



Making IoT reachable & affordable

SMART CITY ECOSYSTEM

Connecting the Unconnected

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hIOTron as an IOT Company

Providing the keys to unlock your city's potential with hIOTron's Smart City Ecosystem. The Internet of Things isn't all about technology, it's about connecting lives and creating transparency, when things are connected, opportunities are endless.

Hiotron Pvt. Ltd (hIOTron) is an Indian technology corporation focused on development and implementation of Internet of Things based Products and Solutions. It develops, manufactures, supports, licenses IoT Platforms and sells IoT based consumer, industrial electronics & software services.

It provides an ecosystem for IoT solutions right from training, design, hardware manufacturing, integration, platform, analytics and support to any business or individual to make their IoT journey simple and smother.

Most business use established IoT platform to ensure the success of their IoT deployment instead of "reinvent the wheels" themselves. However, with plethora of IoT platforms in the market, many caterings to specific industries, it become challenging to evaluate the options and find the right solution.

Hence, accelerate your IoT journey with fully managed solutions that take the hassle out of creating, managing, and operating your industry-specific IoT solutions, or tailor a customized IoT application that enables fine-grain control. Either way, hIOTron IoT platform offers powerful and secure IoT solutions that will meet your needs today and into the future.



Connect



Monitor

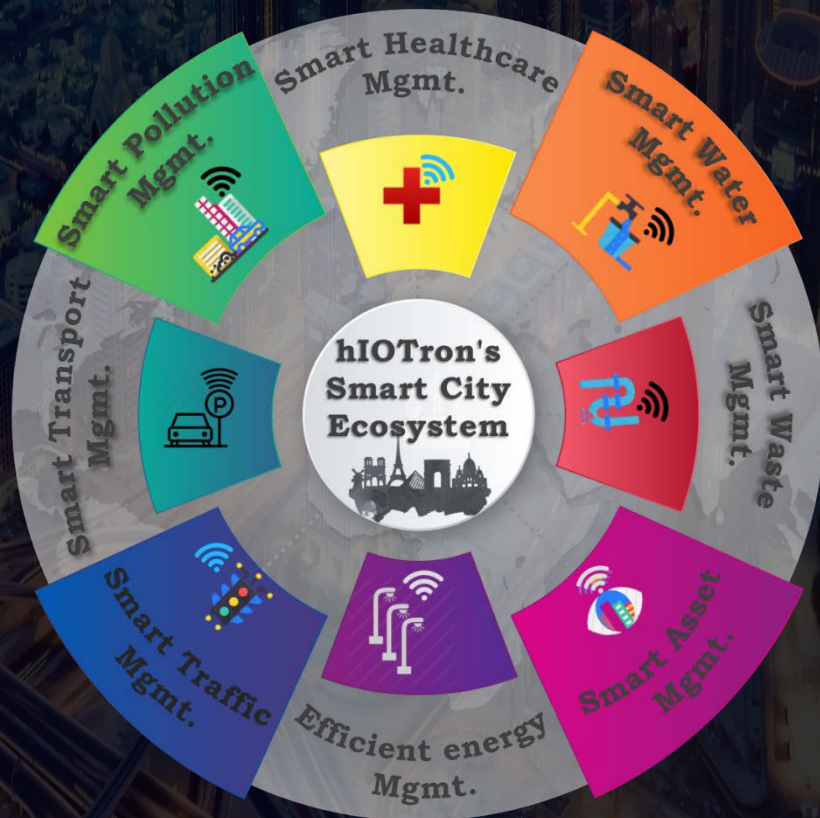


Control

hIOTron's Smart City Ecosystem

Imagine a city where interconnected technology works seamlessly to improve public safety, transportation, energy efficiency, economic development and operating expenses. With its ability to track everything from cleanliness to traffic, the digital infrastructure of smart cities can create safer, healthier, more informed communities while generating data of tremendous value to the public and private sectors.

Most smart city solutions rely on a combination of core technologies such as computing, storage, databases, data warehouses and advanced technologies, including analytics on big data, real-time streaming data, artificial intelligence, machine learning and the Internet of Things (IoT). hIOTron Smart City Ecosystem can lower the barriers to entry by allowing cities to optimize their use of these technologies to improve existing or create new services that positively affect their residents' quality of life.



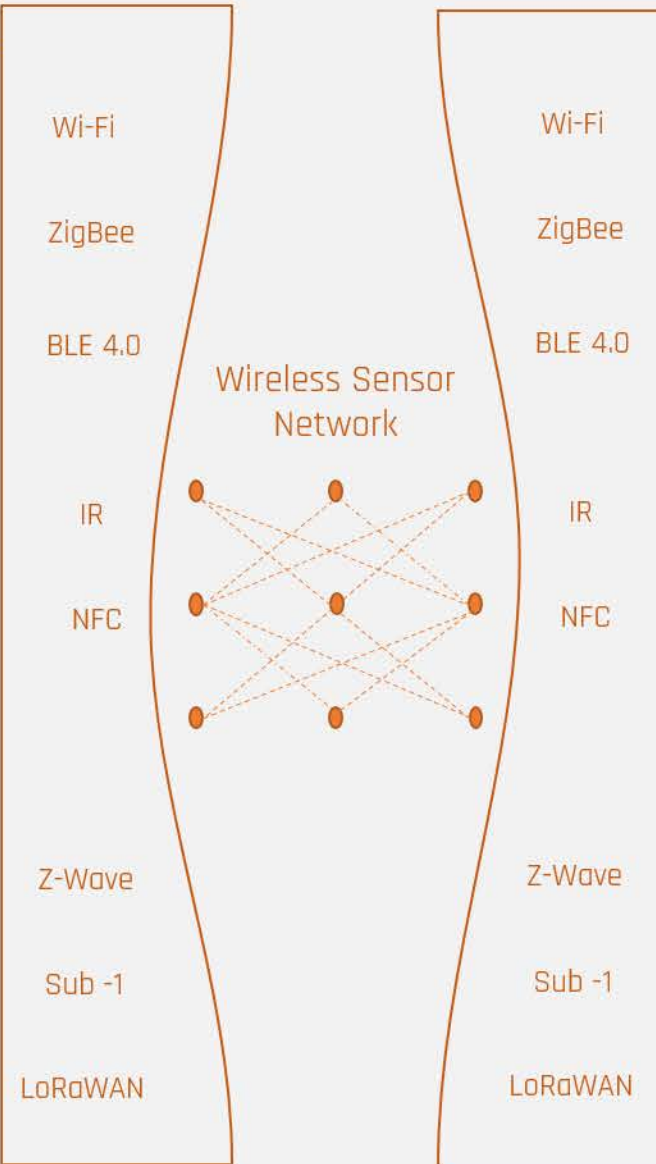
hIOTron Smart City Ecosystem provides IoT based solution for areas such as Transport, Pollution, Healthcare, Water, Waste, Traffic, Energy and Asset Management. These are the critical areas of improvements to make a city smart and provide healthy life to its residents. We will look how each components can help a city to make it smart.

hIOTron's Smart City Architecture

Wireless Sensors/Node

Common Sensor Type

- ✓ Temperature Sensor
- ✓ Proximity Sensor
- ✓ Accelerometer
- ✓ IR Sensor
- ✓ Pressure Sensor
- ✓ Light Sensor
- ✓ Ultrasonic Sensor
- ✓ Smoke, Gas Sensor
- ✓ Alcohol Sensor
- ✓ Touch Sensor
- ✓ Color Sensor
- ✓ Humidity Sensor
- |
- |
- |
- |
- ✓ Tilt Sensor
- ✓ Flow and Level Sensor

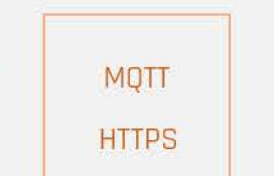


Gateway

Message Receiver

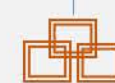


Message Sender



hIOTron® IoT Platform

Platform Services



Authentication
Hierarchical Authorizations
Application Logic
Inbound API
Auto Scaling

Device Registry
Device Connectivity Mgmt.
Device Sub-Node Mgmt.
Deployment
Data Storage

Edge Analytics
Monitoring
Profiling
Logging

Visualization
Business Intelligence
Analytics
Reporting
Scheduler

FOTA [Firmware over the Air]



Gateway Sub-Node.

Batch Services Stream Services

Continuous Data Processing



Batch Services Stream Services Continuous Analytics Processing Conti. Edge Analytics Processing



Smart City Applications

Custom Applications



Water & Waste Mgmt.



Asset & Logistics Mgmt.



Healthcare Mgmt.



Energy & Environment Mgmt.



Pollution Mgmt.



Traffic & Transportation Mgmt.

Others ...

Pre-built Products & Solutions



Home Automation



Smart Lock



Office Automation

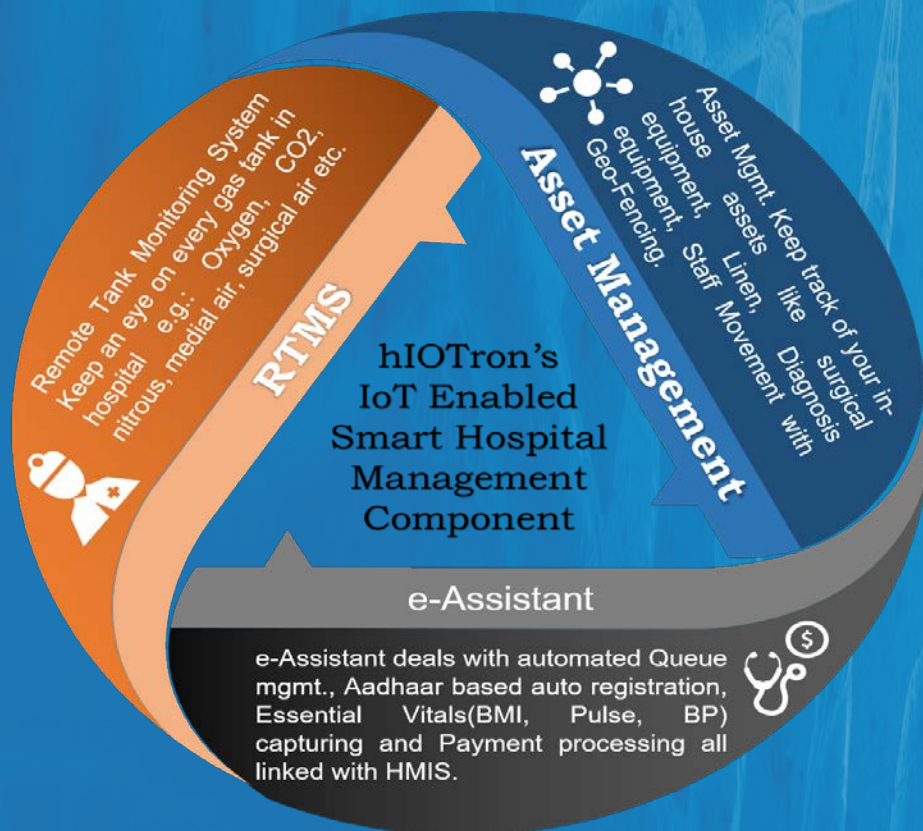


Hotel Automation

hIOTron's Solution for Healthcare

A truly Smart City will advance the concept of Smart Living, a variety of approaches that leverage technology to enhance the daily living of residents and leverage efficient tools for hospital to provide better healthcare services. hIOTron provides various IoT enabled solution w.r.t hospitals under different modules such as Asset Mgmt., Remote Tank Monitoring (RTMS) and Hospital e-assistance.

Asset management is need of hour for various hospitals across city, with IoT enabled system we can keep track of in-house assets of the hospitals right from linen to surgical equipment, diagnostic equipment and staff & patient movement within premises by creating a geo-fencing to avoid any unauthorised access. Apart from this, movement of certain equipment are restricted through public area, with geo-fencing in place admin can get real time location and alert in case of such scenario.



We can keep track of every gas tank in the hospital with hiotron's Remote tank monitoring solution (RTMS) such as oxygen, Co₂, medical air, surgical air etc. which can be clubbed with inventory and logistic module to automate the order and delivery of the same with giving timely instruction to authorized vendors.

With e-assistance in place, we can automated the registration process, vitals examination process, queue management and payment process via IoT enabled systems, wherein doctors can focus on better patient examination and hospitals administration can provide better patient experience. This will create transparency also and helps patient to keep track of their diagnosis history.

hIOTron's Solution for Pollution Mgmt.

Pollutions are major headache to metros, it can be air pollution, water pollution or noise pollution.

Noise Pollutions:

Air pollutions can monitored such as level of CO, CO₂, PPMI level and presence of other gases as well. We can also measure the visibility, by combining all these factors we can have real time pollution level across the city. We can figure out whether these pollution are due to traffic congestion or due some industrial presence with-in the vicinity. It also give us alert or location in case some sudden rise of pollution level due to some uncertain activity. We can install IoT enabled sensors based air purifiers to monitor and control the air pollution level.

Noise Pollutions:

We can monitor the noise pollution also. With having real time data for noise pollution we can analyses to reduce or decongest the heavy noise pollution areas or can alert the citizens with real time data. Based on sensors we can monitor the real time noise pollution.

Water Pollutions:

Water pollutions are biggest risk for cities as it spread so many water borne diseases, Each and every society & community can measure water pollution level before they store to their respective arraignments. Municipal corporations can measure water pollution level before they supply the drinking water, having real time data from all communities and from supplier as well we can figure out areas where water may getting contaminated during supply. It may be due to leakage or other factors.

Sensors can be used to measure the quality of surface water in real time mode. Traditionally, water quality monitoring required manual actions for sampling and analyzing, causing a lag between the emergence of pollution and the detection of it. Real time water quality monitoring, with a network of sensors covering surface water, contribute to sustainability of city resources.

hIOTron's Solution for Water Mgmt.

A drop of water is worth more than a sack of gold to a thirsty man.

Automating water for agriculture and municipal use

The greatest savings in water consumption can come from automating agricultural and municipal use: More than 70 percent of water consumption today is for agricultural use, and 60 percent of the remainder goes to urban landscape maintenance. In both instances, agribusiness often irrigate regardless of current conditions, risking overwatering rather than drought. Sensors with advanced algorithms can help address both problems, aggregating measurements of soil moisture, heat, humidity, and slope to analyze how much water plants need.

Leakage detection

Water loss management is becoming increasingly important due to population growth and water scarcity. Experience shows that the amount of non-revenue water (water produced but lost due to theft, metering inaccuracies, and supply chain leakages) can be up to 25%. To minimize this loss, water providers can equip the distribution network with sensors

Advanced Meter Infrastructures (AMI)

AMI - telemetered water meters that provide a continuous record of consumption. Visualizing the impact of AMI in concentric circles, at the center you would have the efficiencies that they enable in billing and account management (for example remote connect/disconnect). Moving out one ring, one would list the consumer service benefits that come from a continuous record of consumption - enabling consumers to manage their consumption (and so, reducing their environmental footprint and potentially, helping them to alleviate energy poverty. The value is amplified when smart meters are supported by the smart-phone apps.

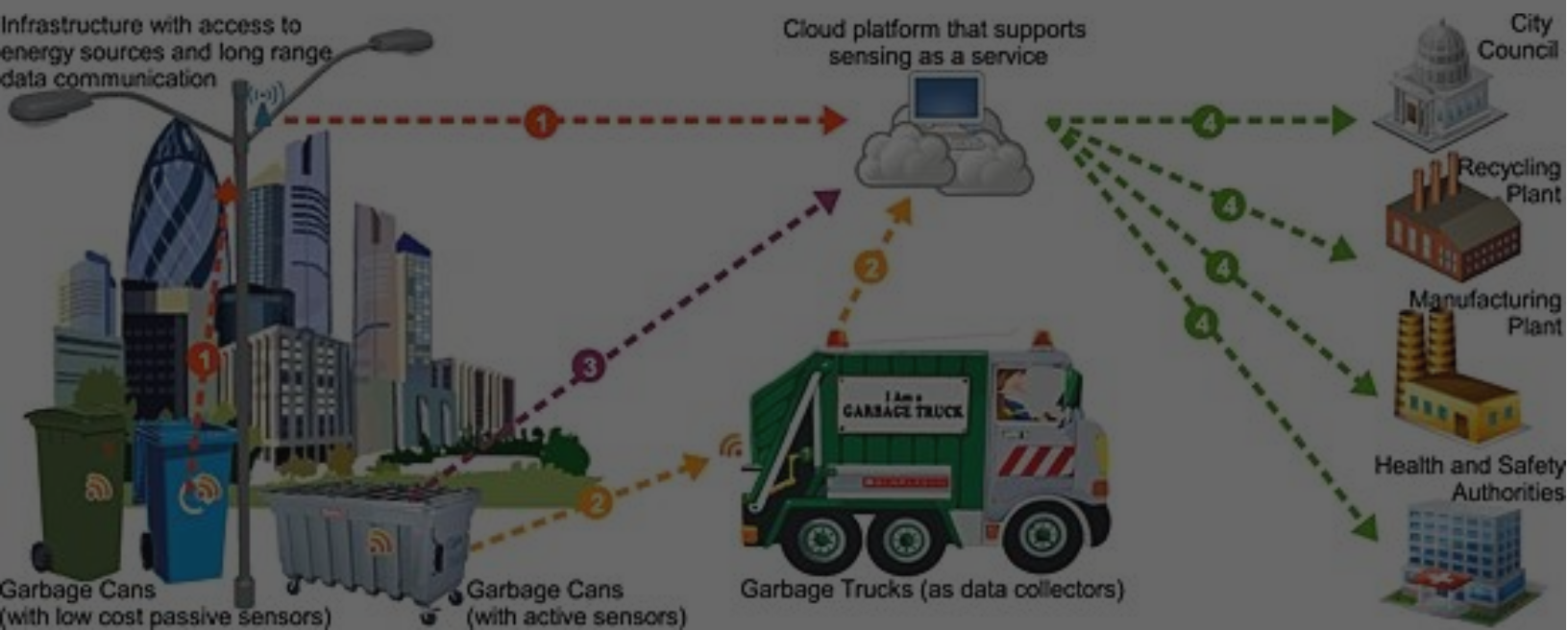
Advanced Warning for Flooding

Cities that are at risk for flooding due to excessive rain or storm can use predictive analytics on weather forecast data combined with geographical data to forecast probable flooding zones and times. This can be used to reroute traffic and preemptively alert the inhabitants of the zones that are at risk.

hIOTron's Solution for Waste Mgmt.

Just in time waste collection

Most cities use some type of waste container to collect the waste produced by households. Traditionally, these garbage trucks operated on fixed routes, e.g. visiting each container once a week. As a consequence, some containers are emptied when they are only half full and some are emptied days after they became full. The 'smart solution' is to equip the waste containers with sensors that detect the volume of the waste in the container. This data is used to optimize the number of garbage trucks and their routes, skipping containers that are not yet full and making an early stop at containers that are close to reaching their limit. This results in a cheaper process (fewer stops required) and elimination of full waste containers (which could lead to people dumping their waste on the street next to the container).



Zero waste

Through better design and life-cycle thinking, consumption and production become closed loops, producing no outputs as waste throughout their life cycle. As such, the concept of waste disappears, as all by-products retain an intrinsic value to feed into other systems. Even food spoilage and waste could be reduced to zero and turned into biofuels, compost or animal feed. IoT enabled system provides you capability of monitoring end to end life cycle of waste materials.

hIOTron's Solution for Energy Mgmt.

Smart metering

Smart meters record electricity consumption in intervals of one hour or less and communicate this data to the utility company. This allows utilities to introduce dynamic pricing based on the season and the time of day and encourages citizens of smart cities to reduce their energy consumption, especially when demand is at peak level. Smart meters also provide data that helps utilities better monitor the health of the electric grid, restore service faster during outages, communicate information to customers such as high usage alerts, and integrate distributed energy resources.

Electric Vehicle Charging

The amount of electric vehicles used in cities is growing and expected to grow faster in the future. All these vehicles contain a battery, a high amount of such batteries result in a potentially significant energy storage capacity. This provides an opportunity to store energy during production peaks and to provide additional energy during consumption peaks. Such potentially significant storage capacity enables smart cities to use energy more efficiently.

Smart grids

Transmission and distribution networks will evolve to what we call smart grids. These next generation electricity grids are designed to be bi-directional nodes can produce and consume electricity. Furthermore, smart grids do not only transport energy, but also data enabling end-user energy management.

Smart City Lighting Solution: The SMARTER way to Illumination.

Lighting plays very crucial role in smart city solution. Energy is very important for lighting, it may be from thermal or from renewal resources. hIOTron's smart lighting solution provides you total control over the function of the city lights. Capabilities are as below:



hIOTron's Smart Light Solution Capabilities

Optimized lighting operation by scheduled switching On/Off based on the demand, off-peak dimming capability, proactive monitoring and alerting for proper maintenance support, intelligent energy metering to track energy usage, periodic reports on usage status, run hours and lighting performances.

Switching capabilities



Single schedules



Multiples schedules



weather based



Clock based



Light intensity based



Remote switching & Monitoring



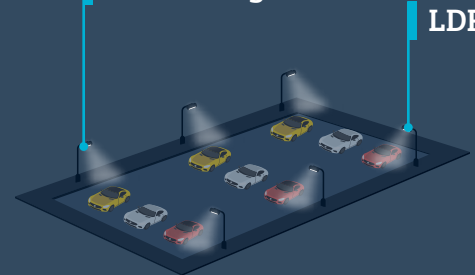
Dimming



Energy metering



Luminosity



LDR

Features



Remote Switching & monitoring

Remotely switch On/Off lights based on schedule timing, dimming, LDR & clock schedules

Real-time monitors the Power factor, load, fluctuations and metering usage for thousands of lights



Predictive maintenance

Proactive maintenance of assets using insights from Advanced Analytics module



Notifiers & escalations

24*7*365 monitoring with timely alerts in case of abnormalities or critical issues via automated SMS or mail.



Mobile app

Enable operators to stay updated with lighting info on the go

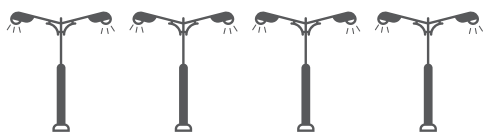


Value Proposition we deliver

- Demand-driven lighting
- Reduced electricity expenses and OPEX
- Improved safety
- Reduced CO2 emissions
- Vendor-neutrality
- Enhance customer engagement

Existing Scenario

Improper switching due to non-optimized scheduling



Increased power consumption resulting in higher energy cost



Increased manpower cost due to manual intervention

- Manual timer setting
- Manual inspection & repair



Higher maintenance & repair cost due to Reactive monitoring.



Large amount of CO2 emission pollutes the environment.

After hIOTron Smart lighting Implementation

Proper switching by optimized scheduling

Upto 35%

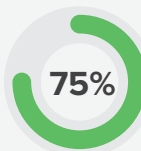
(Energy saving with existing HPS, HID, CFL & other lamps)

Upto 65%

(Energy saving with transition to LED lamps)

- Optimized schedules
- Periodic dimming
- Precise metering

Our solution takes total control



Manpower cost saved

- Remote scheduling
- Energy metering & reporting
- Notification on faults

20%



Maintenance

10%



Repairs



Cost Saved

Maintenance & repair cost reduction due to Proactive monitoring.



More than 50% reduction in CO2 emission

\$\$\$ Carbon credits for efficient energy usage

ROI in 18 months



Efficiency can be increased by 30%



Life time of luminary can be increased by 15%



Better Visibility

Solution for Traffic & Transport Mgmt.

Smart parking

Finding a free parking space in a large city is often difficult. hIOTron's Smart parking solutions can be used to optimize the use of parking spaces. Each parking space is equipped with a sensor that detects whether a car is parked on it or not. The data is used to provide drivers with real time information on the nearest free parking spaces and their price (alternatives). Smart parking eliminates the need for driving around looking for a free parking space, which reduces traffic. Furthermore, if there is no free parking space at all, drivers can decide to change their plans and look for other option.

Smart traffic control

Computers have been used for years to monitor road conditions, but advances in sensors and the internet of things are now offering a major leap in monitoring technology. Real-time information optimizes traffic flows. Traffic data collected through sensors coupled with commuter GPS and Bluetooth allow for instantaneous reporting of traffic conditions. Fine-grained traffic flow data created by sensors in infrastructure and vehicles allow intelligent systems to optimize traffic flow by adjusting traffic lights and other signals.

These traffic control systems can also be used to guide emergency services like ambulances smoothly through traffic by finding the fastest route, keeping bridges closed and adjusting traffic lights.

Smart Ticketing System

Smart ticketing system can be a state specific solution, as all transport can be merged into a RFID single card based ticketing system. A user is linked with card by any one the identity and also he can integrate his/her bank details to make payments. Irrespective of mode we choose this card is valid in all mode of transport.



Thank You.

www.hIOTron.com

