



# TECHNICAL CONFERENCE

## Session 5

### Building Sustainable Smart Communities and Intelligent Infrastructure

#### Transforming Industrial Cities into Smart Hubs: A Case Study of MODON's Smart Industrial Cities Program

Mohamed EIDaly |  Giza Systems

## Transforming Industrial Cities into Smart Hub

### About **Giza Systems**

Digital transformation enabler and leading systems integrator (SI) in the Middle East and Africa; we design and deploy industry-specific technology solutions for asset-intensive industries. We also offer cloud enablement and space virtualization services.



**2000+**

Satisfied  
clients



**50**

Years in  
market



**25**

Countries we  
work in



**4**

Regions of  
operation

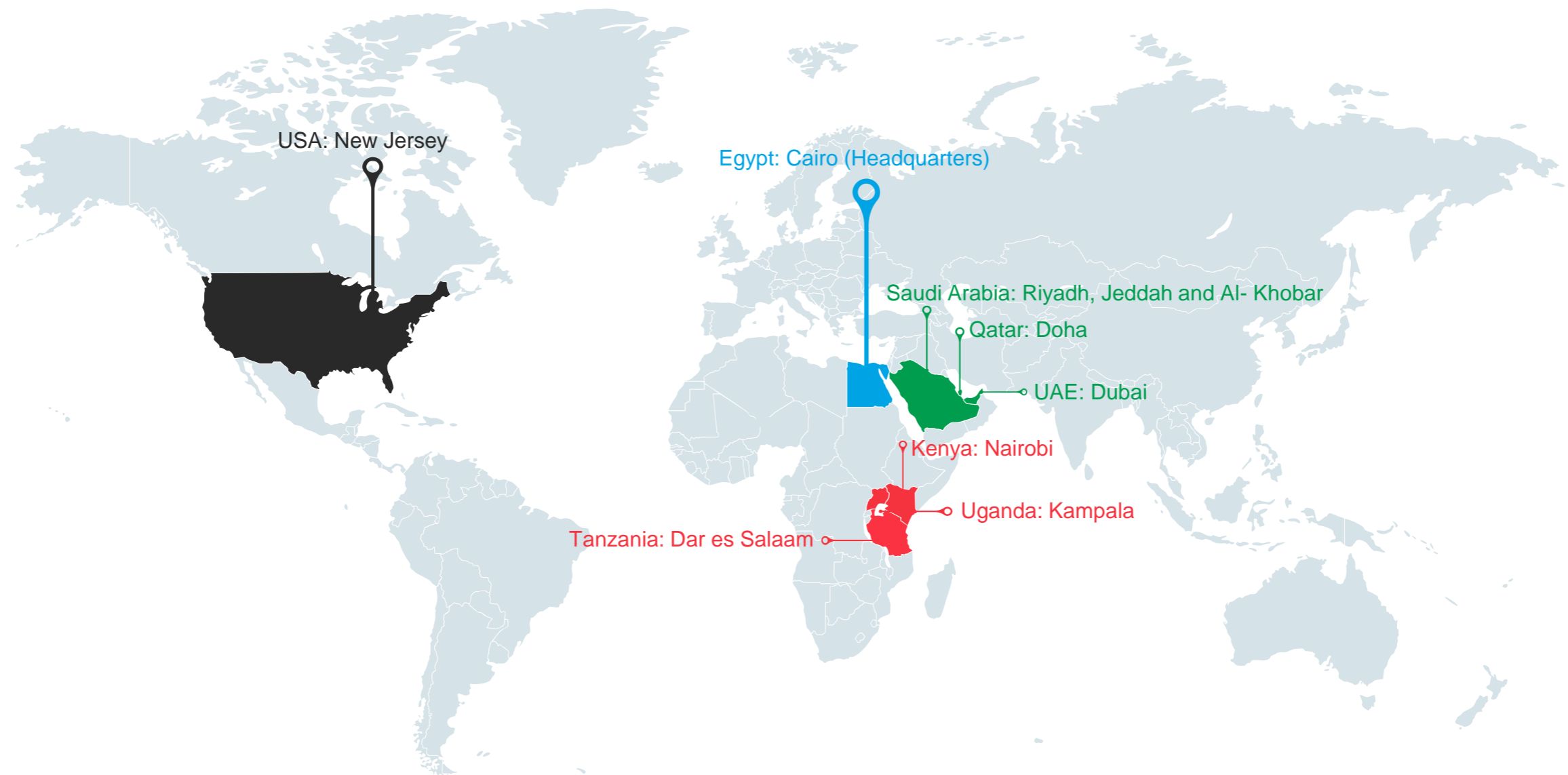


**2400+**

Employees

## Transforming Industrial Cities into Smart Hub

### Presence of **Giza Systems**



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## Transforming Industrial Cities into Smart Hub

### Some Clients of Giza Systems



وزارة البيئة والمياه والزراعة



المؤسسة العامة للري  
Saudi Irrigation Organization  
المملكة العربية السعودية



الشركة القابضة  
لمياه الشرب والصرف الصحي



Honeywell



## Transforming Industrial Cities into Smart Hub Giza Systems' Industries





## Transforming Cities Success Stories

# MODON Industrial Smart City Platform

### Technologies



### Benefits to Client

- Efficient city operations, monitoring and control
- Energy savings
- Reduced operational costs and manpower required
- Enhancing performances and operational excellence
- Better communication between MODON and factory owners and residents
- Enabling the digital transformation of industrial cities, and aligning with the Kingdom's Vision 2030

### Scope

The project scope of work covers the implementation of the smart city platform for 30+ Industrial Cities across the Kingdom covering 12 verticals:

- Smart Start Lighting System & Smart Poles
- Smart Energy Optimization System
- Smart Asset management System
- Smart Irrigation System
- Smart water metering System
- Smart Air Quality Monitoring System
- Smart Water Quality System
- Smart Fire Alarm System & Intrusion Detection System
- Intelligent Traffic System
- Smart CCTV Integration

Including all business rules, dashboard and analytics LPWAN technology to be deployed utilizing NB-IoT connectivity





## Transforming Cities Success Stories

### Egypt International City for Olympic Games Operation Center Project

#### Technologies



#### Benefits to Client

- Monitoring and control of power and water utilities across the city, and detection of any water leakage in the network
- Monitoring and control of street lighting to reduce power consumption and improve maintenance across the city
- Efficient monitoring of waste collection trucks to optimize collection routes and planning for smart waste management to reduce costs and carbon footprint

#### Scope

- Complete end-to-end Smart City solution enabling the digital transformation of the Olympic City Operation Center
- The smart solutions that will be implemented include the IoT platform, GIS platform, the SCADA system, the leak detection system, the smart waste management system and smart street lighting system
- Delivering an IoT central platform to manage, operate and maintain all the smart solutions inside the Olympic City
- Scope includes: supply, installation, configuration, development, end-to-end integration, testing, commissioning, start-up, training and after-sales support





## Transforming Cities Success Stories

### Jeddah Municipality Smart City Platform

#### Technologies



ArcGIS



#### Benefits to Client

- Efficient city operations, monitoring and control
- Optimized level of safety, security and comfort
- Reduced operational costs and manpower required
- Higher responsiveness and effective incident management
- Optimized resource management

#### Scope

##### Water Management Solutions

- Smart Tunnel Flood System
- Smart Disaster Management and Responses System

- Smart Pump Station Monitoring System
- Smart Irrigation System

##### Energy Management Solutions

- Smart Street Lighting System

##### Physical Security Solutions

- Smart Video Surveillance
- Smart Intrusion System
- Smart Rammed System Integration

##### Infrastructure Management Solutions

- Smart Gardens System Integration
- Rassef System integration
- Madinaty System Integration
- 940 Call Center System
- Smart Waste Management System
- Smart Bins
- Smart Poles
- Smart Signage System





# Synergistic Partnership

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## Giza Systems & MODON



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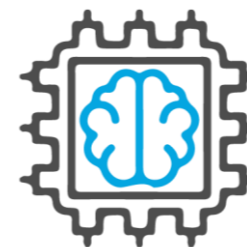
Making sure that all the facilities at the industrial cities are sustainable and following the guidelines of the Sustainable Development Goals (SDGs).



Since 2020, we have transformed industrial cities into smart industrial cities to seamlessly absorb and support the expansion of the industrial sector.



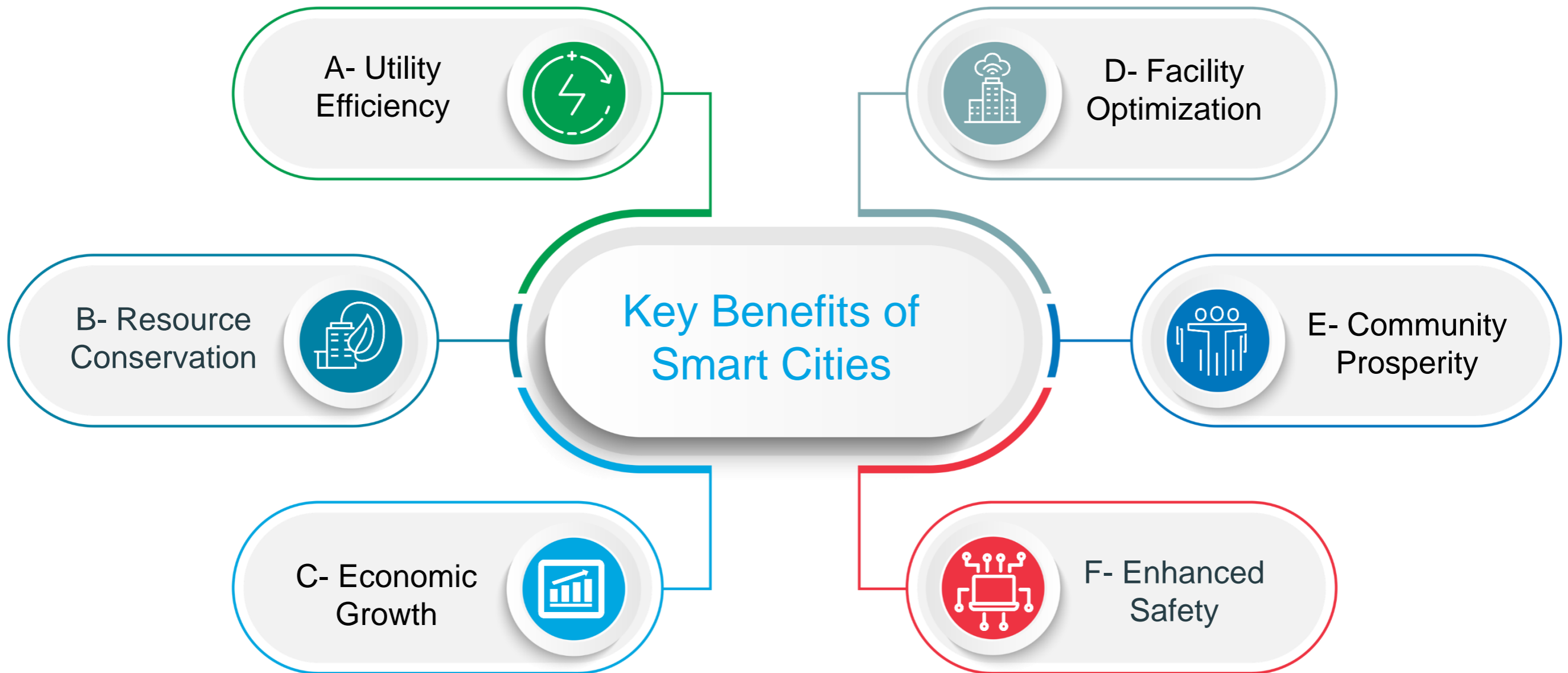
MODON is a global leader in smart cities, with 13 smart verticals in Saudi industrial cities covering infrastructure, utilities, and environmental systems.



MODON is operating 3 CoCs enriching data to train the ML and enhance the AI engines to make the systems smarter.

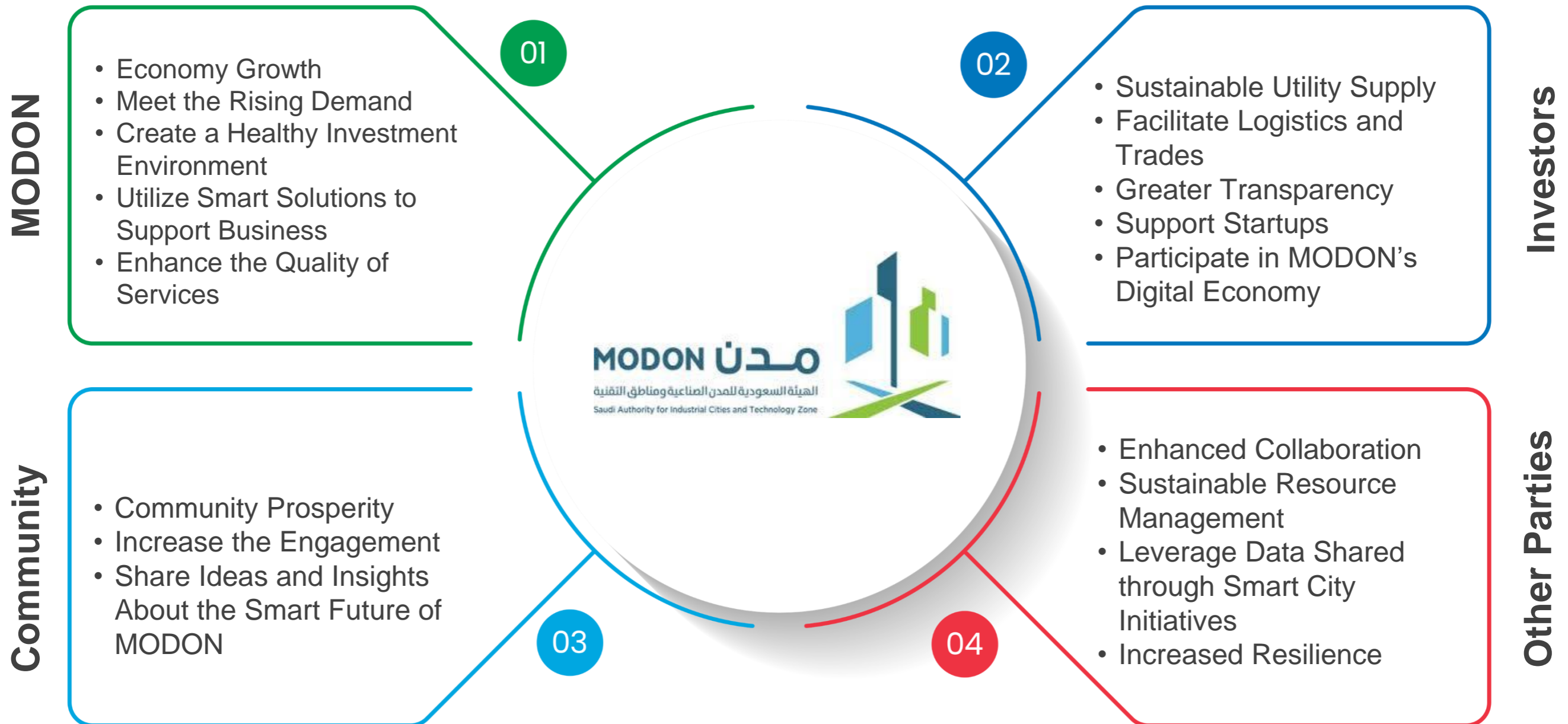
COC at Eastern Sector (Dammam II)

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## Stakeholder and Beneficiaries



# Technical Dive

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# Smart Solutions



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## Technical Dive into the Smart Solutions

### COC (City operation Center)

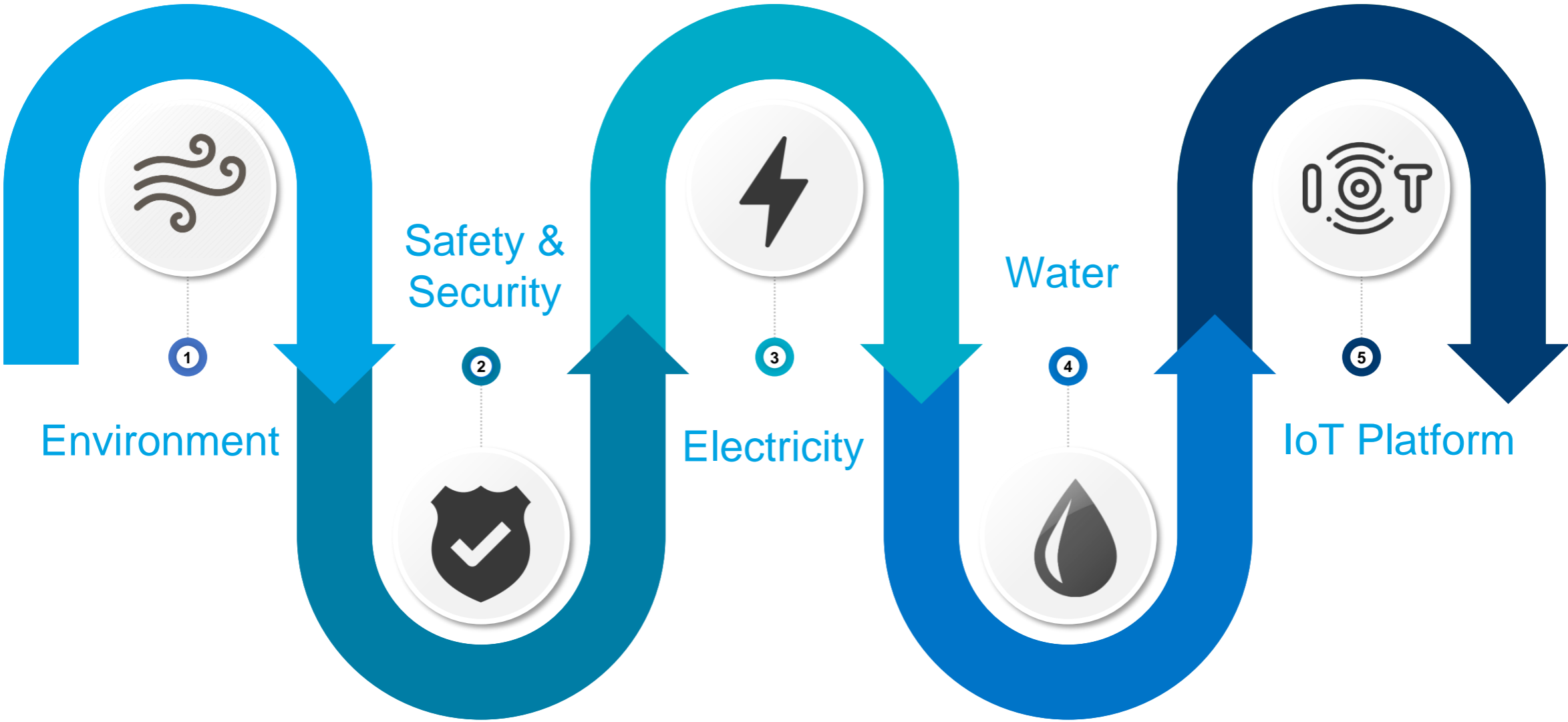
In this framework, Giza Systems has established three City Operation Centers (CoCs) as the core hubs of the industrial cities. These CoCs leverage NB-IoT and 5G connectivity to collect data from smart IoT devices in the field and send commands, enhancing security, safety, and sustainability while reducing costs. The gathered data is processed and analyzed through an advanced smart city platform equipped with AI and ML engines.

This platform monitors and manages water, energy, traffic, environment, and safety. The AI and ML capabilities automatically analyze the data, guiding stakeholders to take necessary actions efficiently and effectively.

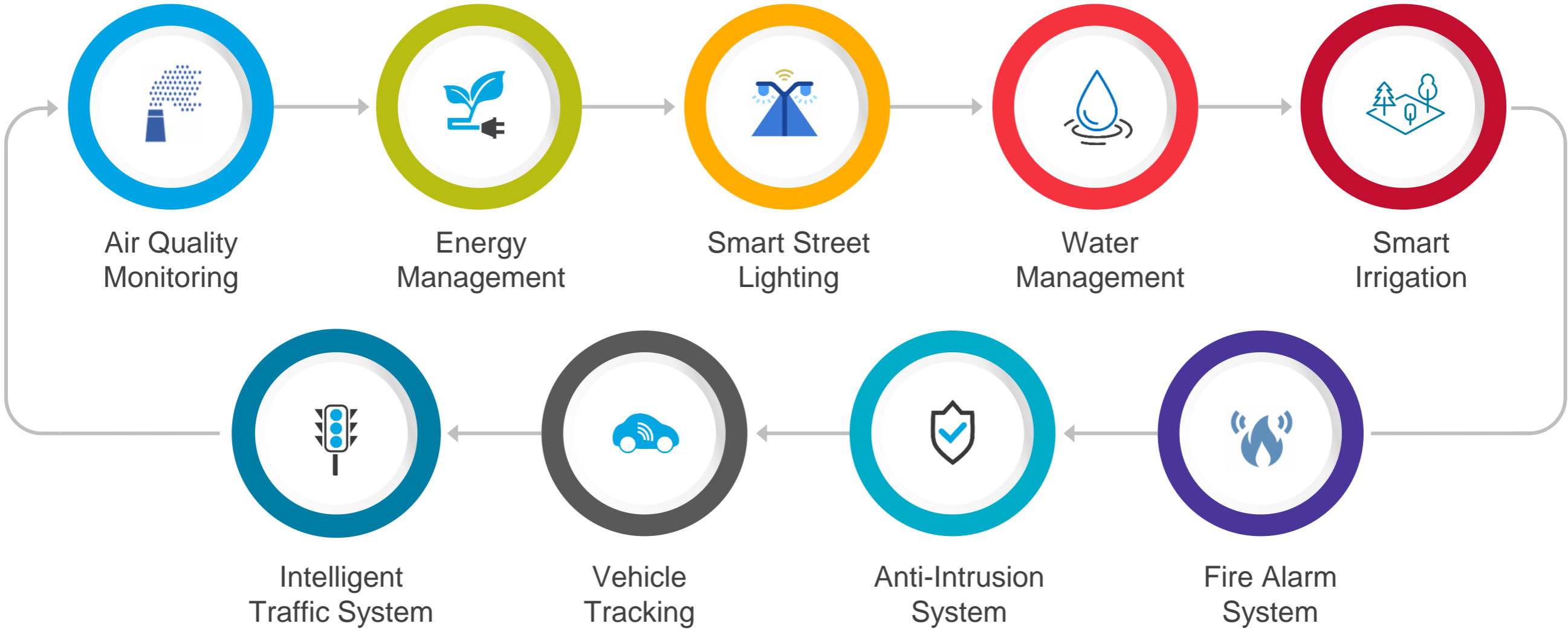




## Smart Solutions



## Smart Solutions



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## Successful Implementation

### Environment

- Air Quality Monitoring

### Electricity

- Energy Management
- Smart Street Lighting

### Water

- Water Management
- Smart Irrigation System

### Safety & Security

- Intelligent Traffic System
- Vehicle Tracking
- Anti-intrusion System
- Fire Alarm System



### A- Utility Efficiency



- Reduction in unplanned outages by 30%.
- Reduction in patrols' route by 33% reducing the fuel consumption.

### B- Resource Conservation



- Smart irrigation system saved up to 25% of water.
- Energy consumption was optimized by 40%.

### C- Economic Growth



- Providing investors with detailed data has improved transparency and decision-making processes.

### D- Facility Optimization



- Smart street lighting system reduced energy consumption by 20%.
- Maintenance costs of assets reduced by 25%.

### E- Community Prosperity



- Community mobile apps have increased citizen engagement and satisfaction.

### F- Enhanced Safety



- CCTV cameras improved the safety of the industrial cities.
- Integration with fire alarm panels of factory.

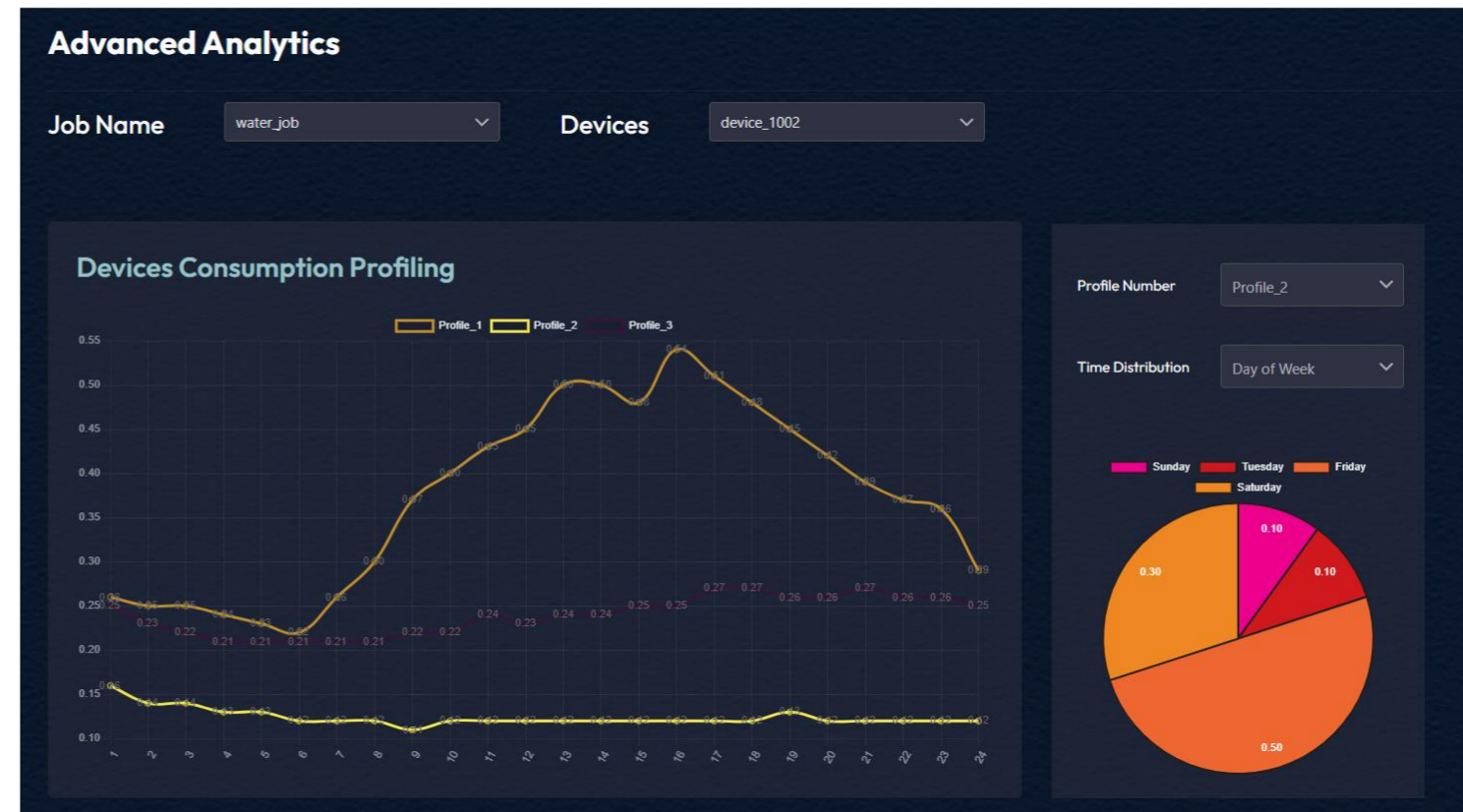
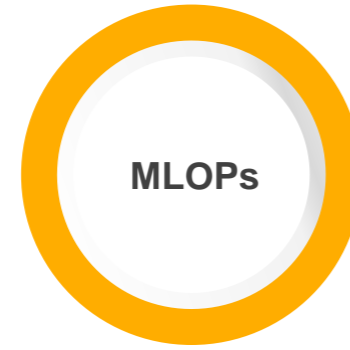


## AI & ML Engines

Use-cases:

### Energy Consumption Profiling

<b>What</b>	Smart meters for electricity and water
<b>Why</b>	<ul style="list-style-type: none"> <li>• Support decision making in planning the capacity of electricity network.</li> <li>• Plan the working hours of factories to reduce the peak load on the network.</li> <li>• Analyze the common patterns and profiles of consumption of different meters.</li> </ul>

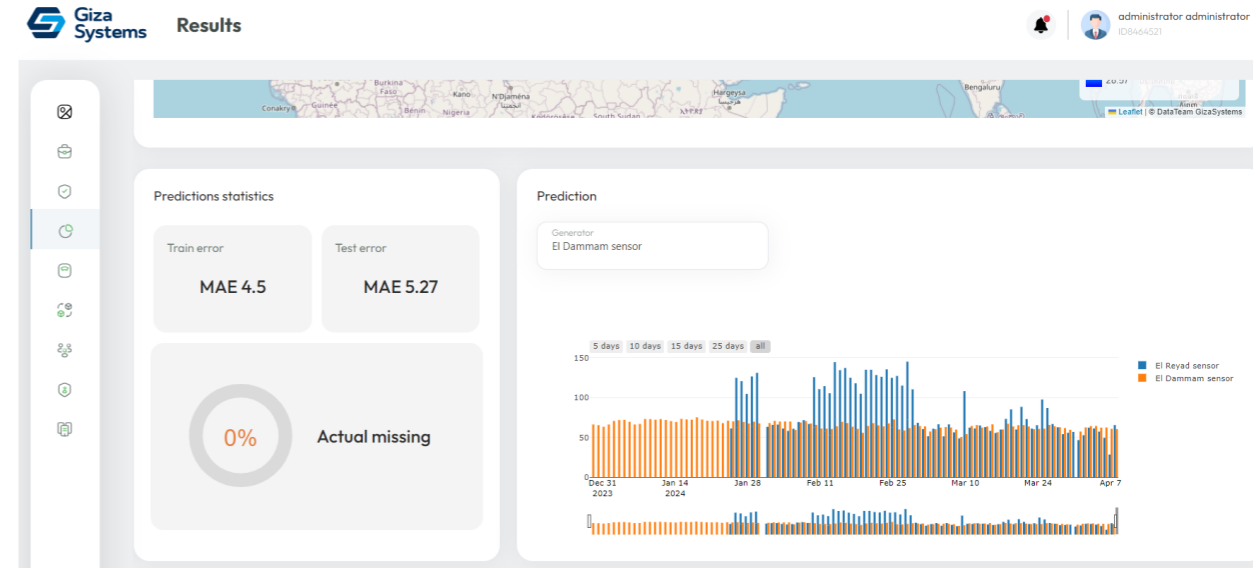


## AI & ML Engines

Use-cases:

### Forecasting & Anomaly Detection

What	Smart meters for electricity and water
Why	The smart city admin wants to know the <b>forecasted</b> electricity consumption and if the received consumption values are realistic or could be an <b>outlier</b> due to device/system error



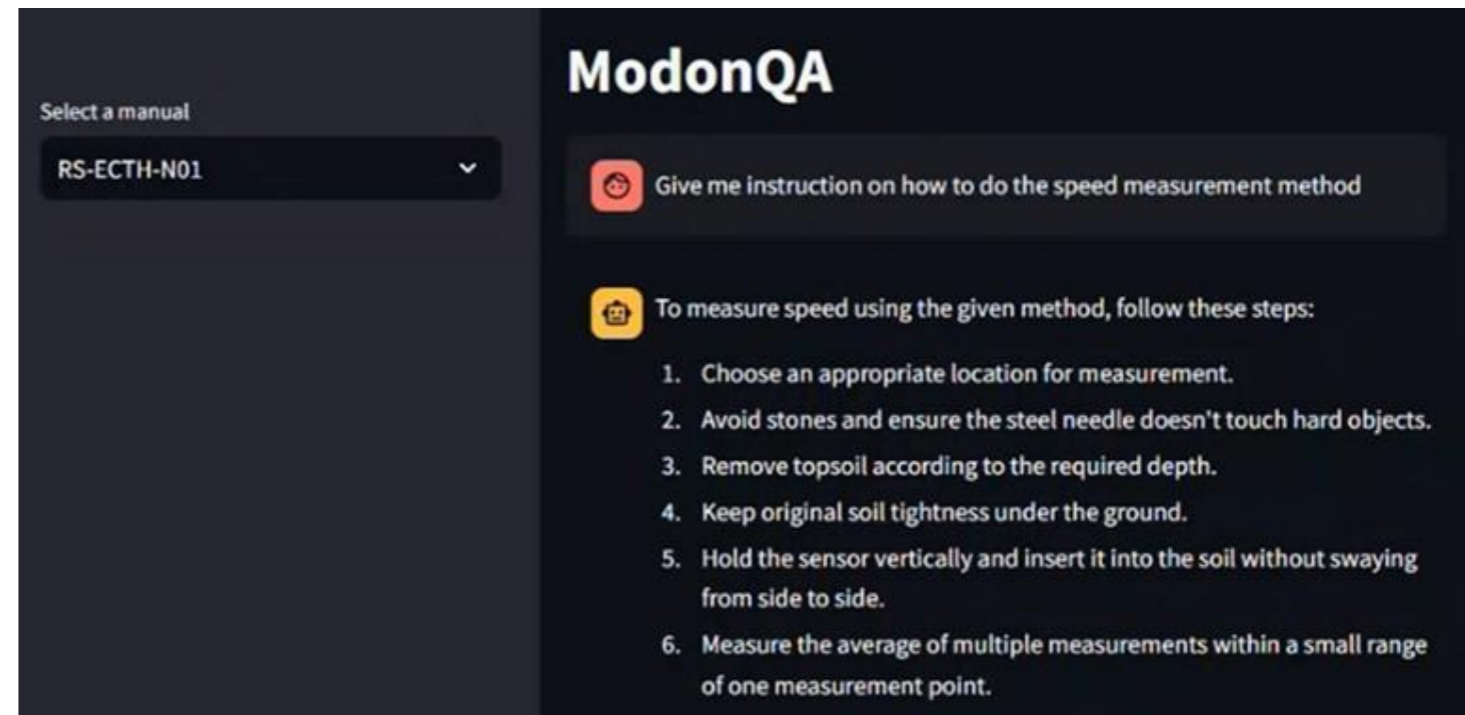
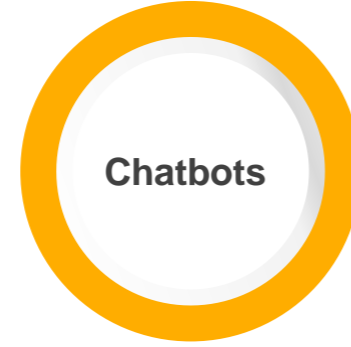
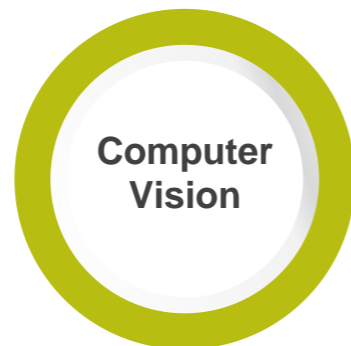
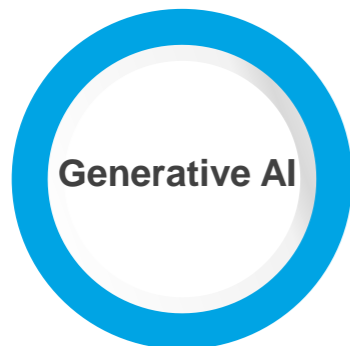
## AI & ML Engines

Use-cases:

### Smart City Operation Center Bots

#### What

- In progress: to develop a virtual assistant to facilitate the operations of the city operation center.
- Developing a QA chat bot using LLMs and Generative AI for extracting answers from the PDF manuals of IoT devices to reduce the SLA of troubleshooting and maintenance of devices.



# Conclusion

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Technology by itself is not innovation; rather, **innovation** lies in how we strategically utilize technology to serve our unique needs and challenges. The transformative power comes from our ability to creatively apply and adapt technological solutions.



Giza Systems has formalized its efforts and adopted the United Nations' **Sustainable Development Goals (SDGs)** by incorporating them as a core part of the group's strategy.



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Partner



Knowledge  
Partner



Host  
City



Destination  
Partner



Venue  
Partner



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You By

