



## IoT for Smart Cities, Challenges, Use Cases

Afzal Shabaz Mohammed

Head of MindSphere and Command & Control team - Expo 2020, Siemens LLC

4th ITU Annual Forum on “IoT, Big Data, Smart Cities and Societies” for Arab region  
Dubai, UAE, 28-29 August 2019

# What are smart cities challenges ?

## What are challenges for Cities today?



To successfully tackle those challenges, Smart Cities need a platform that can power IoT applications. The right one will aggregate, process, analyze, visualize and interpret the data that smart devices generate

<b>Energy</b>	Reduce Energy Consumption Produce clean Energy
<b>Water</b>	Reduce Water Consumption Minimize potable water consumption through use of recycled water
<b>Infra</b>	Intelligent & Integrated Infrastructure
<b>Transportation</b>	Smart Mobility, Intelligent Traffic solutions
<b>Emissions</b>	Minimize carbon emissions
<b>Security</b>	Safety & Security
<b>Waste</b>	Minimize quantity of waste to landfill
<b>Materials</b>	Minimize depletion of natural resources through design for reuse Promote use of sustainable materials

# Smart Cities - Distributed data challenge

## Challenges

- **Data is distributed** across plethora of Systems
- Systems have been in existence **for decades**
- **Huge** amount of data
- **Point-to-point** integrations required; cross impact not understood
- No understanding for **contextual** relationship



## Needs

- Maintain **meaningful relationship** across these data
- Enable **easy linking of data**; minimal to no manual effort
- Enable **comprehensive analytics** of data across domains
- **Minimize migration or duplication** of data

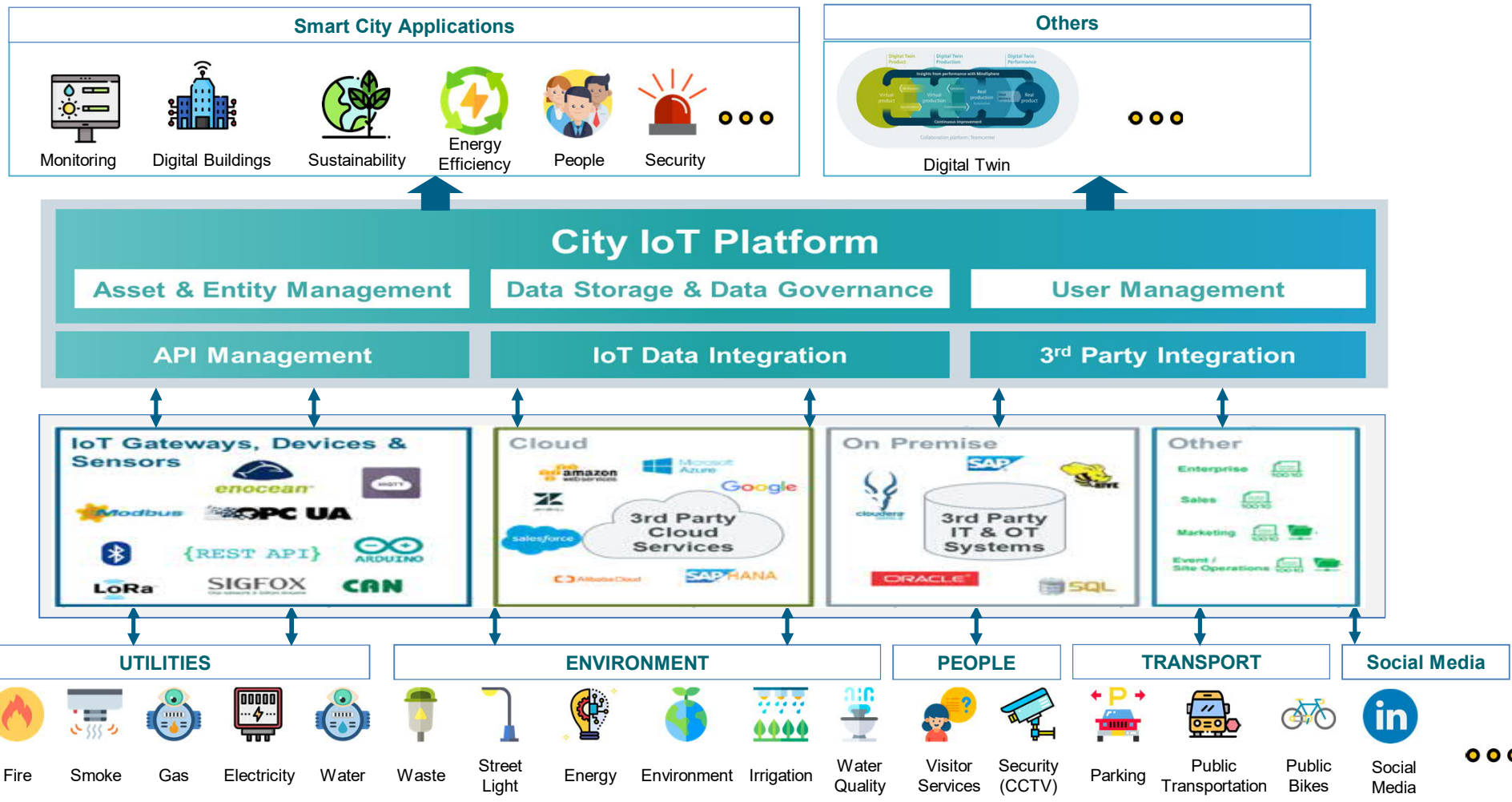
flaticon license required for icon usage

# Typical Smart City Architecture

Application Tier

Platform Tier

Sensor / Device Infrastructure



flaticon license required for icon usage



# MindSphere – Siemens' cloud-based, open IoT operating system

## Applications

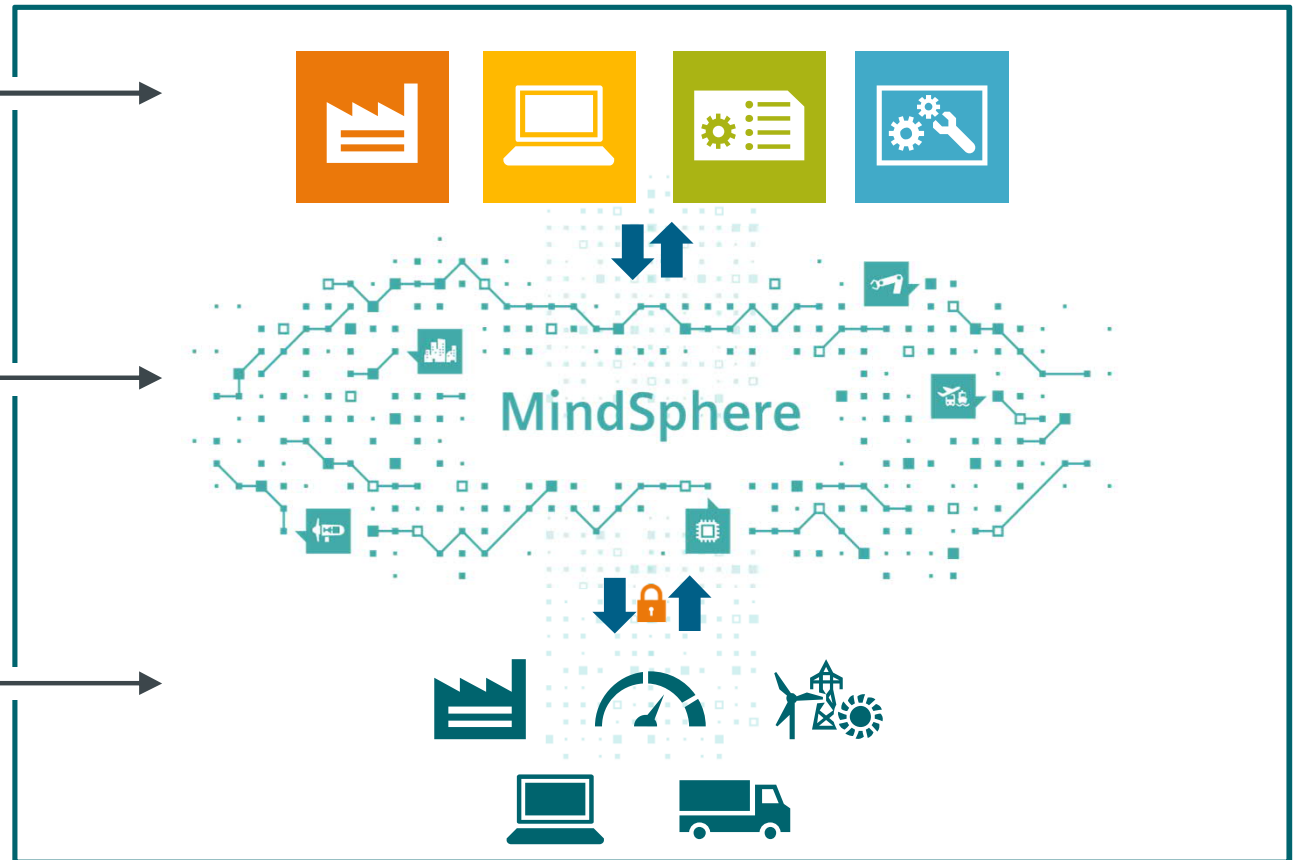
MindSphere applications provide asset transparency and analytical insights into machines, plants, fleets and systems

## Open PaaS

MindSphere, the open PaaS, gives you scalable, global IoT connectivity and application development with native cloud accessibility

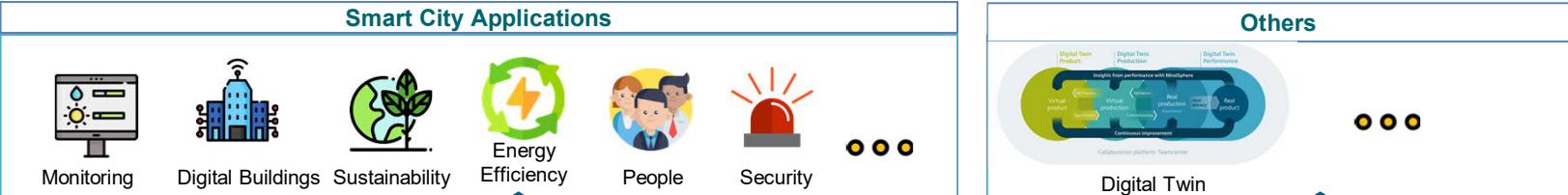
## Connectivity

MindConnect connects products, plants, systems, machines, enterprise applications and legacy databases with a secured plug-and-play collection of Siemens and third-party products and equipment



# MindSphere Smart City Architecture

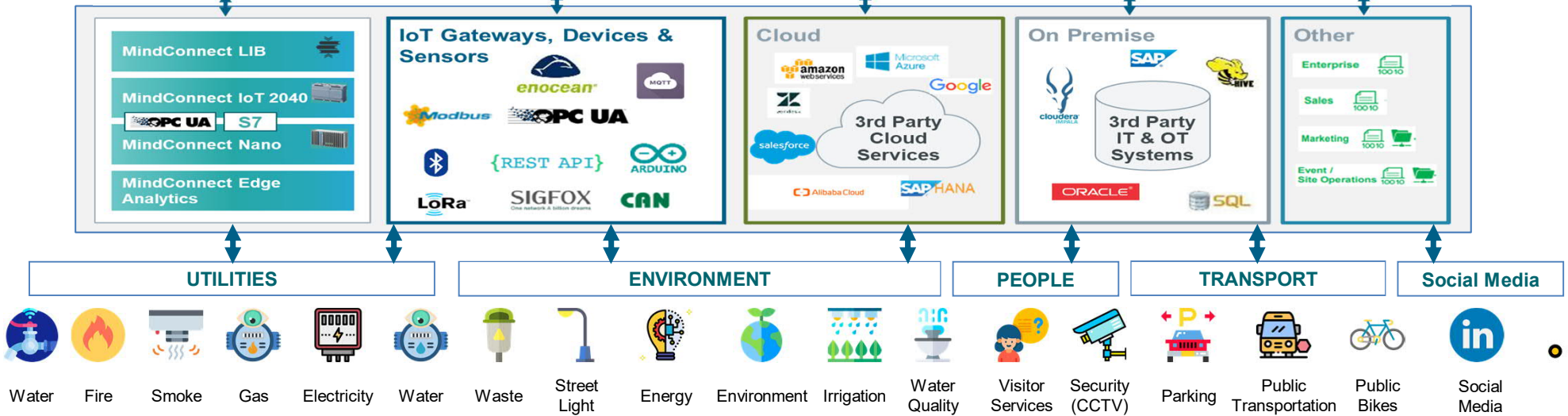
Application Tier



Platform Tier

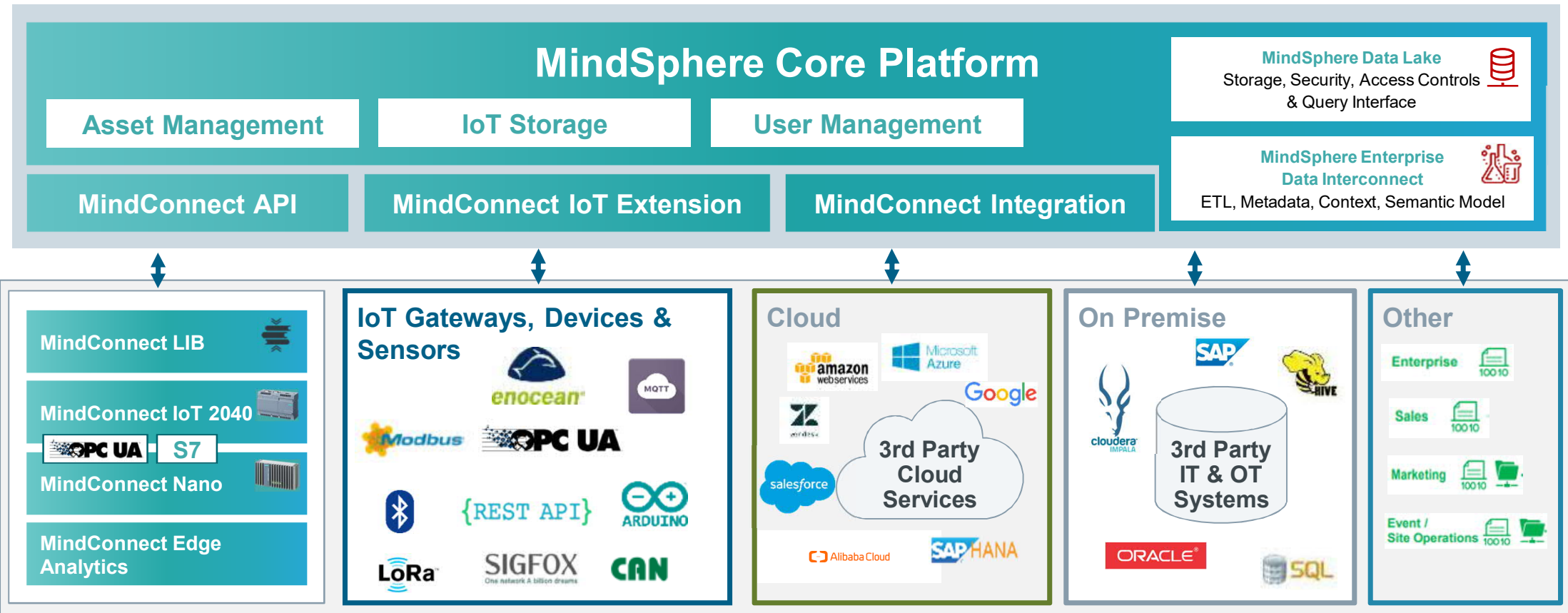


Sensor / Device Infrastructure



# Getting connected - various paths to connect your data

## Overview Connectivity in MindSphere



# MindSphere Smart City Use Cases

Areas



Intelligent Transportation



Smart Waste Management



Public Safety & First Responder



Electrical Vehicles & Infrastructure



Smart Buildings / Utilities



Smart Operations

Applications

Connected Streetlights

Autonomous Vehicles

Connect Traffic Management

Connected Traffic Lights

Smart Road Sign

Smart Parking

Shared Mobility

Fleet Management

Smart Bins

Pneumatics Waste Disposal System

Environmental Monitoring

Gun Shot Detection

Drone First Responder

Wearables

Video Surveillance

Visitor tracking (elderly, children)

Noise Monitoring

MindSphere Data Lake Use Cases

... in addition

Electric Vehicles

Electric Vehicles Infrastructure

Smart Meter - Electricity

Smart Meter - Water

Smart Meter - Gas

Smart Building

Smart Irrigation

Smart Lighting

E-Governance

Open Data

Visitor Engagement

Public Wi-Fi Hotspot

Position as a Service

Crowd & Queue Mgmt.

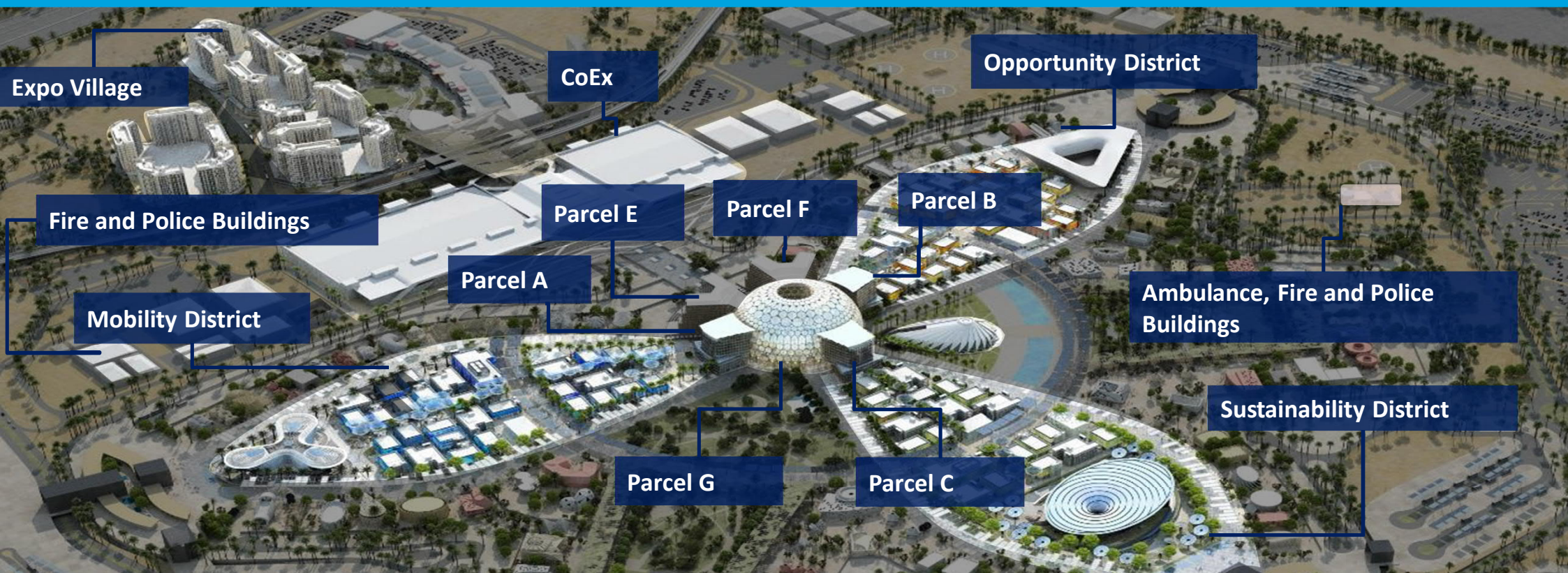
Location based Messaging

flaticon license required for icon usage



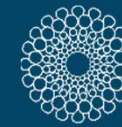


# Infrastructure Digitalization Partner



Site-wide of Desigo CC and Siveillance Vantage... 100% market share for Access Control, CCTV and BMS in the Thematic Districts, 137+ buildings connected to Navigator powered by MindSphere!

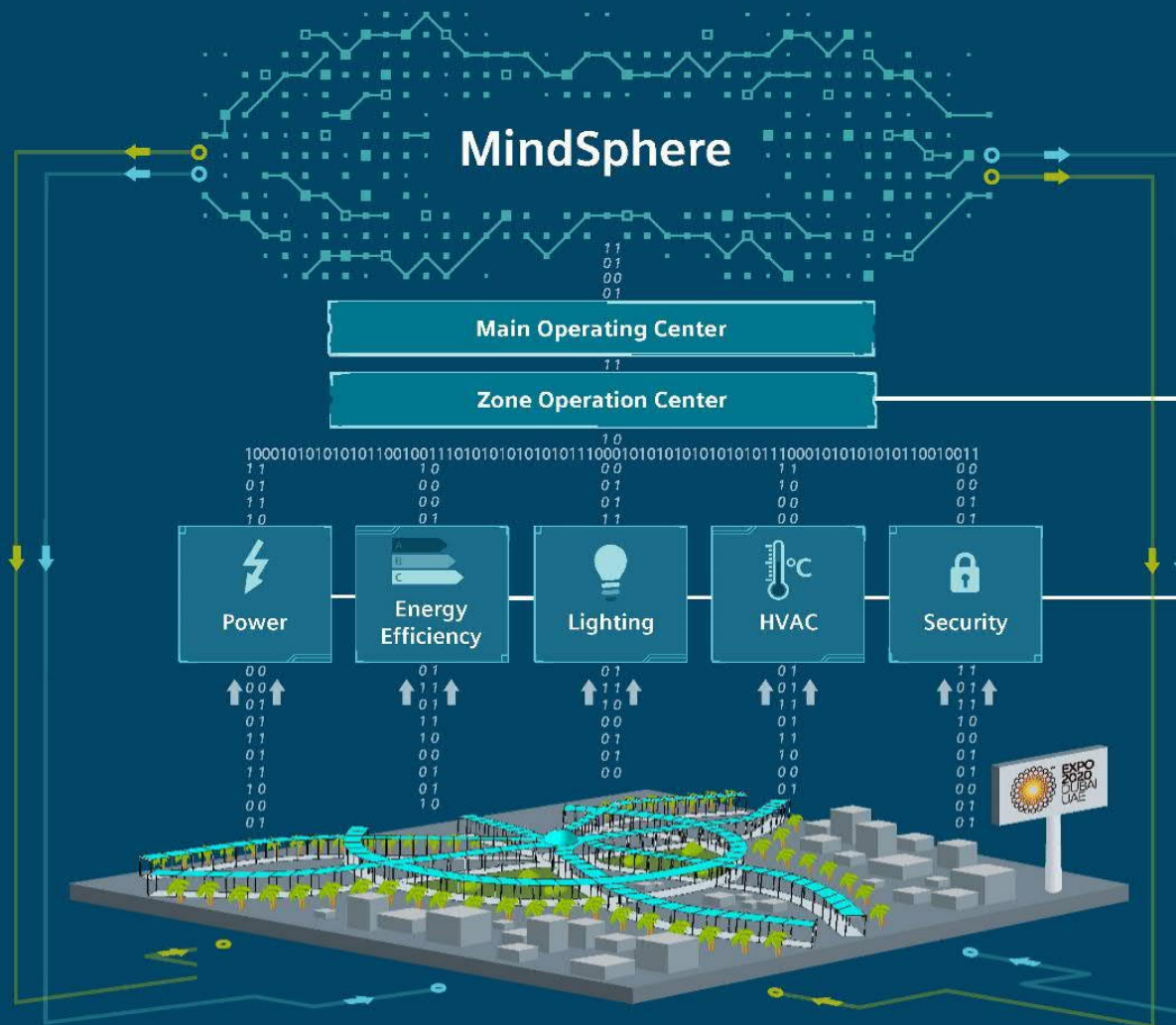
# Siemens works with Expo 2020 Dubai to create a blueprint for future cities



EXPO  
2020  
DUBAI  
UAE

**SIEMENS**  
Ingenuity for life

OFFICIAL PREMIER PARTNER



**3.** MindSphere IoT cloud technology analyzes data for intelligent decision-making

**2.** Data integrated into Operational Centers for monitoring and control

**1.** Collection of data from:

**130+** buildings connected to Navigator

**200,000+** data points connected to Desigo CC

**3,500+** doors connected to Sipass Integrated

Up to **15,000** cameras connected to Siveillance VMS

## Siemens at Expo Dubai - additional Information

### Expo 2020 Siemens Solution Page

General Information about Siemens contribution at Expo 2020

Links: <https://new.siemens.com/mea/>



### Siemens MindSphere Webpage

General Information around MindSphere IoT Platform

Link: <https://www.MindSphere.io>



### MindSphere Phase 1 App – Press Release

Official Press Release for MindSphere Phase 1 Launch

Link: [Official Press Release](#)



### Siemens Atlas of Digitalization

Atlas identifies digital readiness and potential for six cities

Link: [Atlas of Digitalization](#)



**For additional questions please feel free to reach out!**



## **Afzal Shabaz Mohammed**

Head of MindSphere & Command  
and Control Team

+971 55 2001628

[afzal.mohammed@siemens.com](mailto:afzal.mohammed@siemens.com)



# BACKUP

# MindSphere APIs

**MindSphere APIs - Services**  
Ready to use

- APIs kick start your development
- Continuous demand-based functionality extensions
- API versioning, allowing backward compatibility
- Long term stability

**SIEMENS**  
*Ingenuity for life.*

Page 36

Siemens Cloud Application Solutions