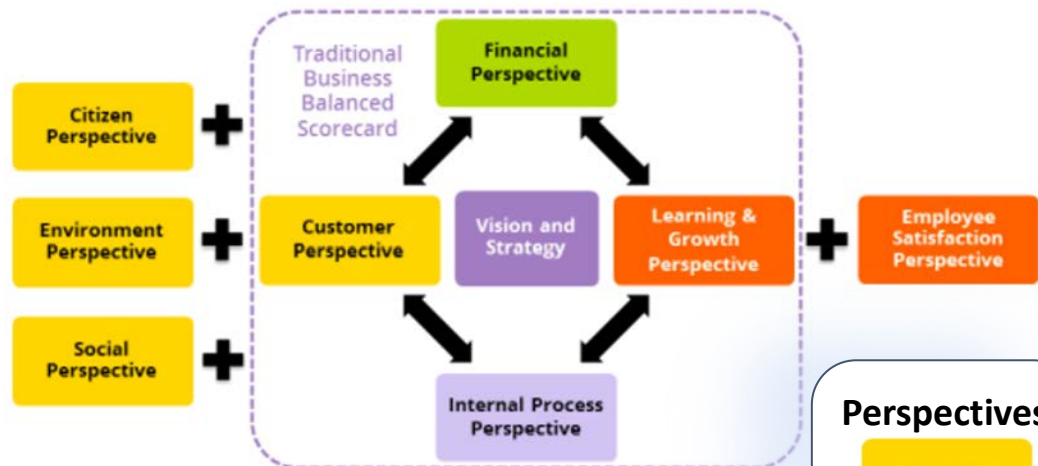
A scrutiny of publicly available data of projects taken up under the Smart City Mission reveals that only 69 of 5,861 projects were for health infrastructure and capacity building — this works out to a little over 1 per cent of total projects selected since 2015.

BUT ARE WE REALLY IMPLEMENTING THOSE ??



Measuring Performance – Methodology

Balanced Scorecard Framework for Policy Guidelines



Analytics & Intelligence Delivered by the Intelligent Operations Platform or City's Digital Services Platform



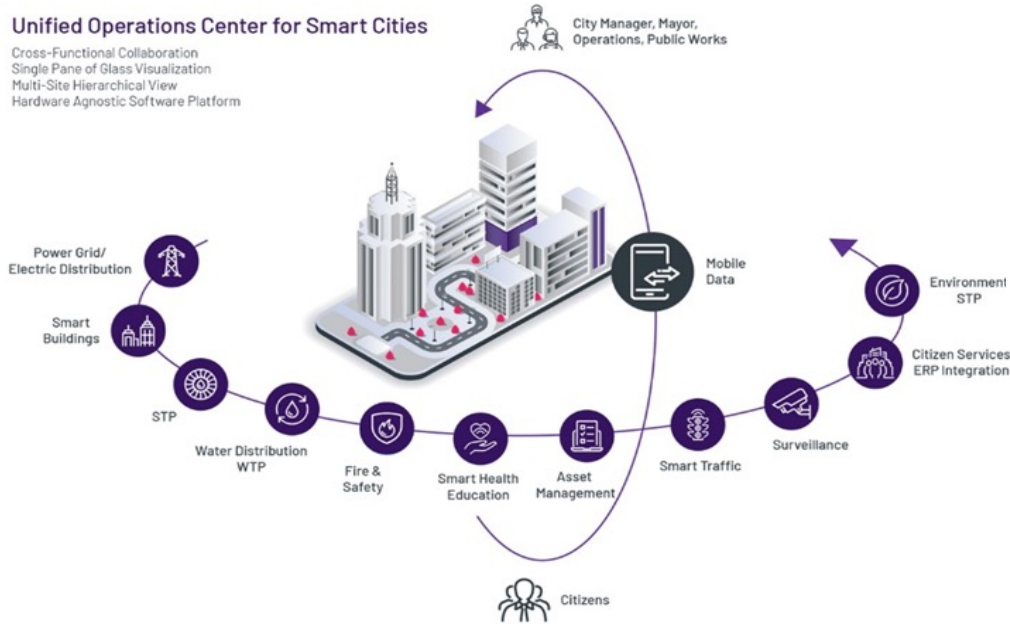
Perspectives are Defined by Citizen Engagement Study and Departmental Operational Analysis

Perspectives	Tangible Key Performance Indicators & Measures				
Citizen Perspective	Government Transparency & Accountability	Government Service Delivery	Employment	Health & Education	Equity
Internal Process Perspective	Scenario Planning	Automation & Efficiency	Decision Support	Policy Coherence	Program Management
Learning & Growth Perspective	Learning & Promotion Opportunities	Organizational Change Management	Adequate Compensation	Job Satisfaction	Empowerment
Financial Perspective	Budget Credibility	Debt Management	Value for Money	Taxation	Public Investments

Purpose of ICCC Platform

Unified Operations Center for Smart Cities

Cross-Functional Collaboration
 Single Pane of Glass Visualization
 Multi-Site Hierarchical View
 Hardware Agnostic Software Platform



UNIFIED CONTROL PLATFORM

Ability to takeover the specific allowable control of the integrated subsystems through single user interface of CCC, empowering the operator to manage critical incidences and events through directly initiating control over the subsystem

UNIFIED OPERATIONS

Identify, Analyze, Acknowledge and act on cross functional incidences plus Enhance the subsystems operational capabilities.



UNIFIED CENTRAL PLATFORM

Ability to integrate with subsystems natively, driving unified user interface providing ease of operations and facilitating central control across multiple operations.

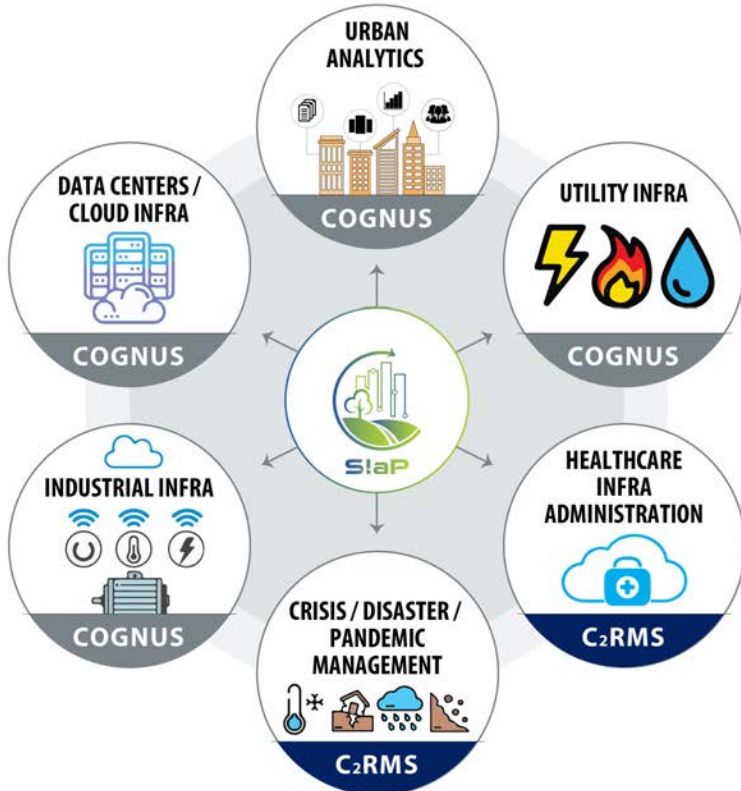
UNIFIED COMMAND PLATFORM

Ability to initiate chain of command and take the feedback from field and office staff on real time, which is not only limited to voice communication but should extend to assign work task and response via electronic medium like smart phones and tablets

UNIFIED DECISION SUPPORT

Ability to provide decision support to various operations during event and incidences based on Pattern analysis, Artificial Intelligence, Machine learning, "what if analysis" and simulation

RELEVANCE & GLOBAL STANDARDS



COGNUS

Certified Platform

ISO 37122:2019

Sustainable Cities & Communities - Indicators for Smart Cities

ISO 37120:2018

Sustainable Cities & Communities - Indicators
for City Services & Quality of Life



C2RMS

Certified Platform

ISO 22320:2019

Security & Resilience - Emergency Management -
Guidelines for Incident Management & Response Mechanism

MORE DETAILS: <https://Astrikos.Ai>

STANDARDIZATION
RECAP...



Buildings' plan visibility to fire fighters help mitigate losses in fire accidents

Smarter Buildings help optimize energy consumption

Urban Systems

Public Safety increases use of public transit



Easing traffic congestion improves emergency response & air quality

'System-Of-Systems' City Operation Platform

Better quality of air, solid waste collection, water supply will reduce cost of healthcare services



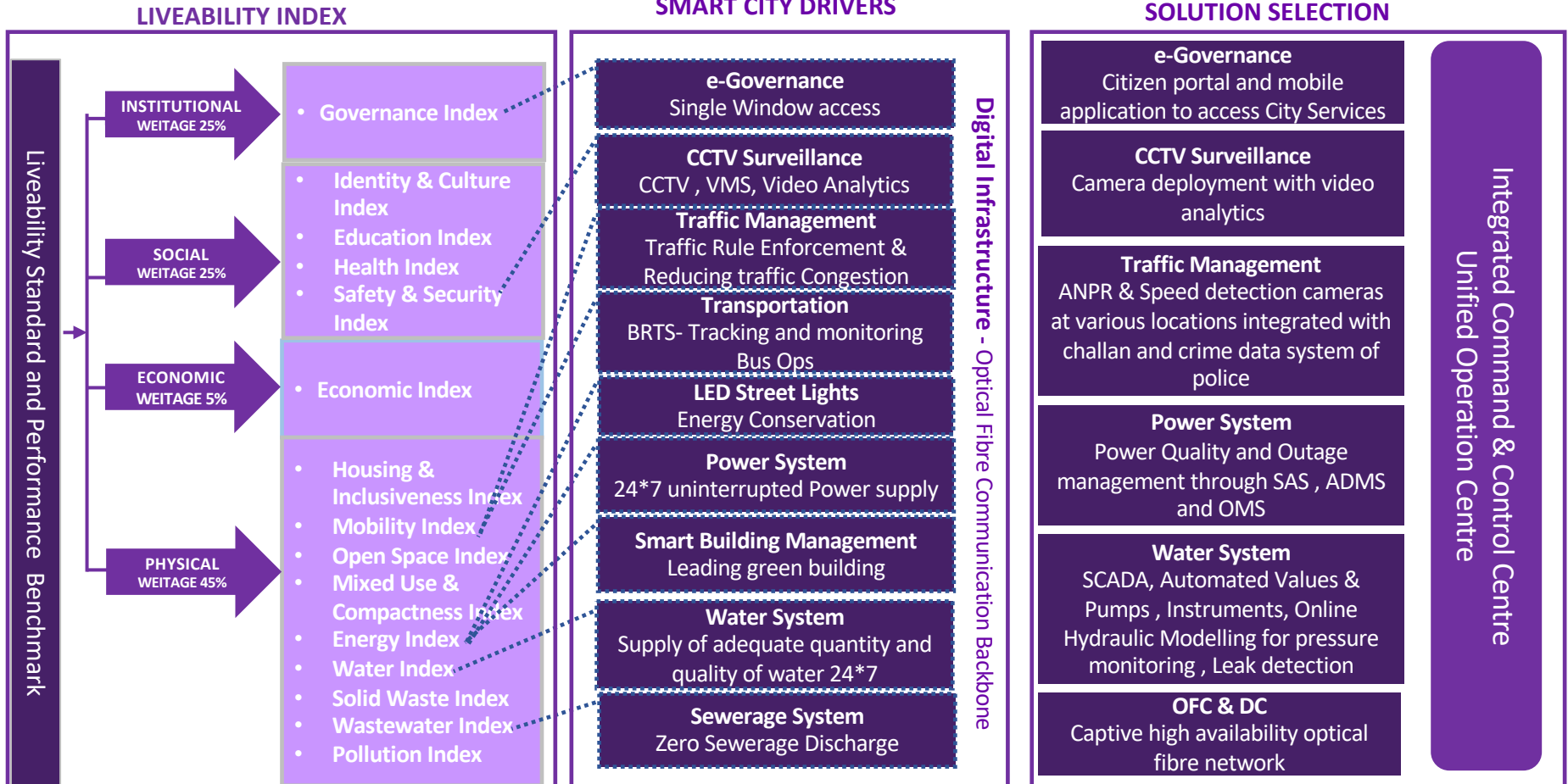
Improving waste water systems improves environment

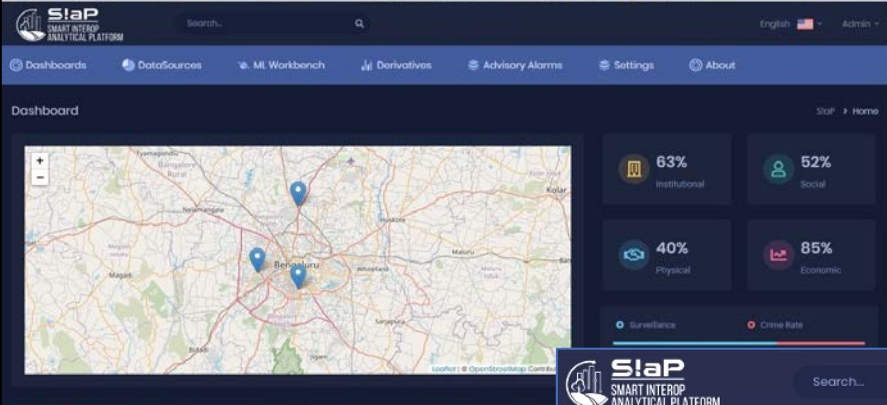
Urban Systems

Improved public health increases early years school attendance

Higher adoption of public transit helps improve air quality

Liveability Index – Smart City Drivers – Solution Selection

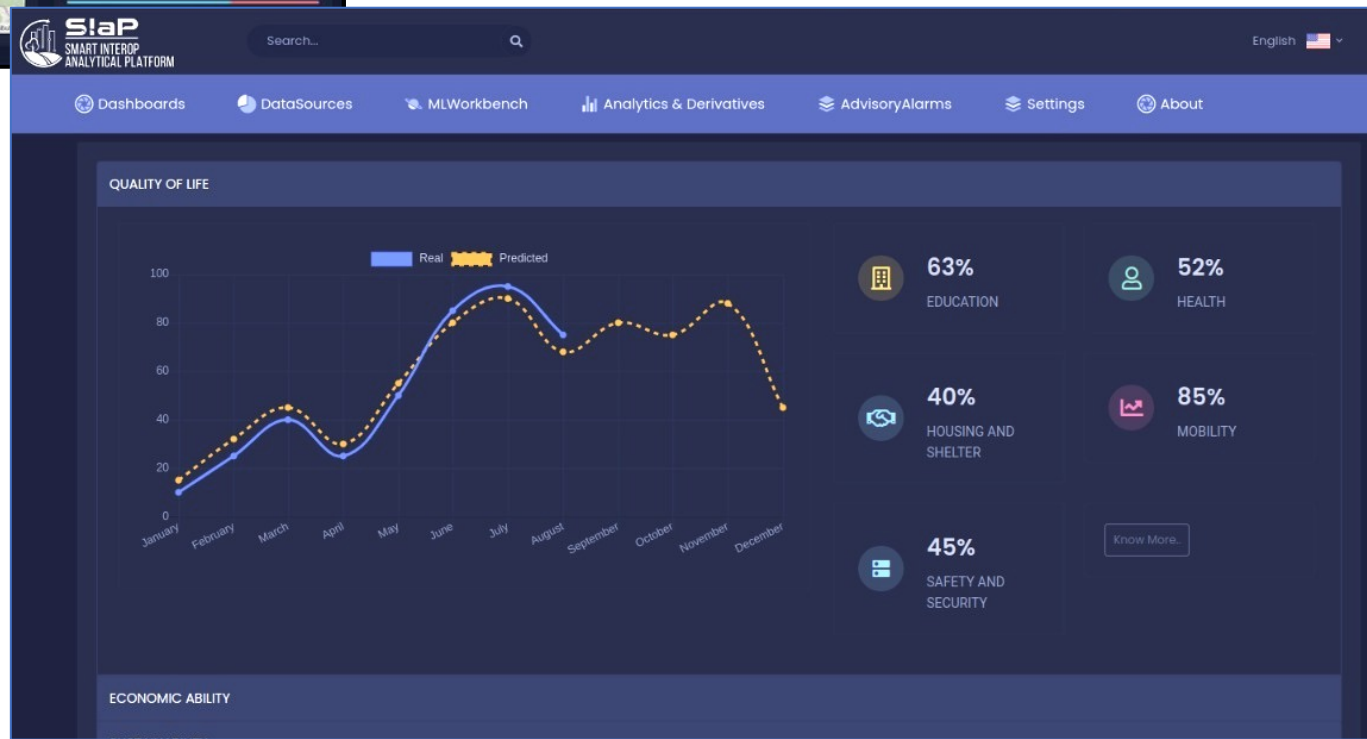




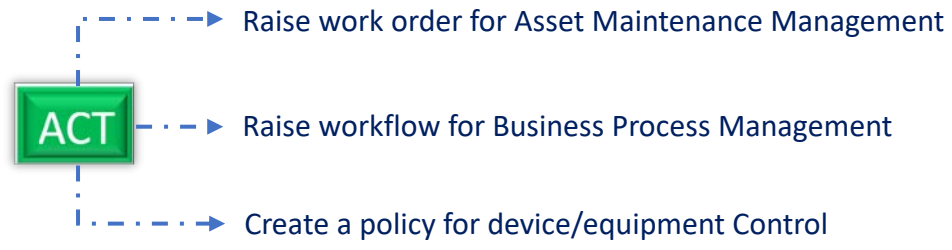
Collaborative Analytics Driven City Operations...

Analytics on Livability Indices:

- History and trends
- Insights with “cause-effect analysis”
- Prediction based on heterogenous data sources
 - Including sub-parameters
- Prescription advisory– “how to plan and act to do better?”



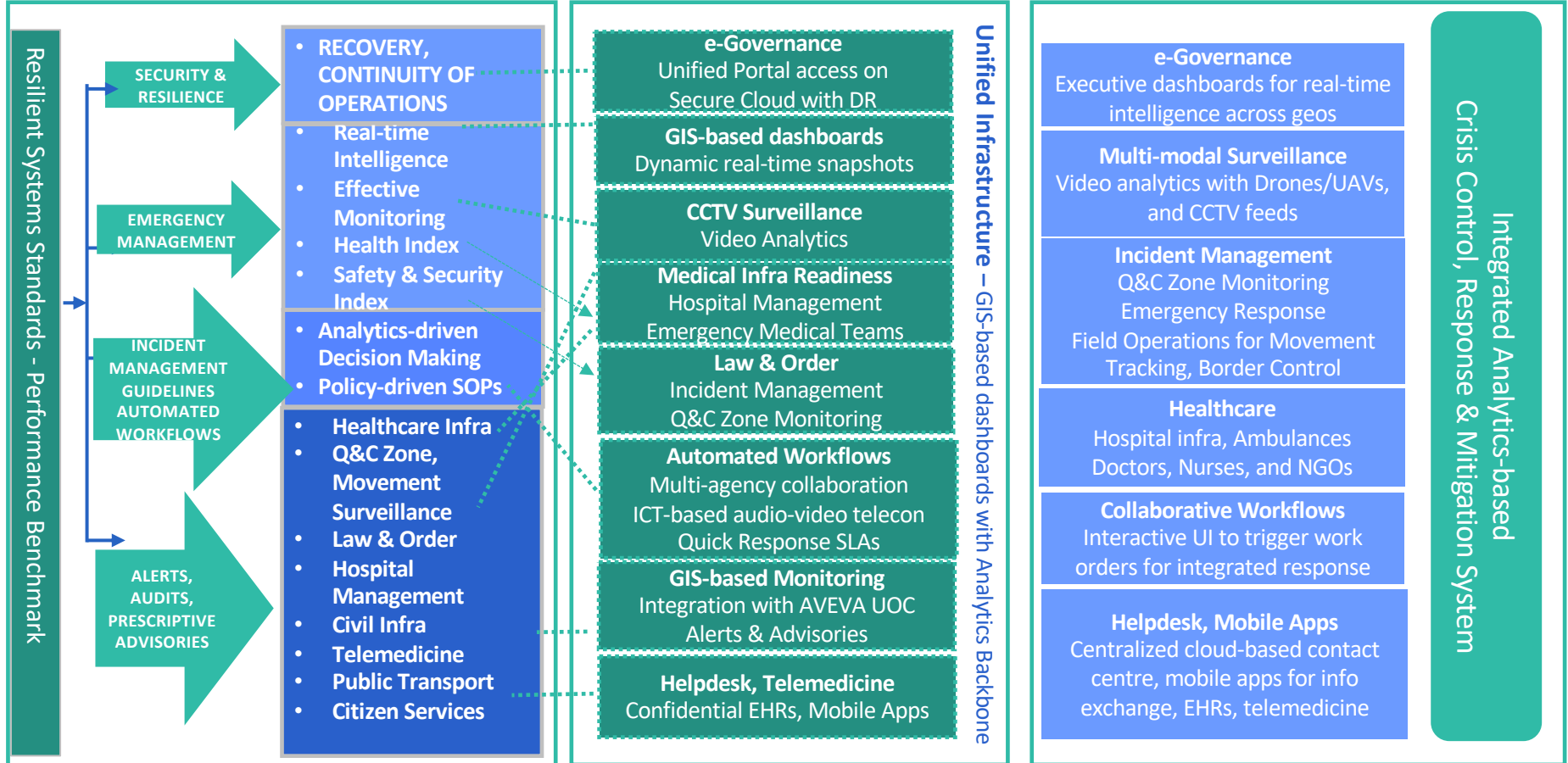
Advisory Alarms followed by Actions

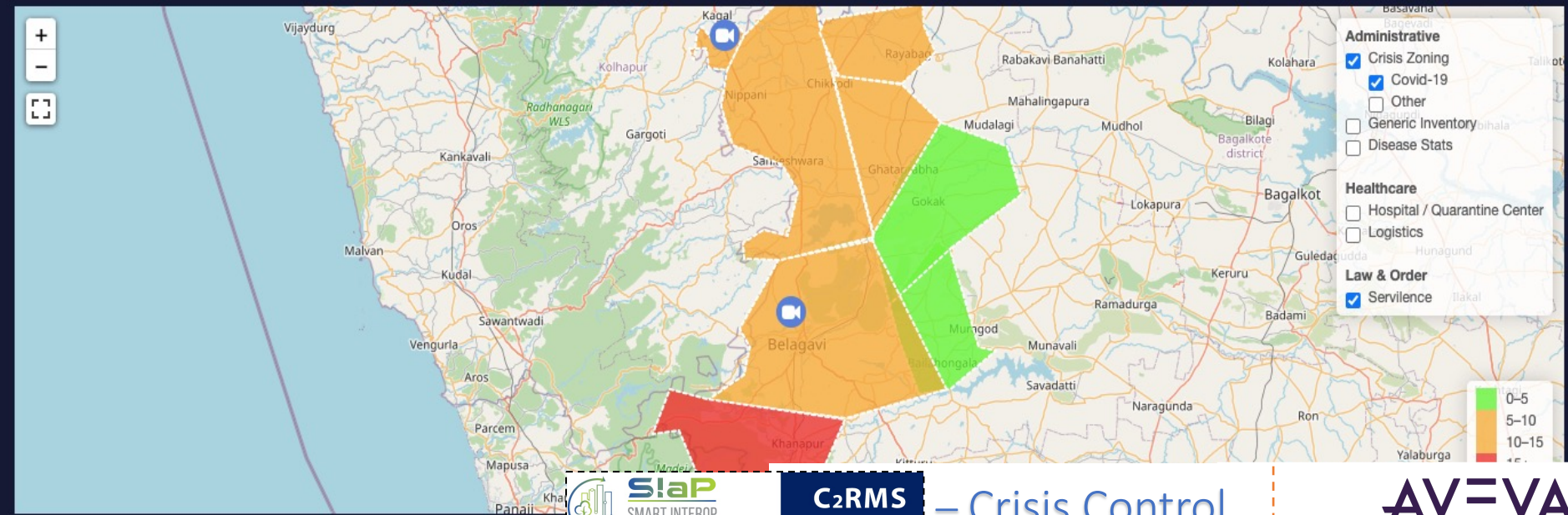


ISO 22320 INDEX

CRISIS RESPONSE DRIVERS

SOLUTION SELECTION





C2RMS – Crisis Control
Response & Mitigation
System



COVID-19 KPIS	
Confirmed 304	Recovered 287
(o) ↓	(o) ↓
1	16
(o) ↓	(o) ↓

ICCC PLATFORM INTEGRATED WITH CRISIS RESPONSE & AREA HEALTHCARE ADMINISTRATION

Unified Operations Centre for Cities

Smart Bus
Street Lighting
CCTV
ITMS
Environment Sensor
Smart Parking
Smart Garbage Bins
STP
Water
Power
IBMS
SOPs
COVID-19
AVEVA

C2RMS Law@Example.Com

Home Pending Action Analytics & Advisories Video conference

100

No of kits Available

15.2%

Isolation room Availability

135

Ambulance Availability

WARDS WISE PATIENTS DETAILS

Ward/Mandal	Covid-19 Affected	Affected Ratio	Zone
Belagundi	1	1.8%	●
Hire Bagewadi	17	27%	●
Piranawadi	1	1.8%	●
Hukkeri	1	1.8%	●
Khasai Galli Camp	1	1.8%	●
Kudachi	17	31%	●

Live Update

Total Cases	221
Active Cases	80
Recovered	140
Fatalities	1

COVID-19

- Total Cases
221 (50%)
- Active Cases
80 (18%)
- Recovered
140 (32%)
- Fatalities















Live Update

Total Samples Sent (B1)	4,719
Results Awaiting (B2)	1,740
Total Negative Cases (B3)	2,910

Action Oriented System with Advisories & Workflows

C2RMS

Home Task Management Healthcare Analytics & Advisories Video conference

Task Name	Task Description	Assign To	Status	Action
Conduct Door to door screening activity	Conduct Door to door screening activity	all	Completed	 
Area health screening order one more time	Conduct Door to door screening activity	health	Completed	 
Conduct area surveillance	Conduct activity	law	Completed	 
Area health screening order-2	Area health screening order-2	law	Completed	 
Again	law	Completed	 	
	health	Completed	 	
	health	Completed	 	

C2RMS

Home Task Management Healthcare

Task Management

Task Name





Task Description

Assign to

- ✓ Select
- All
- Law & Order
- Health Authority
- Help Desk
- Food & Grocery

Close Start

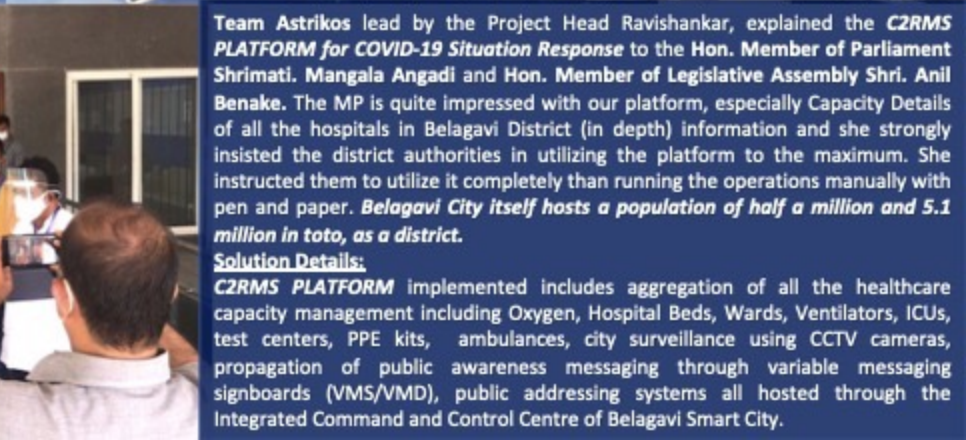
TASK MANAGEMENT

Task Name	Task Description	Assign To	Status	Action
Conduct Door to door screening activity	Conduct Door to door screening activity	all	Completed	 
Area health screening order one more time	Conduct Door to door screening activity	health	Completed	 

New Task



COVID-19 WAR ROOM: Belagavi Smart City, Karnataka – INDIA



Team Astrikos lead by the Project Head Ravishankar, explained the **C2RMS PLATFORM for COVID-19 Situation Response** to the Hon. Member of Parliament Shrimati. Mangala Angadi and Hon. Member of Legislative Assembly Shri. Anil Benake. The MP is quite impressed with our platform, especially Capacity Details of all the hospitals in Belagavi District (in depth) information and she strongly insisted the district authorities in utilizing the platform to the maximum. She instructed them to utilize it completely than running the operations manually with pen and paper. *Belagavi City itself hosts a population of half a million and 5.1 million in toto, as a district.*

Solution Details:

C2RMS PLATFORM implemented includes aggregation of all the healthcare capacity management including Oxygen, Hospital Beds, Wards, Ventilators, ICUs, test centers, PPE kits, ambulances, city surveillance using CCTV cameras, propagation of public awareness messaging through variable messaging signboards (VMS/VMD), public addressing systems all hosted through the Integrated Command and Control Centre of Belagavi Smart City.

COVID-19 WAR ROOM: Namchi Smart City, Sikkim – INDIA



Team Astrikos lead by the Project Manager Ratnadeep Paul, explained the **C2RMS PLATFORM for COVID-19 Situation Response** to the Sikkim police Addl. Director General, Superintendent of South Sikkim Dist., Addl. SP and Local Police and Health administration who visited at ICCC Namchi. The authorities are using the AVEVA ICCC and the C2RMS platform integrally to manage the situation in the district of **South Sikkim**, especially Capacity Management Details of all the hospitals in the District (in depth) information and they evidently encouraged the other district authorities in utilizing the platform to the maximum. A special mention to the Nodal Officer of NSCL Mr. Navin Rai for the leadership exhibited. **South Sikkim hosts a population of about 125,000 as a district.**


Solution Details:

C2RMS PLATFORM integrated to AVEVA UOC Platform implemented includes aggregation of all the healthcare capacity management including Oxygen, Hospital Beds, Wards, Ventilators, ICUs, test centers, PPE kits, ambulances, city surveillance using CCTV cameras, propagation of public awareness messaging through variable messaging signboards (VMS/VMD), public addressing systems all hosted through the Integrated Command and Control Centre of Namchi Smart City.

CERTIFIED BY ADCAI (INDIA'S LARGEST THINK TANK ON TECHNOLOGY)



**Aerospace & Defence
Consultants Association of India**

Please Reach Us:- info@adcai.in |  

**C2MCRS - CORONAVIRUS CRISIS MANAGEMENT
CONTROL & REPORTING SYSTEM**



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