

INNOVATION FOR SUSTAINABILITY



TECHNOLOGY
ACCELERATORS

CONVERGE. CREATE. CHANGE

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CONVERGED SOLUTIONS FOR SUSTAINABLE DEVELOPMENT

VALLURI TECHNOLOGY ACCELERATORS believes that the future is about **convergence of technologies** through **collaborative approaches** and creating solutions that drive **positive changes in societies**. Our intent is to create and innovate sustainable low cost solutions through convergence of multiple technologies. To address the Indian societal need, we determined the following areas to be of greatest importance:



Data acquisition and analysis becomes a key component in creating such solutions. The Organization's endeavour is to bring in deep domain expertise from various global and national corporations and provide a platform where multiple processes and technologies can be integrated.

CURRENT SCENARIO

EXISTING CONDITIONS

13 of the top 20 polluted cities are in India.
Air pollution slashes life expectancy by 3.2
years for the 660 million Indians

The Ganga and Yamuna are ranked among the
world's 10 most polluted rivers

Concretisation of ground and green belts and
booming real estate activity has led to heat
island effect

Green cover is destroyed in the name of
development leading to shrinkage of
groundwater rechargeable areas





CURRENT SCENARIO

SUPPORTING REGULATION

Smart City Scheme to develop smart solutions in **Environmental Monitoring, Water, Waste Management** and **Urban Mobility** with a **budget of USD 7.1 Billion**

AMRUT Scheme to provide and create **infrastructure for basic necessities** with a **budget of USD 7.5 Billion**

Namami Gange Project to clean up the **River Ganga** has a **budget of 300 Million USD**

Under the **HRIDAY Scheme** – **750 Million USD** has been allotted for the **development of 12 Heritage Cities**





Our Solutions



SOLUTION PORTFOLIO

Environmental Monitoring & Modelling

- Air Quality monitoring
- Air Quality assessment
- Air Quality Modelling & Forecasting
- Noise & Traffic Modelling & Forecasting

Water Monitoring & Modelling

- Water Quality monitoring
- Water Quality assessment
- Water Quality Modelling & Forecasting

Infrastructure Management

- Infrastructure Quality Monitoring
- Infrastructure Assessment
- Infrastructure Modelling & Forecasting

Sewage, Waste Management & Waste to Energy

- Waste to Energy Technologies
- Waste Water treatment
- Waste segregation services

Land Use & Urban Planning

- Building Information Systems
- Land Use Assessment
- Urban Planning & Urban Heat modelling
- Resource consumption assessment

Energy

- Energy distribution systems modelling
- Energy consumption analysis
- Thermal energy system modelling
- Battery management systems

Smart Mobility & ICT

- Smart Parking
- CCTV Monitoring & Facial Recognition
- Integrated Command Center
- Healthcare

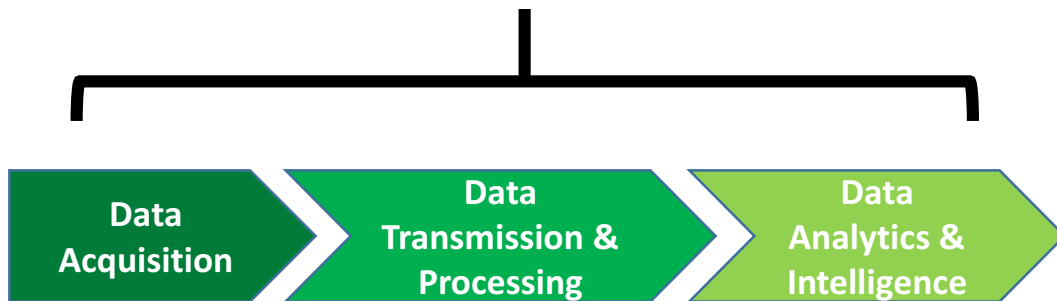


VTA SOLUTION STRATEGY

CONVERGENCE OF TECHNOLOGY

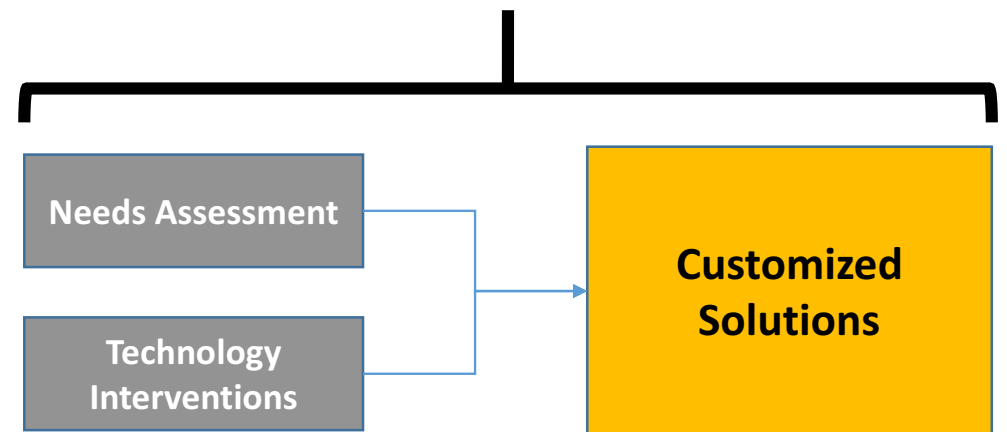
Data Acquisition & Assessment Model

Real time Data Acquisition, Assessments and Accurate Intelligence



Customized Solutions Model

Client specific solutions for enhanced efficiency & productivity

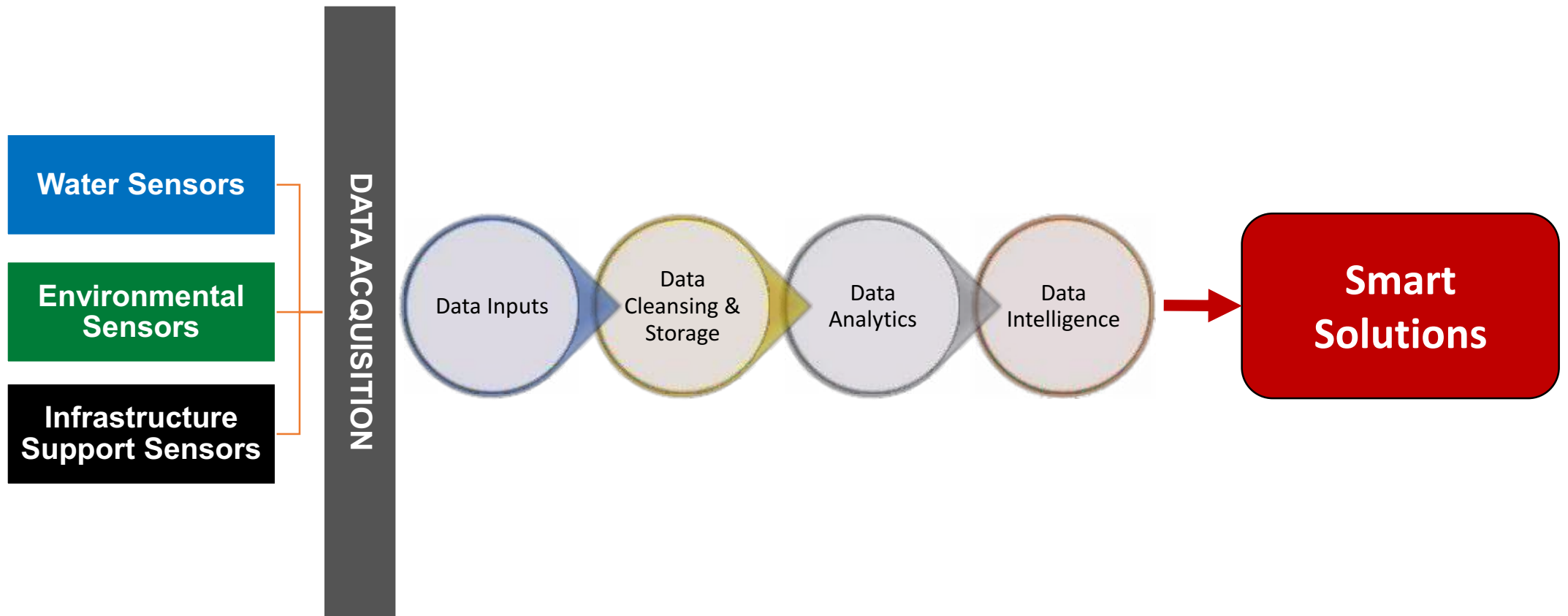




Data Acquisition & Assessment Model

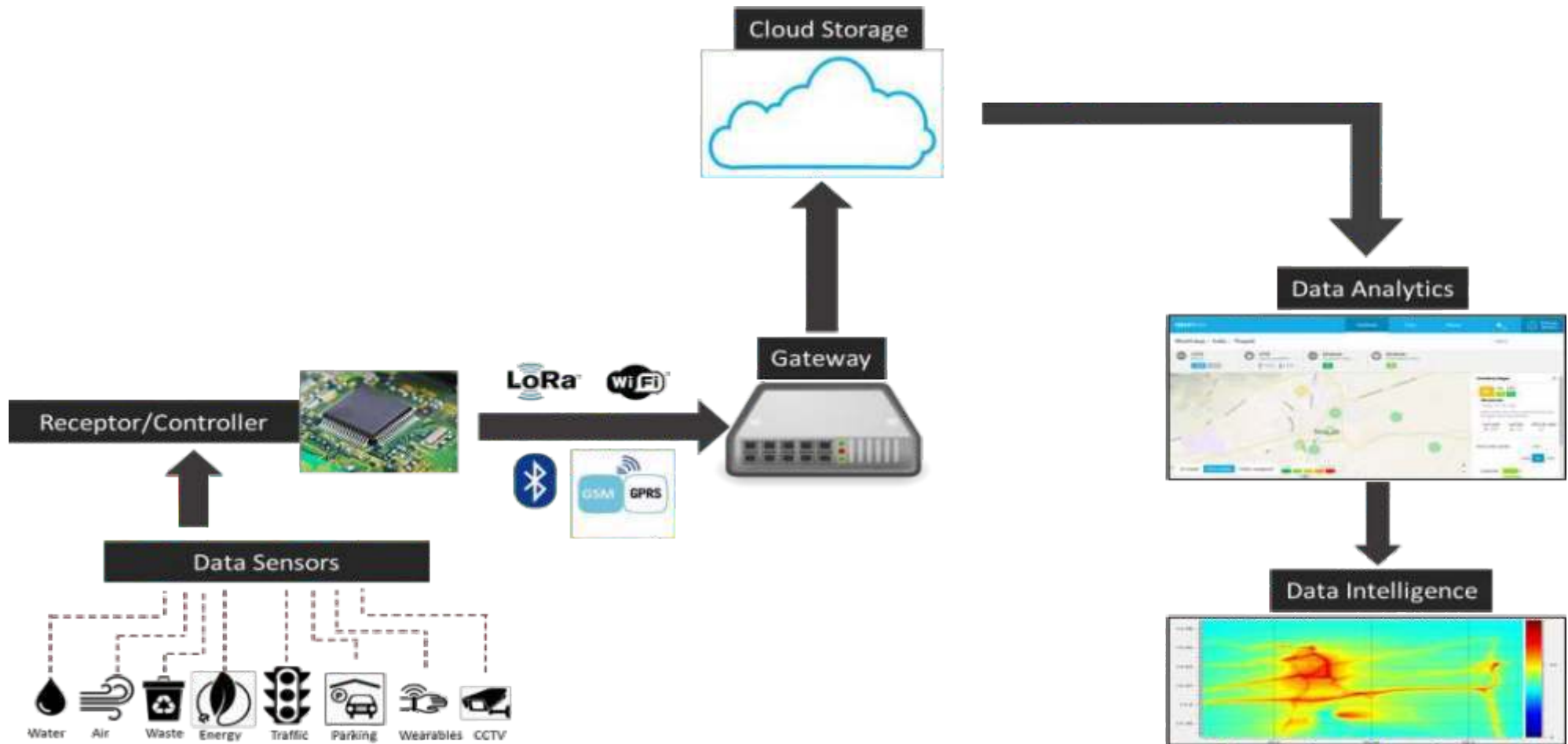


INTEGRATED APPROACH





DATA ACQUISITION & ASSESSMENT PROCESS





Environmental Monitoring & Modelling



AIR QUALITY MEASUREMENT

PARAMETERS

PM 2.5

PM 10

CO

NO_x

Other Pollutants



AIR QUALITY SENSOR

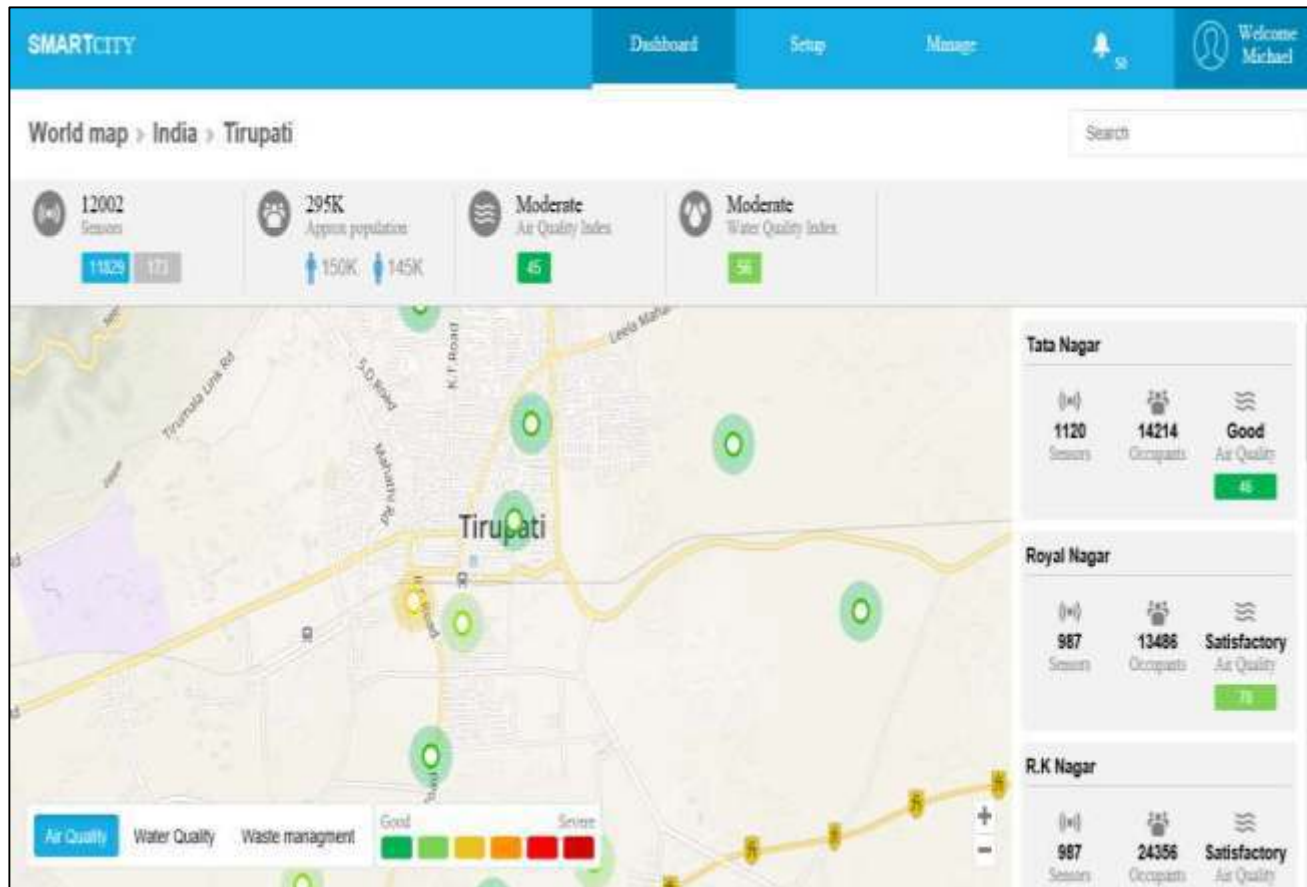
Measures PM 10 and PM 2.5 parameters

Enables wireless transmission of measurements to cloud server to ensure easy accessibility to data

Uses weather-proof design to ensure functioning from -20 to 50°C. Easy Maintenance with field replaceable parts



AIR QUALITY MONITORING



MONITORING DASHBOARD

Provides real-time air quality information

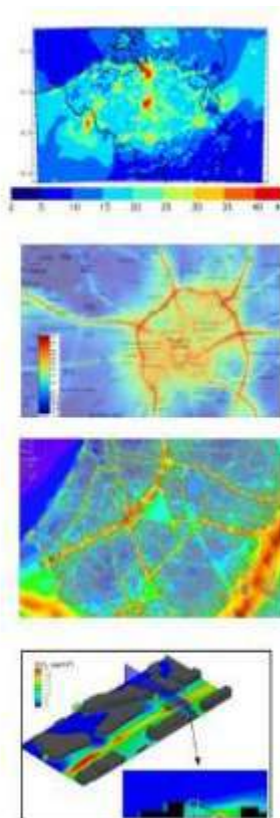
Displays true & background pollution concentrations at discreet locations

Provides alerts for severe deterioration of air quality

Enables remote access to air quality information from any location



AIR QUALITY MODELLING & FORECASTING



PREDICTIVE INTELLIGENCE

Scaled air quality modelling between Regional, Urban, Local and Micro areas

Forecasts air quality levels

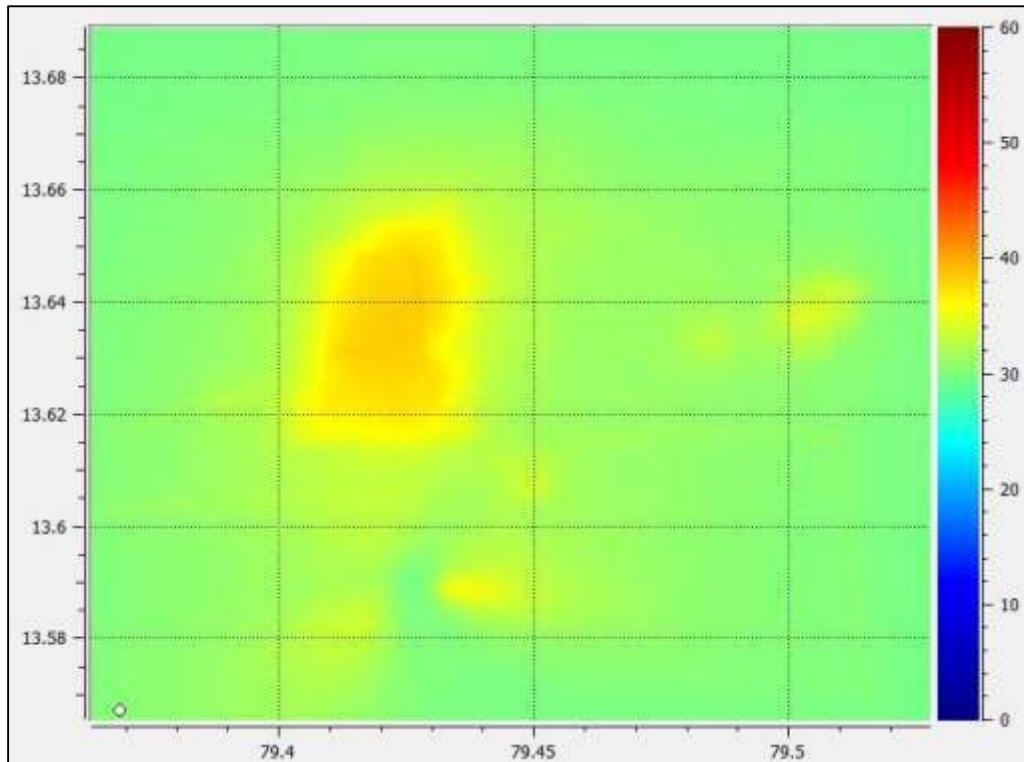
Displays spatial & periodic pollution variability

Pollution Source Appropriation

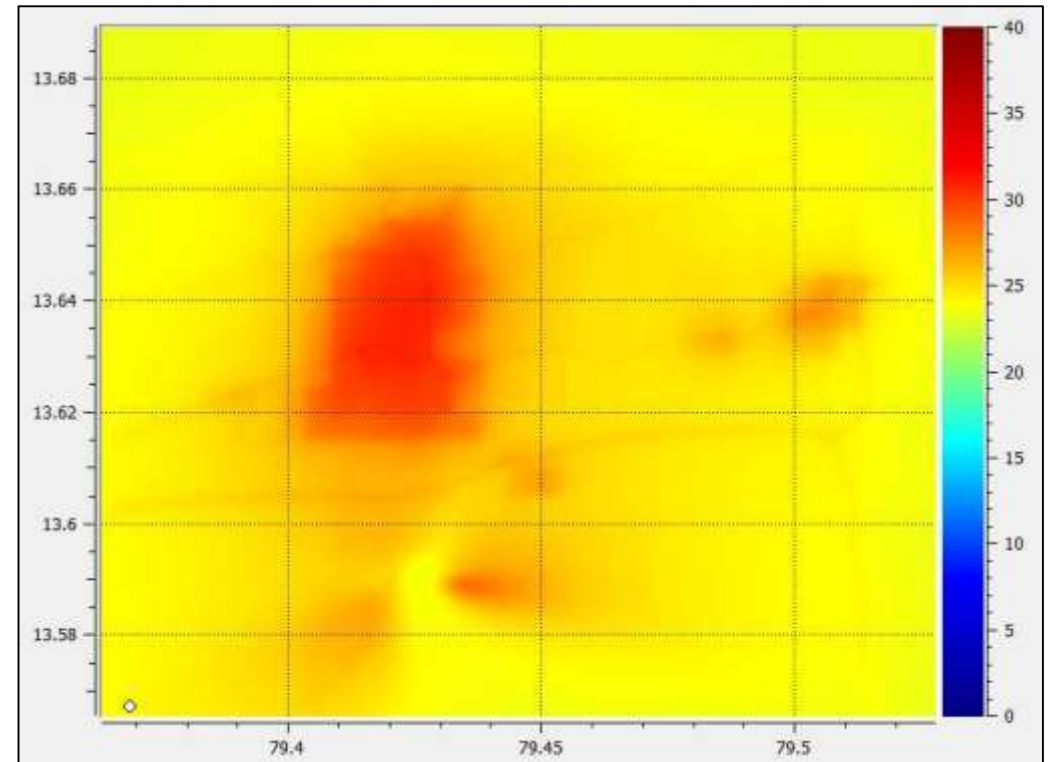


AIR QUALITY MODELLING & FORECASTING

Pollutant – PM10



Pollutant - PM2.5



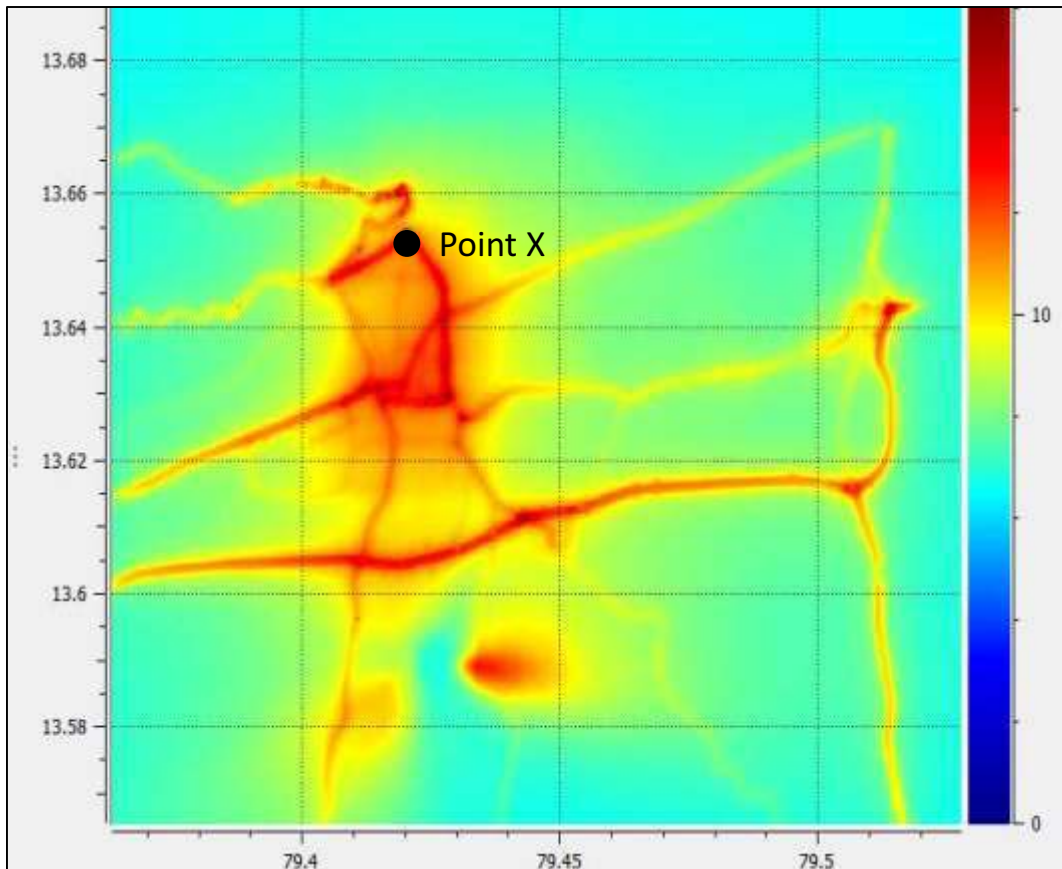
The maps plots the pollutant concentration at each coordinate.

The X and Y axis gives the Geographical Coordinates of the map; The scale gives the amount of pollutant present

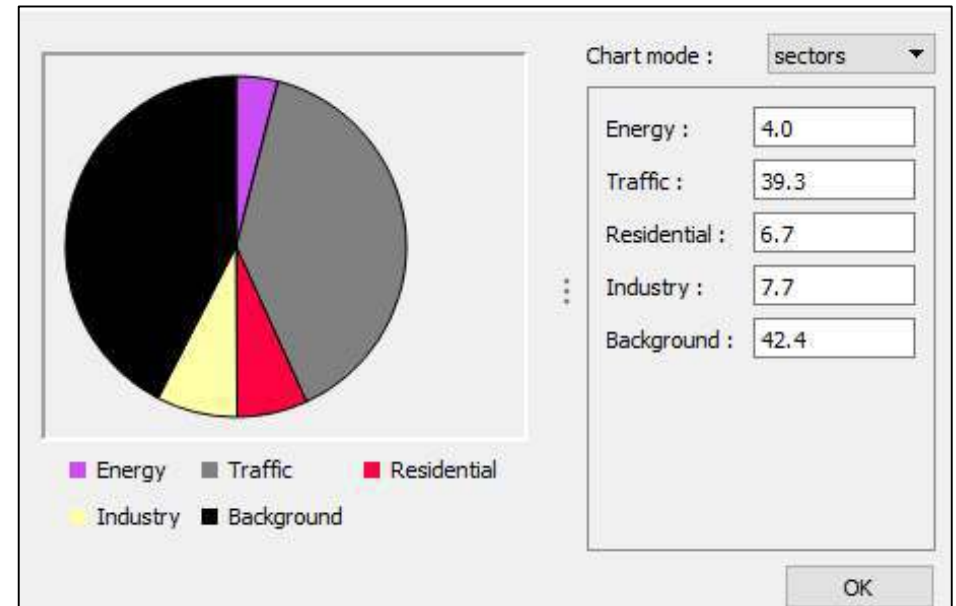


SOURCE APPROPRIATION OF POLLUTANTS

Pollutant – PM 2.5 & PM 10



Pollutant Contributor



As an Example:

Traffic contributes 39.3% of PM 2.5 & PM 10 at point X

The map on the left plots the pollutant (PM 2.5 & PM 10) concentration at each coordinate. The chart above shows the contributors of the pollutant PM 2.5 & PM 10 at point X on the map

NOISE AND TRAFFIC ASSESSMENT

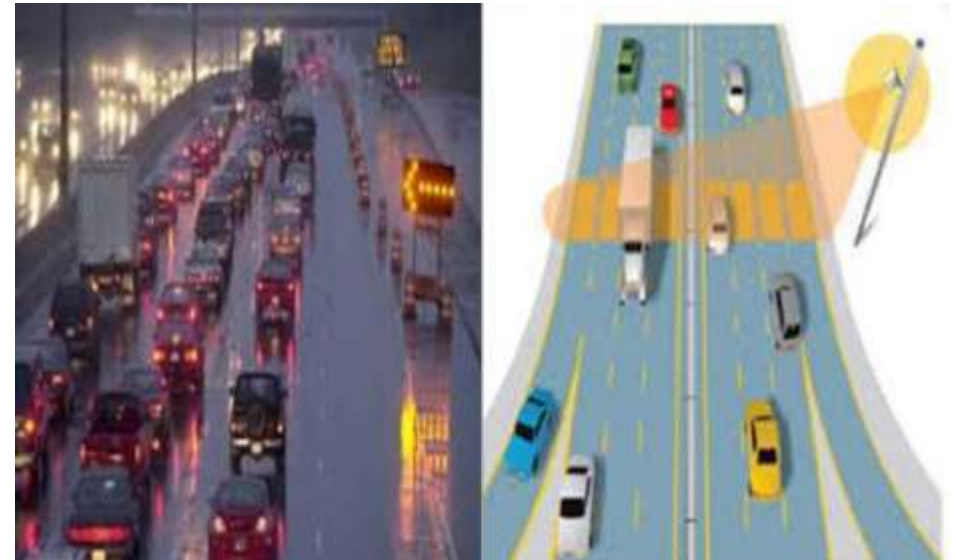
NOISE MONITORING & MODELLING

1. Measurements to monitor urban noise
2. Monitor impacts of noise on urban community & natural surroundings
3. Enable policy to design and plan noiseless neighborhoods, hospital areas



TRAFFIC MONITORING & MODELLING

1. Measurements to monitor traffic in urban and intercity areas
2. Enable real time updates on the road and in Control Rooms for diverting traffic





Water Monitoring & Modelling



WATER QUALITY MEASUREMENT

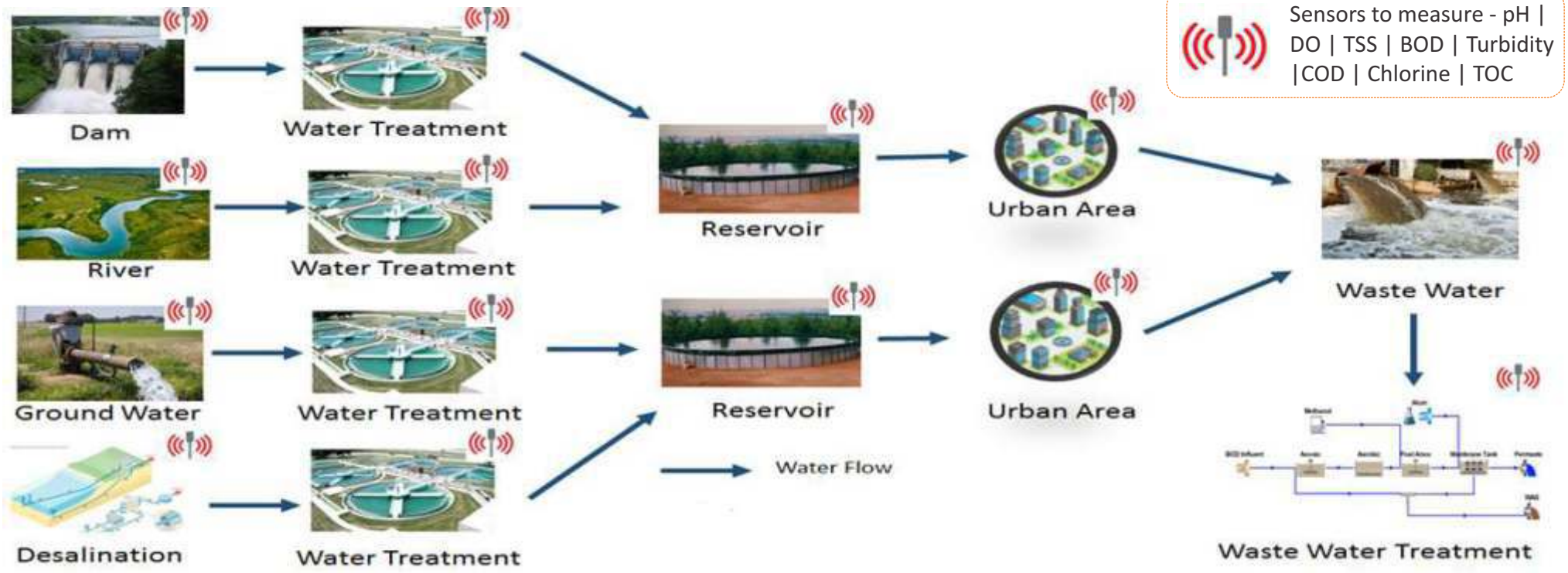
PARAMETERS	
Dissolved Oxygen (DO)	pH levels
Turbidity	Chlorine
Total Suspended Solids (TSS)	Total Organic Carbon (TOC)
Biochemical Oxygen Demand (BOD)	Chemical Oxygen Demand (COD)

SENSOR
Enables wireless transmission through Radio/GSM
Accommodates up to 20 different sensors
Easy Maintenance with field replaceable parts. 3 year warranty on monitoring station



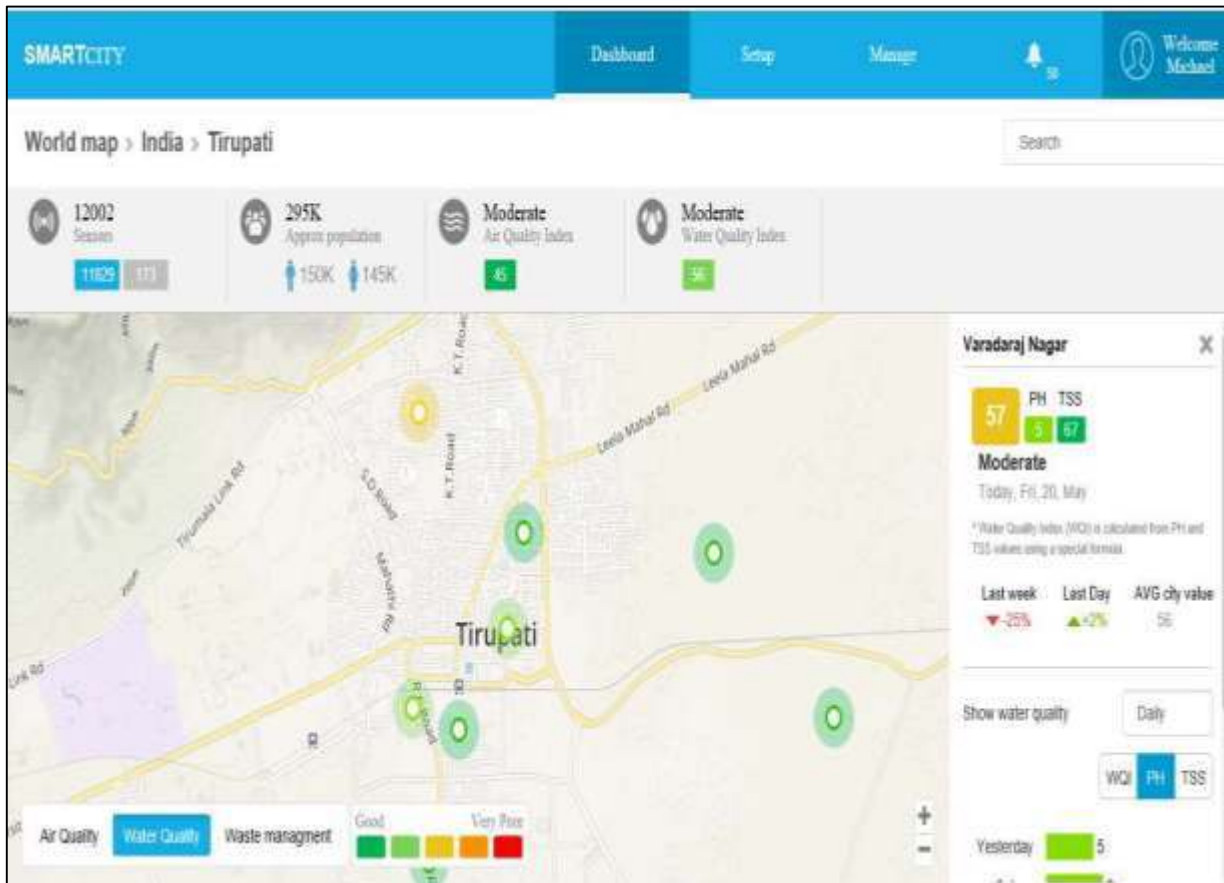


APPLICATIONS FOR WATER QUALITY





WATER QUALITY MONITORING



MONITORING DASHBOARD

Displays real-time water quality information

Displays location specific water quality

Provides alerts for severe deterioration of water quality

Enables remote access to water quality information from any location



WATER QUALITY ANALYSIS & FORECASTING

PREDICTIVE INTELLIGENCE

Provides a visualization of water quality measurements over time

Enables water quality mapping and modelling

Delivers early warning alerts

Source appropriation for emissions and water pollution

Provides forecasts of water quality



WATER EMISSIONS ANALYSIS

TECHNOLOGY FEATURES

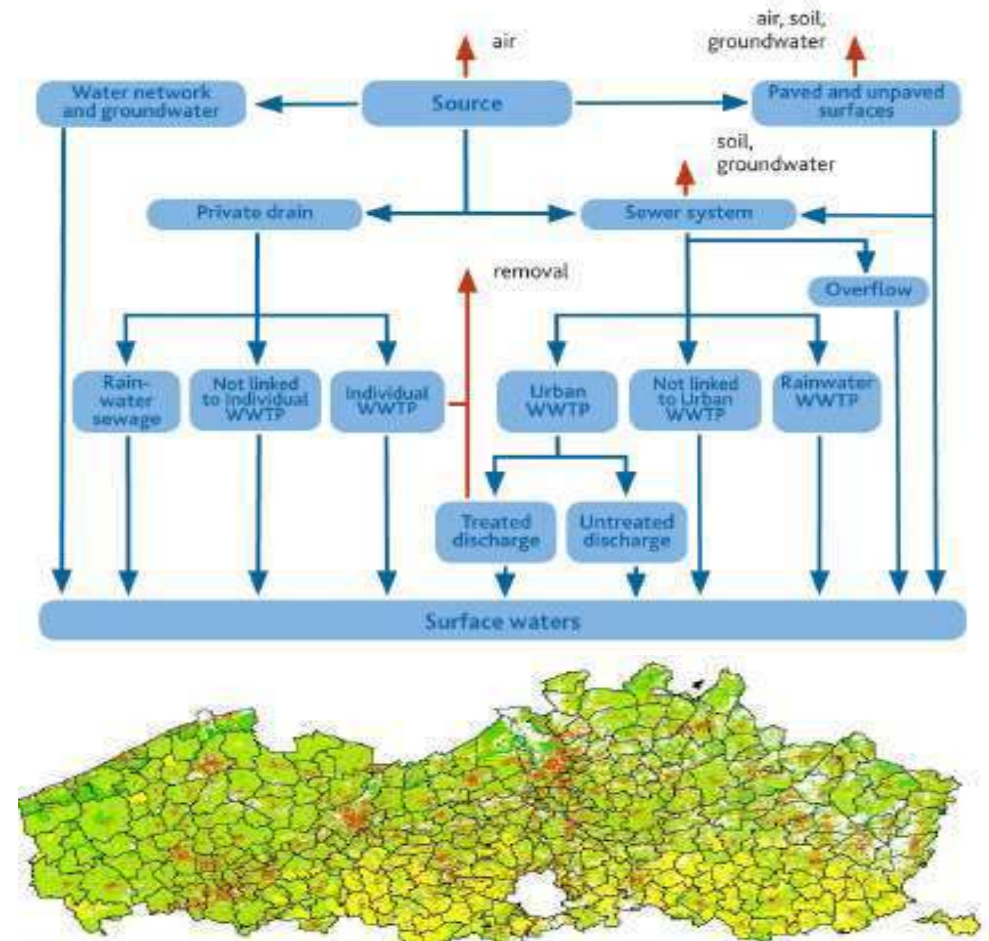
Provides assessment of pollution at source



Maps pollutant emission pathways



Identifies contribution of pollution to water bodies

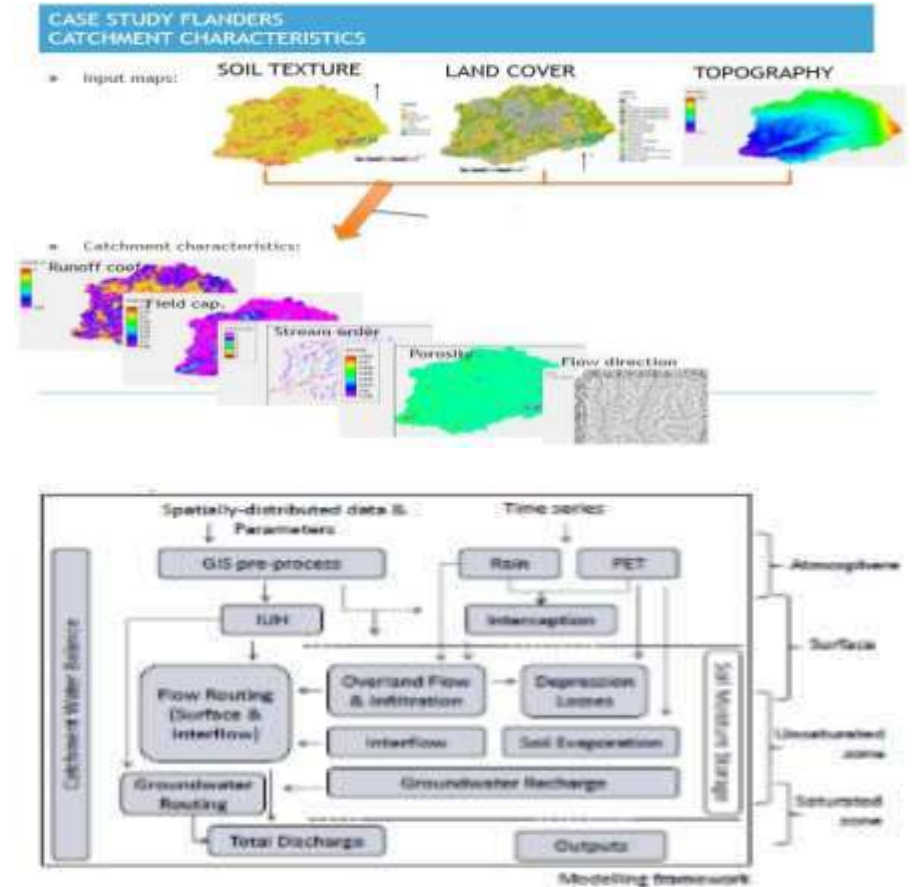
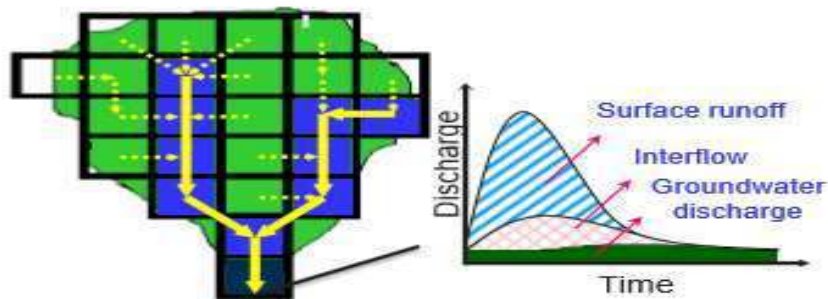


FLOOD PREDICTION & ASSESSMENT

APPLICATION

- Consists of several components including data collection, data interpretation and response
- Uses Soil Texture, Land Cover and Topographical data to generate simulations
- Incorporates all hydrological processes within the urban area into the model
- Tracks downstream routing of runoff in urban areas

Downstream routing





Infrastructure Management



INFRASTRUCTURE MANAGEMENT SYSTEMS

TECHNOLOGY FEATURES

- Monitors and models the **condition of buildings, bridges, roads and large infrastructure assets**
- Provides recommendations for preventive and corrective **maintenance of infrastructural assets** to the user
- Provides a predictive **estimation of costs for asset maintenance**





Customized Solutions Model



Sewage, Waste Management & Waste to Energy



COLLECTION, SEGREGATION AND DISPOSAL OF MSW

MSW COLLECTION & SEGREGATION AT SOURCE

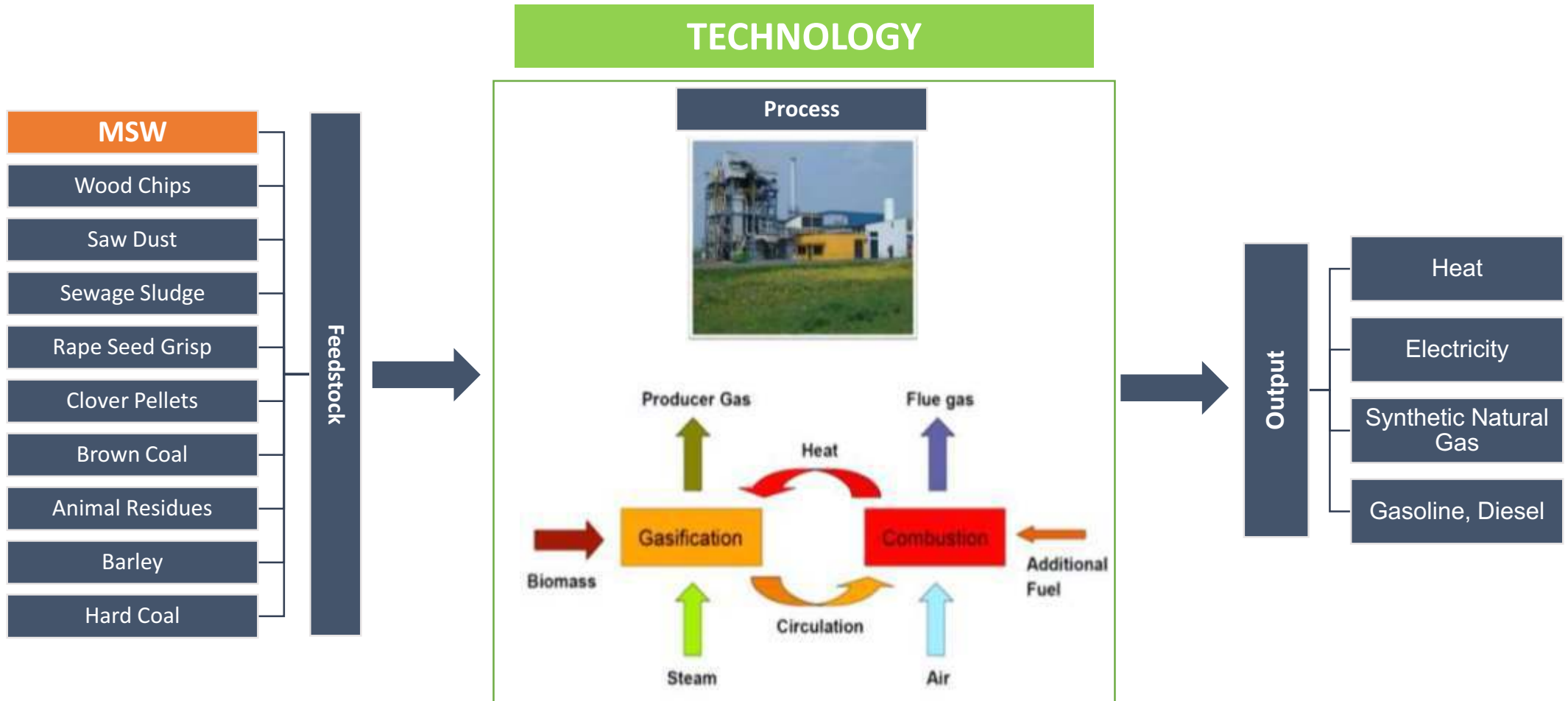
- Provides source separated primary collection services
- Utilizes a synchronized system for transport of waste
- Operates Decentralized Composting and Materials Recovery Facilities (MRF)
- Facilitates safe disposal of inert and hazardous materials



**Emission Free Stream
Separated Primary
Transportation**



WASTE TO ENERGY TECHNOLOGY

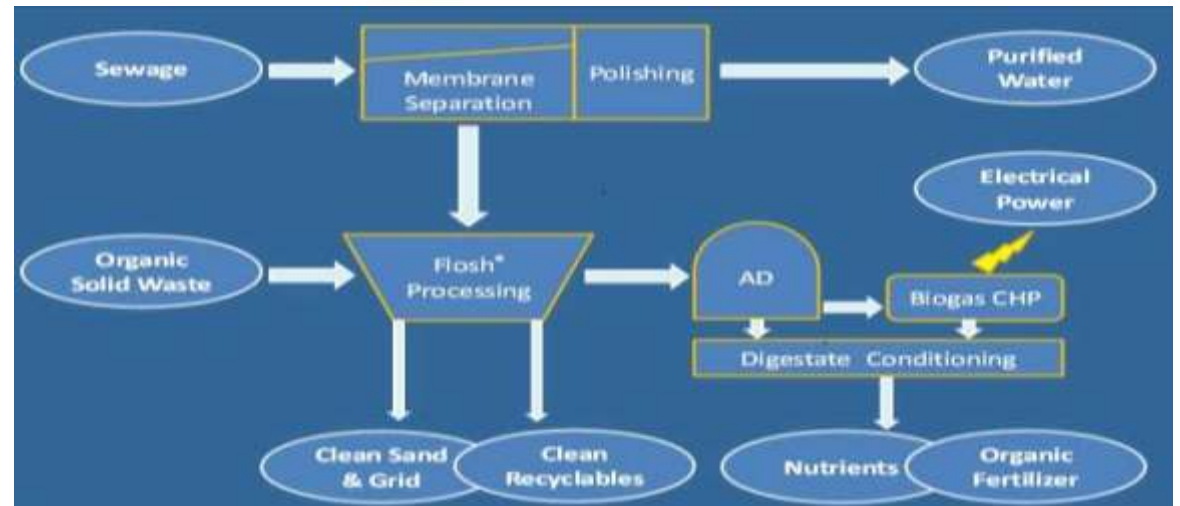
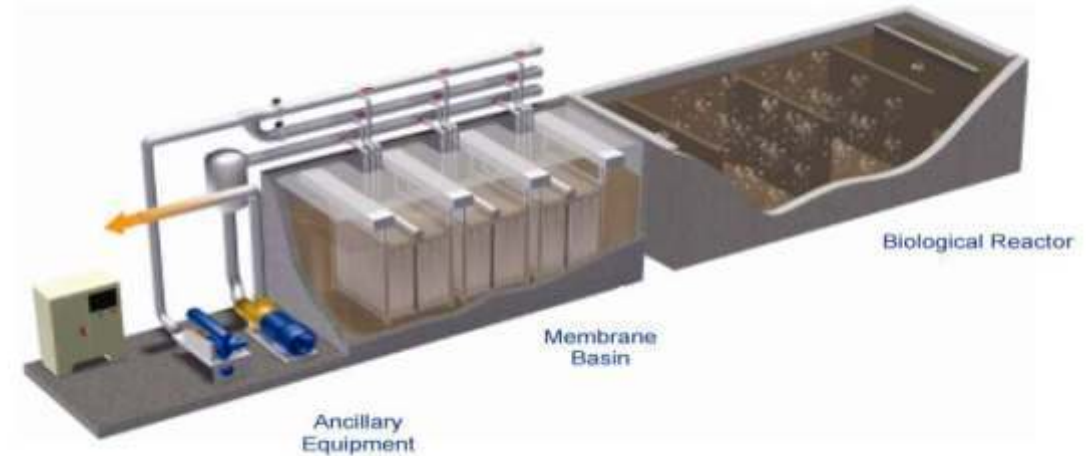




WASTE WATER TREATMENT & ENERGY RECOVERY

TECHNOLOGY FEATURES

- **Membrane Bio-Reactor (MBR)** – a Waste Water Treatment Technology that treats sewage to produce high quality industrial grade water
- **Anaerobic Digestion by Combining Organic & Sewage (ANDICOS)** will augment the sewage treatment process by deriving energy from the sludge discharged by the STP. This will be done through anaerobic digestion of sludge





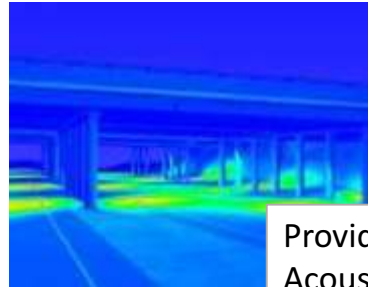
Land Use & Urban Planning



BUILDING INFORMATION MANAGEMENT



Simulates the movement of the people & detection of bottlenecks



Provides Heat & Acoustic Maps for urban spaces and buildings



Provides visualization of the structures in detail with overall and individual views of a structure



Provides subjective visualizations:

- Pedestrian movement
- Drivers & Cyclists
- Maintenance staff



Visualizes different positions on a human scale:

- Platforms
- Pavements & Cycling ways

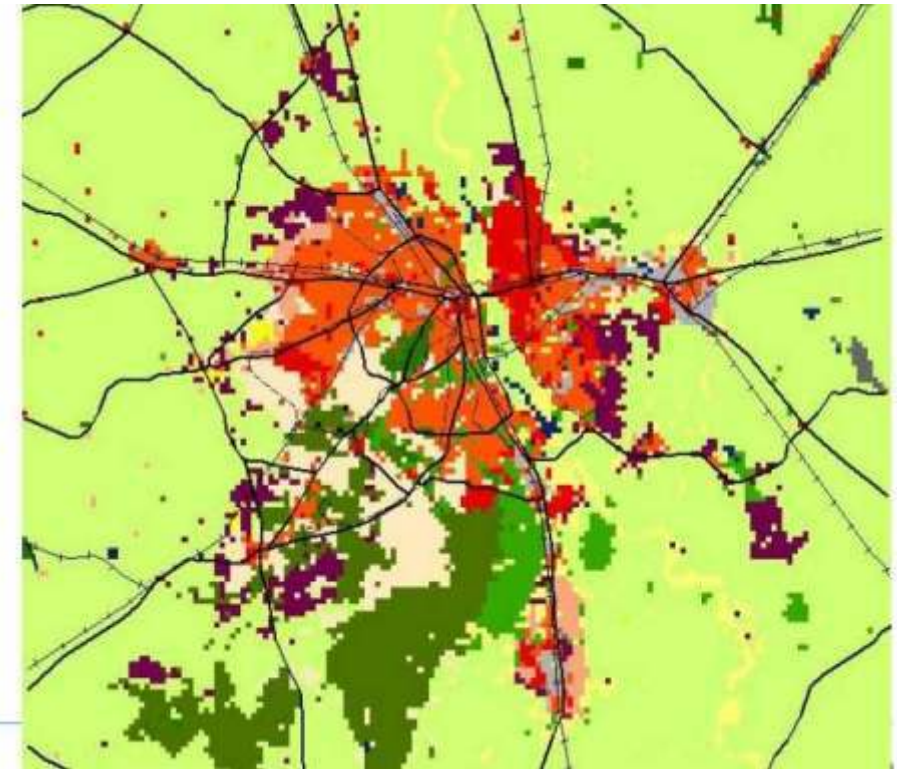


Construction planning allows visual updating & monitoring of the deadlines during the construction

URBAN PLANNING

TECHNOLOGY FEATURES

- Allows the user to create a database detailing the features of urban and semi-urban areas
- Assists in planning infrastructure development
- Models the use of land over a given time period
- Models the growth patterns for population and habitation

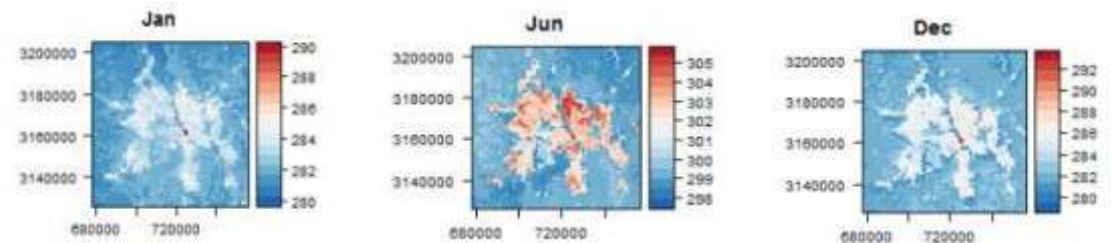
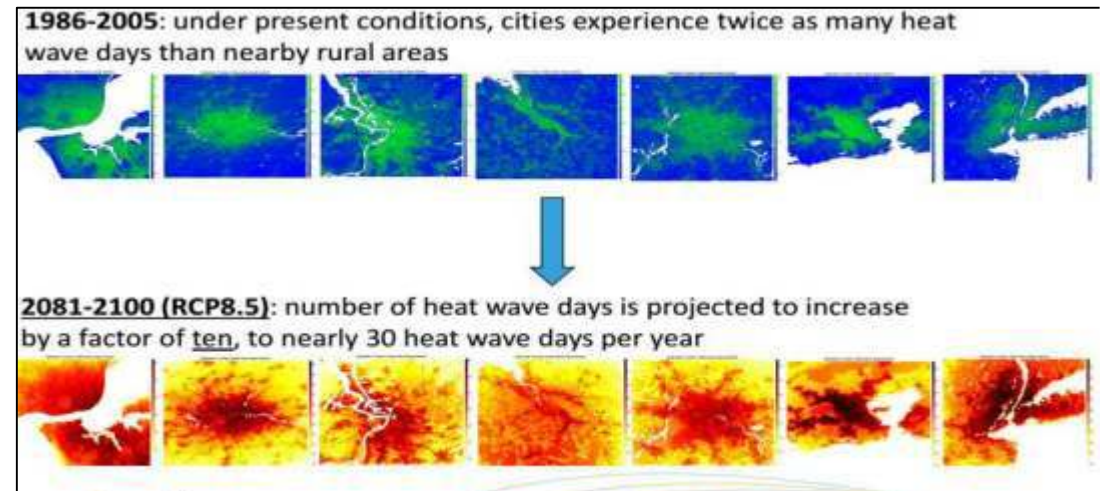


Forecast of Land Use in New Delhi in 2015, as conducted in 2000

URBAN HEAT MODELLING

TECHNOLOGY FEATURES

- Supports decision making for **urban planning legislation** and urban heat abatement strategies
- Analyzes sources of urban heat:
 - Trapping of radiation between buildings
 - Anthropogenic heat
 - Lack of Vegetation
- Assesses impact on:
 - Human Health
 - Transportation Systems
 - Energy Consumption
- Provides evaluation and recommendation of corrective policies and strategies
- Provides real time evaluation and warning systems



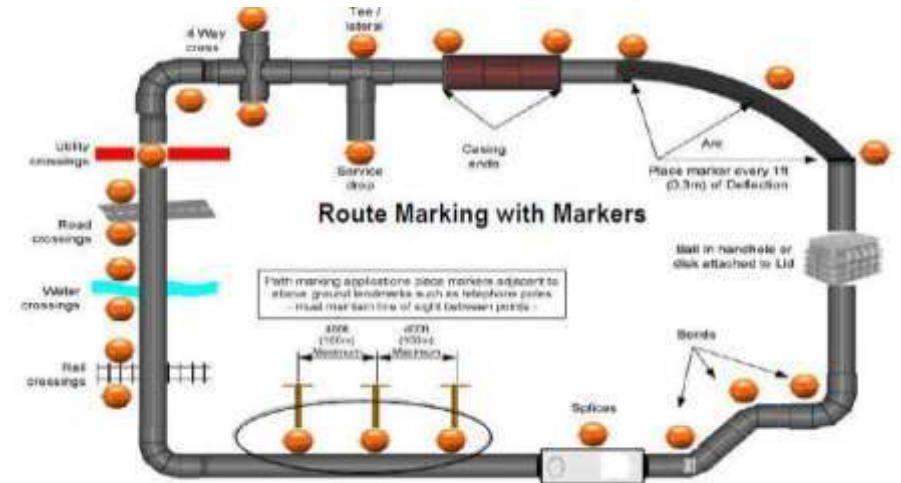
Urban Heat in New Delhi over the course of a year



SMART INFRASTRUCTURE

SMART BUILDINGS & URBAN INFRASTRUCTURE

- Smart Solutions to Enhance Energy Efficiency of Buildings:
 - Window Films to increase natural indoor lighting
 - Energy less skylight redistribution
 - Energy Management Software
 - Smart Lighting
 - Biometric RFID based Access Control
- Water Pipeline Maintenance:
 - Coating to improve the life of existing pipes
 - Coating can also fix broken or cracked pipe sections
 - Reduction in costs & collateral damage to infrastructure
- Tracking Buried Assets:
 - Can map drainage pathways
 - Identify blockages
 - Monitor water levels





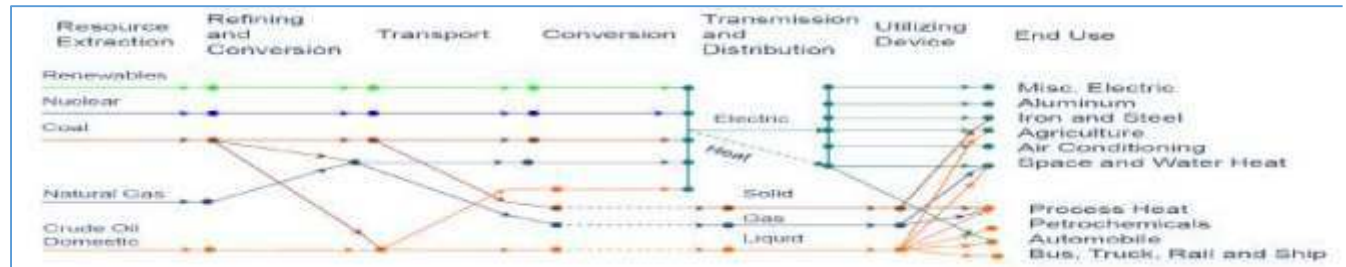
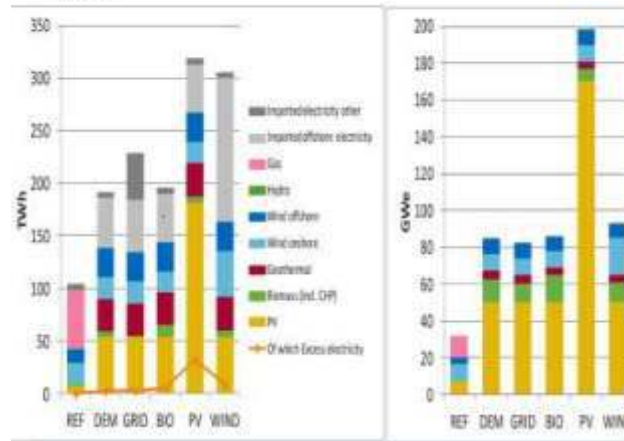
Energy

ENERGY ASSESSMENT & LONG TERM MODELLING

TECHNOLOGY FEATURES

- Analyses Energy Technology Systems to provide advice to decision makers regarding energy planning policies
- Builds forecast with multiple objectives:
 - Cost
 - Energy Consumption
 - Resource Consumption
 - Emissions, etc.
- Provides an evaluation of **Life Cycle Analysis** for Industry

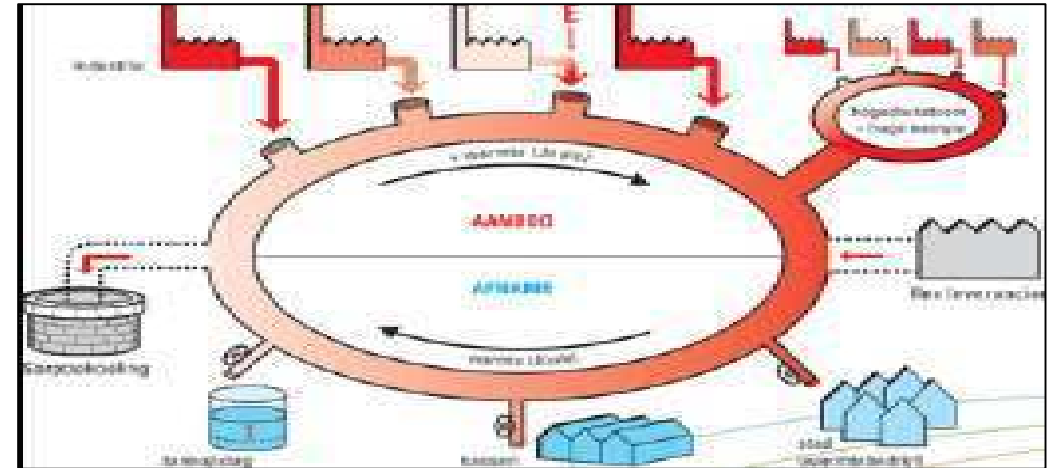
Electricity production and capacities in 2050 in the reference scenario (REF) and the 5 100% RE scenario's



OPTIMISATION OF THERMAL ENERGY SYSTEMS

WASTE HEAT VALORIZATION & DISTRICT HEATING/COOLING

- **Techno-Economic analysis of Thermal Energy Systems** for industrial systems (Private & Public)
- Identify areas of thermal energy wastage
- Assess excess energy valorization opportunities and recommend solutions
- **District Heating & Cooling:**
 - Assessment of Heating/Cooling demand
 - Assists in planning for Infrastructural assessment & support
 - Assists in economic modelling



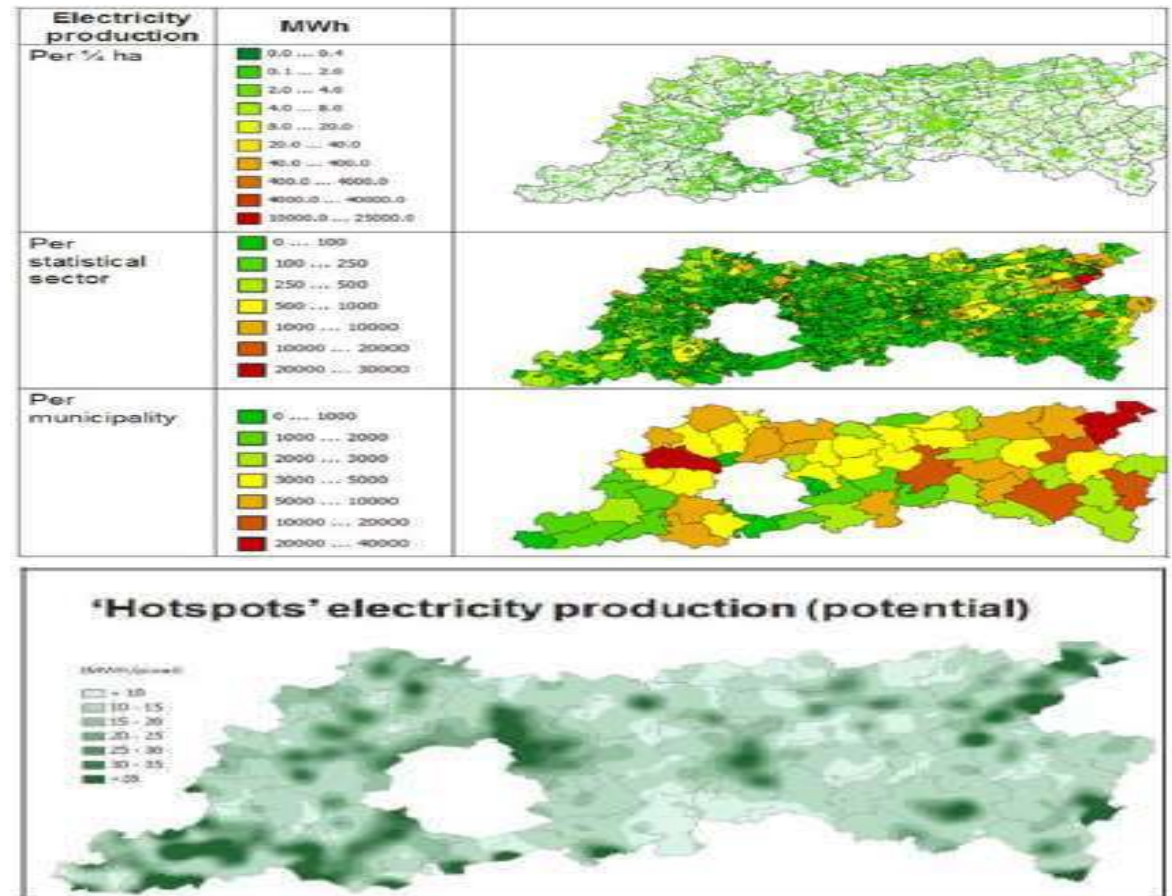
ENERGY MAPPING

TECHNOLOGY FEATURES

The production of renewable energy requires space. Energy production, consumption and distribution becomes a shared responsibility requiring authorities to plan and implement environmental legislation

Dynamic Energy Atlas (**DEA**) can allow the user to determine areas tailored for specific energy investments based on a variety of factors:

- **Energy Demand**
- **Installed & Potential Energy Production**
- **Type of Energy (Wind, Coal, Solar, etc.)**
- **Sectors using the Energy (Commercial, Industry type, Transportation etc.)**





ENERGY STORAGE SYSTEM

TECHNOLOGY FEATURES

The Ultra-capacitor systems allow the buffering and storage of significant amounts of energy for high-power applications such as:

- **Hybrid buses and cars**
- **Railway transport**
- **Aerospace and Marine applications**





Smart Mobility & ICT



PARKING SOLUTIONS

Smart Parking

- Smart Parking for On Street & Off Street locations
- Solutions for identification, reservation and payment for parking services
- Complete engagement from contractors to attendants to end user



Parking Management

- Parking Management Solutions for residential, commercial and industrial clients
- Solution to track and manage parking
- Boom Barrier Integration





CCTV MONITORING

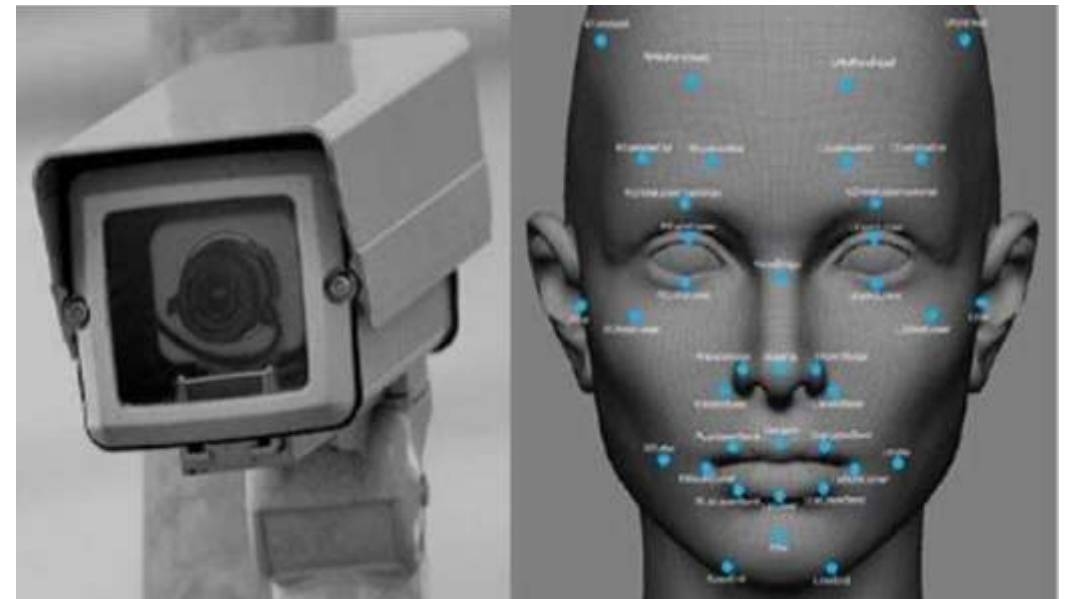
Automated Number Plate Recognition (ANPR)

Automated Number Plate Recognition can identify standardized vehicle registration numbers of moving vehicles and link the information to a database



Facial Recognition

Improving the security standards by the implementation of a wireless CCTV system with advanced facial recognition capabilities





REAL TIME PUBLIC NOTIFICATIONS

Variable Message Signage (VMS)

Contextual & Variable Message Signage that can offer the following information on a real time basis to citizens travelling on roadways and public areas:

- Congestion Update
- Crime Update
- Event Update
- Weather Update
- Direction Signage

LOCATION	STATUS
ANIL KUMBLE CIRCLE	SEVERE
E B PURAM	MEDIUM
HESBAL FLYOVER	LOW

ESTIMATED JOURNEY TIME	TIME
BIAL	01:20 hrs
MALLESHWARAM	00:22 hrs
RACE COURSE	01:13 hrs

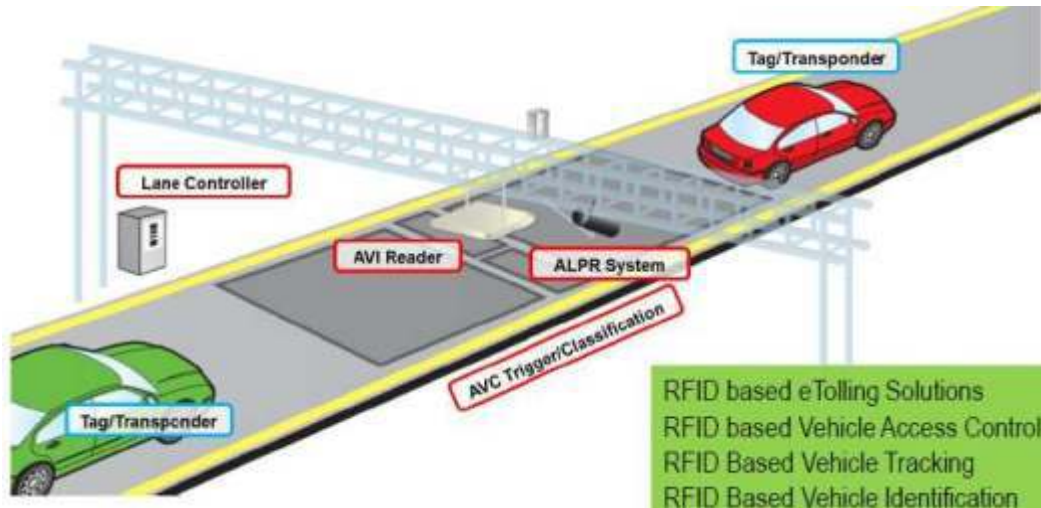




ELECTRONIC TOLLING STATIONS

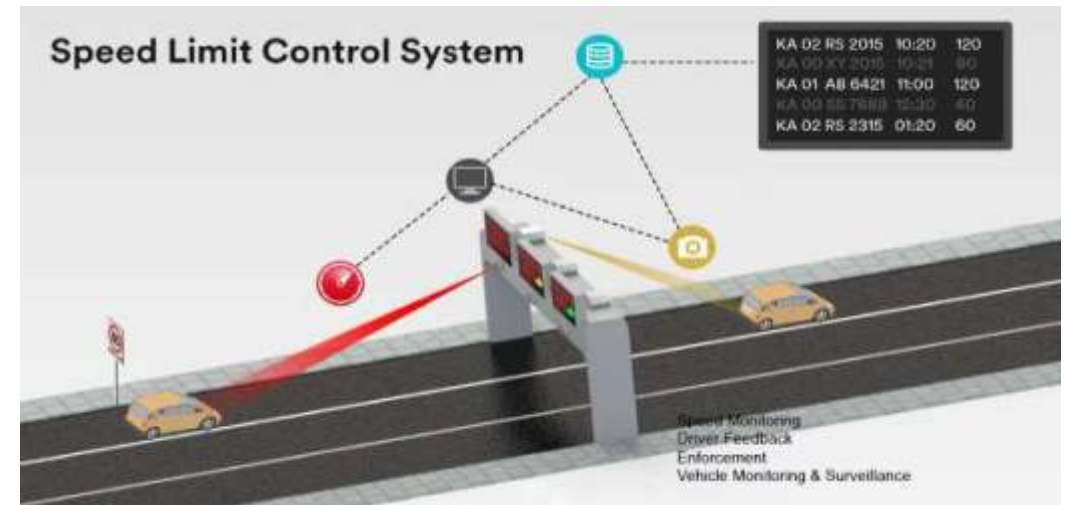
Electronic Tolling Stations

- E-Tolling stations to ensure autonomous tolling
- System involves:
 - Automatic Vehicle Classification
 - Lane Detection
 - Automatic Vehicle Tracking



Speed Limit Control System

- The Speed Limit Control System can:
 - Monitors the speed of vehicles
 - Reports vehicles to the Police Database





INFORMATION & COMMUNICATIONS TECHNOLOGY

Public Transport Management

- Automated Fare Collection and Revenue Management System
- Video Surveillance Systems
- Automatic Vehicle Location Systems-GPS based
- Point of sales for Smart Cards



Command Control Center

Establishment of a modern Command and Control Center, including advanced software for analysis and management of information

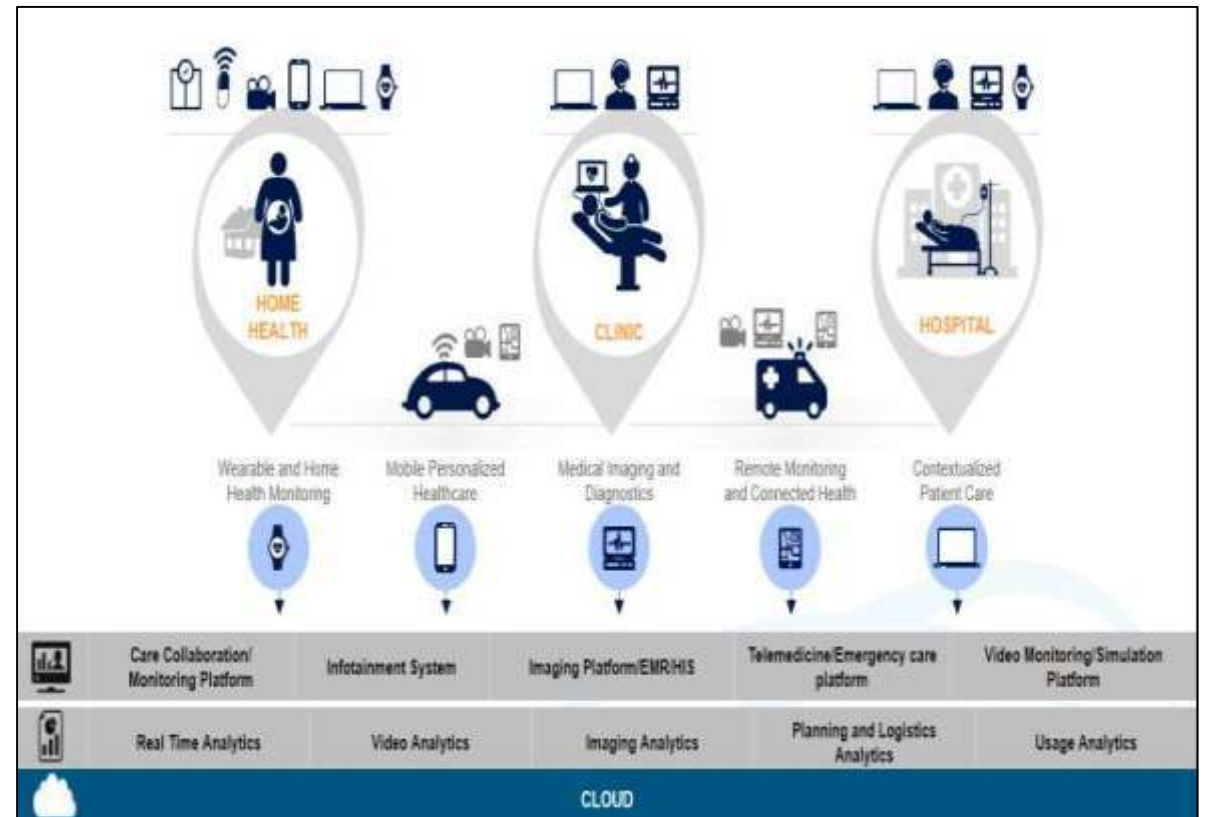




CONNECTED HEALTHCARE

SMART HEALTH SOLUTIONS

- Remote Health monitoring devices and mobile applications
- Wearables that track and manage vital health statistics and the activity of the user
- Personalized healthcare and remote diagnostics





Our Partners



PARTNER ECOSYSTEM



VITO is a leading Flemish independent technology organisation in the areas of clean tech and sustainable development that addresses major societal challenges



HARMAN, a leader in IoT services in India, offers end-to-end managed IoT solutions



GE Power and Water in India offers comprehensive set of chemical and equipment solutions and services available



GP Energy specializes in gasification Technologies of MSW and Bio Waste. It is a key partner of VTA in developing solutions for waste disposal



Quess, India's leading integrated business services provider in the areas of Staffing and O&M contracts for Industrial projects



PARTNER ECOSYSTEM



3M specializes in a variety of domains ranging from infrastructure design, Smart Buildings, ICT, Smart mobility to healthcare, mining, and Smart city solutions



Xylem is a water expert that functions across multiple industries, offering various solutions. Xylem can provide analytical solutions, pumping solutions and treatment solutions



RAUROS is a consulting firm connected with the development of new technologies within the field of Civil engineering. In particular, RAUROS develops its activity in this field applying survey techniques of roads, highways and airport pavements



IDP is a Spanish company focused on provided complete planning solutions for infrastructure development, building construction and urban planning using highly advanced Building Information Management tools



TSI Inc. identifies and solves measurement problems. An industry leader in the design and production of precision measurement instruments relating to aerosol science, air flow, chemical analysis, indoor air quality, fluid dynamics, biohazard detection, and even scrap metal sorting and plastics identification



PARTNER ECOSYSTEM



Jethro specializes in water solutions, infrastructure design & water systems, smart grid management, solar energy technologies for rooftops, industries and grid management



Get My Parking provides real time parking information and navigates you directly to available parking spaces near you or your destination



BMSIT&M is one of the most sought after institutes for high quality engineering education. It is a well established private engineering college recognized by the Government of India



VELTECH University is a renowned institute for higher learning based in southern India. The university inked about 200 MoUs with government Institutes/Universities, Industries/MNCs, International Universities, Public Sector Units and R&D labs



The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a UN designated, international organisation which conducts agricultural research for rural development



TECHNOLOGY
ACCELERATORS

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