World Class Drone Management Platform for Smart Intelligence

Solution Deck for Urban Environments

Detailing the Problem, Solution and Guidelines for implementation for City Managers, Infrastructure Developers and Maintenance Agencies

Prayush Poddar
Chief Marketing Officer
Kesowa Infinite Ventures Private Limited

About Kesowa

Who are we?

We are a team of borderless thinkers, collaborators, creators, who want to look forward and create futuristic products and solutions which make real impact.

Our First Customer
D&DDCC for Newtown Kolkata Development Authority

Newtown Kolkata, a satellite township aspires to provide its residents with impeccable quality of services in line to international counterparts with transparency.
A Drone & Drone Data Call Centre was envisioned and setup in April 2021 to help improve governance with actionable insights.

An IGBC Gold Certified City, with best in class infrastructure, New Town's decision to setup and deploy the Drone & Drone Data Call Centre is in tune to it's vision to be a strategic thought leader for the world in years to come.

With ARU's deployment, the city can build a dedicated single repository of information which can become a factual single source of truth.

Commissioned
April 2021

Federal Synergies India Private Limited

IMPLEMENTATION PARTNER
FEDERAL SYNERGIES INDIA
PRIVATE LIMITED

NEWTOWN KOLKATA
GREEN SMART CITY CORPORATION LTD

SMART CITY SPV
NKGSSCL

NKDA

MUNICIPAL BODY
NEWTOWN KOLKATA
DEVELOPMENT AUTHORITY

KESOWA

Understanding the Drone Ecosystem

Hardware

Agriculture
Delivery Systems
Drone Platforms
Drone-In-A-Box
Helicopter
Recreational
VTOL Fixed Wing
Fixed Wing
Safety & Security
Lighter-Than-Air
Passenger Drones
Counter Drones
Components & Systems
- Cameras, Imaging & Video System
- Launch & Recovery Systems
- Propulsion & Power
- Navigation & Guidance Systems
- Data Communication

Software

Flight, Fleet & Operation Management
Open Source Infrastructure, SDK
Navigation, CV and AI
UTM, LAANC Suppliers
Data Analytics, Workflow, CV and AI

Services

Drone-As-A-Services
Delivery
Drone Show Providers
Education, Simulation & Training
System Integration, Engineering and Advisory
Maintenance
Suppliers, Retailers
Test Sites
Market Research & Consulting
User Groups, Networks
Media, News, Blogs & Magazines
Podcast
Insurances
Marketplaces
Shows, Conferences and Events
Coalitions, Organizations & Initiatives

Problems in an Urban Environment

Waste & Pollution

Identification of accumulated Solid Waste, Untreated discharges, major sources of air pollution, untreated discharges in the river.

Knowledge of the City

Road Condition and Layout, Street Furniture Assets like Street Lights, As Built Layout of Buildings, Parks and more.

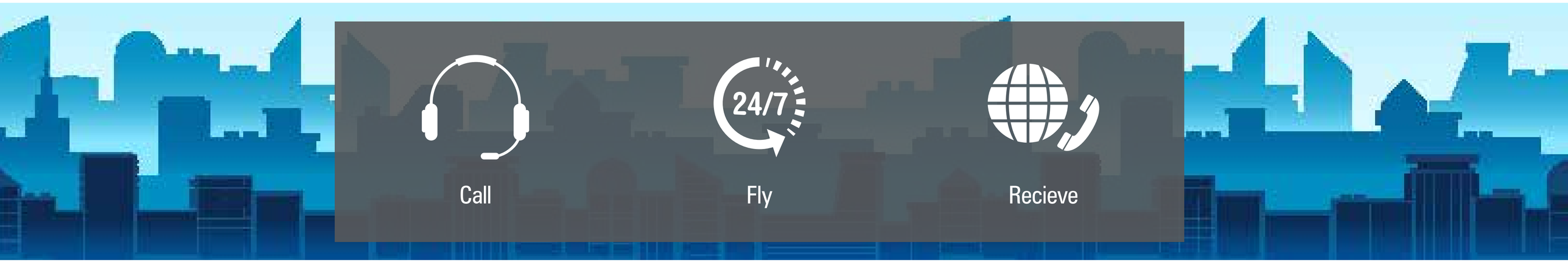
Infrastructure

Issues arising due to inadequate or old Infrastructure - Water, Power, Energy and local industry like manufacturing

Future Plan & Road Map Viability

Cities of the future need to develop livability indexes as they compete to attract the citizens of the future. As city managers aim to make and create more liveable, walkable and comfortable places of stay, knowledge of the as-built environment becomes critical.

Unavailability of Data



Availability of Data

Droneport

From where the drones depart and arrive

> Fixed

> Mobile

Dronefleet

Mission Specific Drones for meeting Action Requirement as per SLA - Surveillance, Spraying or Delivery

ARU Software Package

On Premises Deployable Software to enable smooth operations and data - from request to delivery

Associated Software & Hardware

Parts of the components with which the Solution is complete

Operations Team

The most important part of the Call Centre

Example

Map Preparation & Analysis

1
Master Plan Preparation - Superimposition with Existing/ Proposed Plans to help provide critical information to City Planners

2
Tree Count for ascertaining green cover and decide on future action

3
Zoning Analysis of Land

4
Study of planned and unplanned growth to prepare a master infrastructure plan

5
Construction Status Identification and Measurement

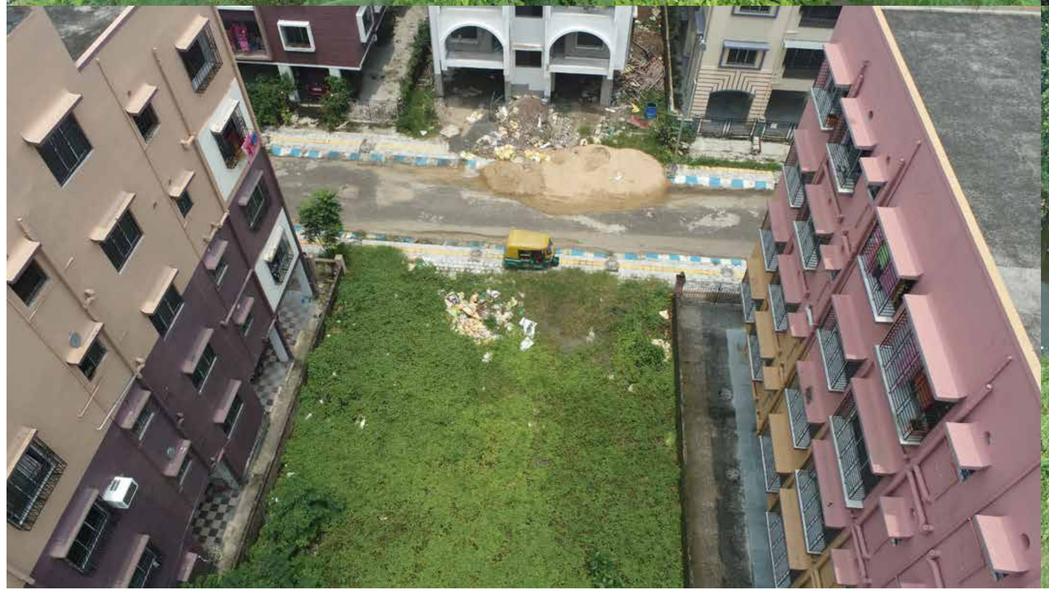
6
Existing Canal Infrastructure identification and Study, Identify STP sites for the future

7
Encroachment Identification

Endless use cases - Critical Information to connect the past, present and the future

Example

Waste Identification



Identify

> Construction Debris

> Solid Waste Accumulation

> Canal Blockages

Audit

> Waste Management contractors

> Residential buildings

Example

Water Bodies Condition Monitoring

Identify

> Existing Water Bodies

> Condition of Water Bodies

> Encroachments

> Status of Beautification Works

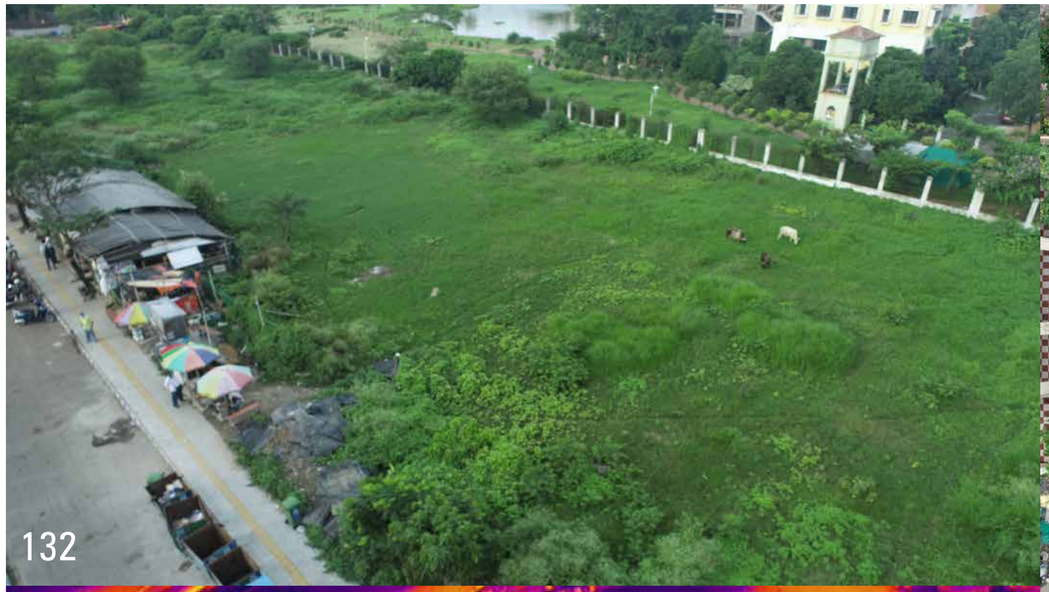
Plan

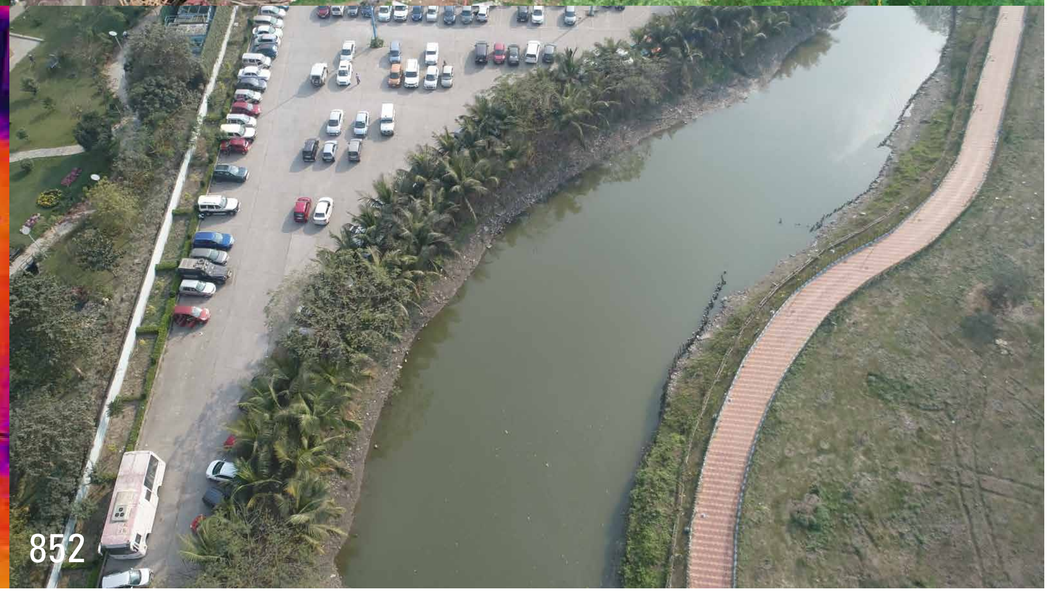
> Beautification Works

> Activity to make the Water Body from a Cost to a Revenue

Example

1000+ Specific Insights On Demand for when you want





132
Jungle Identification for areas to be cleared to reduce “Dengue” Mosquito Breeding Grounds

278
Construction Debris Identification and Labour Hutment Identification on Vacant Land which may lead to Encroachment

478
Thermal inspection of Solar Panels Installed on Roof Top

852
Canal Condition Monitoring for identification of erosion of canal side embankment

More Use Cases

KESOWA

Homeland Security

Surveying & Mapping
Territorial Planning
Natural Resources Survey
Land Consolidation

Geology

Mining Exploration
Disaster warning, assessment and rescue
Mineral Exploration
Geological Mapping
Reserves Calculation
Mine Restoration

Traffic

Highway Patrol
Railway Inspection
Accident Site Investigation
Emergency Rescue
Road Settlement Monitoring

Emergency Rescue

Fire Emergency
Flood Disaster
Earthquake
Environmental Protection
Epidemic
Geological Disaster

Water Conservancy

Water monitoring
Dam deforestation observation
River Regulation

Scientific Research & Education

UAV Teaching
UAV R&D
Subsidiary Product Development

Security & Protection

Security emergency
Security Inspection

Logistics

Low Altitude transporation

Preservation of Cultural Relics

Archeological Reconnaissance
Protection
Restoration of Cultural Relic
Tourism Planning

Firefighting

Forest firefighting
Firefighting in Study

Electric Power

Power line stringing
Power line inspection
Electric power overhaul
Solar (PV) Photovoltaic Inspection

Buildings

Building Information Management
Construction Monitoring
Bridge & Tunnel Design
3D Modelling

Animal & Plant Protection

Ecological environment monitoring
Species Investigation

Defense

Border Inspection
Reconnaissance
Target Drone
MIL

Forestery

Forestery Inspection
Tree Count
Plant Investigation
Plant Identification
Yield Evaluation

Ocean

Maritime Patrol
Reef of surveying and mapping
Marine Ecology
Cargo Transportation

Agriculture

Soil remediation
Sowing seeds
Inspection
Plant Protection
Animal Husbandary Protection
Production Forecast

City Planning

Dumpsite Management
Canal Maintenance Insights
Construction Activity Identification
Encroachment Identification
Progress Monitoring

Town Planning

Town Planning
Community Center Development
Infrastructure Upgradation Monitoring
Urbanisation Monitoring
Record Keeping

Aerial Photography

Film & Television
Autonomous Aerial Photography
Weddings & Major Events Coverage

Village Planning

Village Community Planning
Village Asset Register
Biodiversity Register
Land Record Register
Drone Seeding & Spraying

How does it work?

1
Call Aru

2
Aru will note your requirements and instruct team to go fly

3
Mission is created for pilot to follow while keeping in mind upcoming weather, no-fly zones, NOTAMS, TFRs etc.

4A
Pilot will fly the drone for the mission

4B
Aru will fly the drone
*BVLOS permission required

5
View data LIVE from anywhere in the world to satisfy your query

*Beyond Visual Line of Sight

Solution Stack

Drone Fleet

Surveillance, spraying or delivery - mission specific drones

ARU Software Package

What makes the magic happen - Take Off!

Associated Software & Hardware

Parts of the components with which the Jigsaw is complete

Droneport

From where the drones depart and arrive

Operations Team

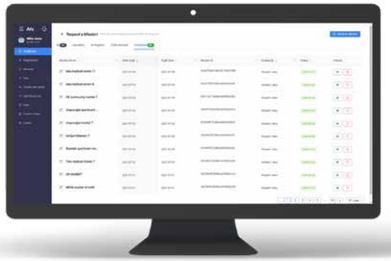
The most important part of the Call Centre

Detailed BOM Available only to customers and partners*

ARU Platform Features

Flight Planning

> Fly and No Fly Zones
> Weather
> Associated Risks
> Airport Funnel and Safety Zone



Digital Logbook

> Repository of all Requests
> Flight Log Management
> User Access Roles
> Track Multiple Drones at Once Live

Data Streaming

> Streaming of Data from Field to HQ
> Pic2Map - Click on field and know where on map with time stamp

Share and Collaborate on a Universal GIS Tool

> Sync Drone maps, Autocad Files, KMZ, Markers +
> See and Act on the Web - No Minimum PC Requirements
> Integrate with your existing GIS as well as external GIS like Google Maps, Open Maps or others

AI Triggered Alerts

While the pilot is flying on the field, AI can identify and alert management users with infraction, image of infraction and location of infraction in near real time.

ARU's Intelligence

Tree Count

> Number of Trees
> Longitude and Latitude of Each Tree
> Coverage of Tree

* On Orthomosaic Maps

People Count

> Number of People
> Density of People

* On Photographs and Video

WHAT ELSE?

Model of Working

KESOWA Partner

Business Model
Invest in Hardware, Software and Resources and sell services

Partner › Service to Customers

Minimum Investment
Drone - DJI Phantom Minimum
Computer
Stand-alone Software - QGIS, Agisoft/ Pix4D, Autocad
1-3 Member Team - Pilot & Analyst

Revenue
Charge per Drone Service
Variety of Services which can be Offered
Customers who avail services can be converted to Enterprise Customers

Enterprise Sales

Enterprise Partner › Managed Services & Turnkey Deployment

Investment & Return on Investment Calculation for a City Manager/
Smart City SPV/ Municipal Authority

Additional Revenue

Revenue from Private Operations
Revenue from Penalising based on Transparent Information
Revenue from Sale of Data if a community wishes
Revenue from Drone Ports
Revenue from increase in Property Taxes
Revenue from Real Estate Sales will go up as Buyers will be informed

Key Messages

Goal is to enable drone and drone data usage for customers

Creation of tremendous value for all stakeholders by awareness of the exact truth

Intangible benefits such as improvement of quality of services, accountability and more