RAIS IMRAN
Chief Strategy Officer

The Contribution of Industrial 4.0 Technologies to Facilities Management

UEM Edgenta – A Leading Assets & Facilities Management Org.

KSA
Operational in April 2022

UAE
EDGENTA
PROPERTY & FACILITY SOLUTIONS

Taiwan
EDGENTA
HEALTHCARE SUPPORT

Malaysia
EDGENTA
HEALTHCARE SUPPORT

EDGENTA
PROPERTY & FACILITY SOLUTIONS

EDGENTA
INFRASTRUCTURE SERVICES

OPUS
CONSULTANTS
AN EDGENTA COMPANY

Singapore
EDGENTA
HEALTHCARE SUPPORT

Indonesia
EDGENTA
INFRASTRUCTURE SERVICES

Notable Clients

Industry 4.0

Industry 4.0 is the integration of data, artificial intelligence, machinery and communication to create an efficient industrial ecosystem that is not just automated but intelligent.
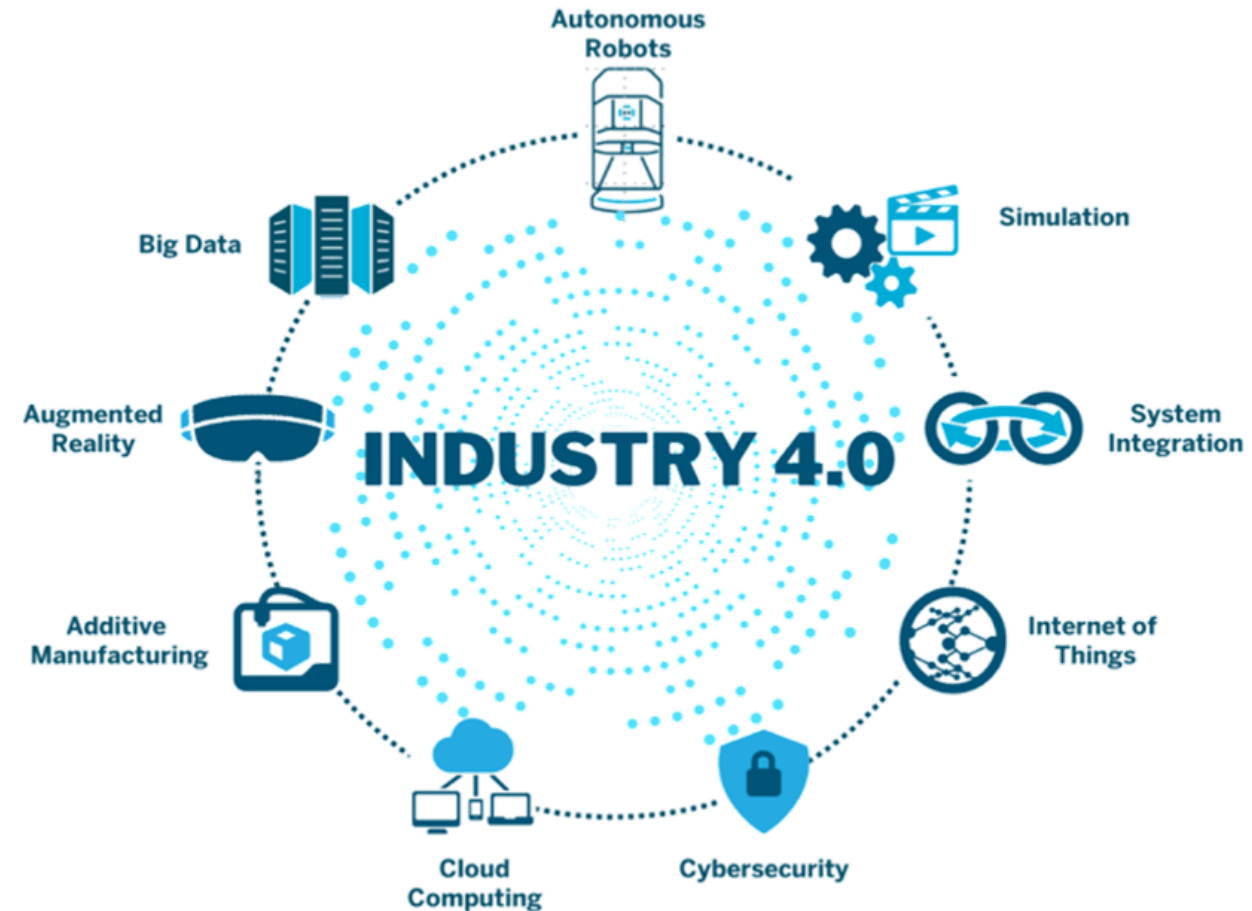
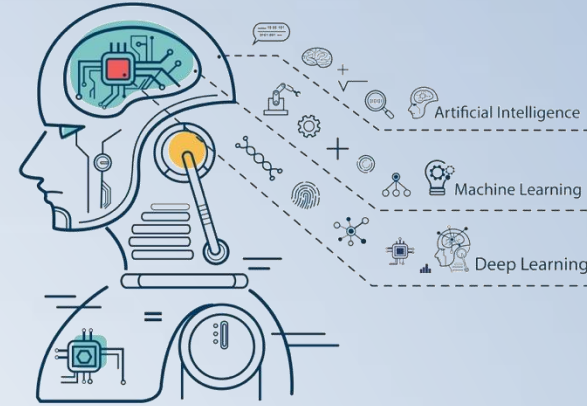# Convergence of Nine Digital Industrial Technologies

Autonomous Robots	• Autonomous, cooperating industrial robots • Numerous integrated sensors and standardized interfaces
Simulation	• Simulation of value networks • Optimization based on real-time data from intelligent networks
System Integration	• Cross company data integration based on data transfer standards • Precondition for a fully automated value chain (from supplier to customer, from management to shop floor)
Internet of Things	• Network of machines and products • Multidirectional communication between network products
Cybersecurity	• Operations in networks and open systems • High level of networking between intelligent machines, products and systems
Cloud Computing	• Management of huge data volumes in open systems • Real-time communications for production systems
Additive Manufacturing	• 3D printing particularly for spare parts and prototypes • Decentralized 3D facilities to reduce transport distance and inventory
Augmented Reality	• Augmented reality for maintenance, logistics and all kind of SOP • Display of supporting information e.g. through googles or glasses
Big Data	• Full evaluation of available data (e.g. ERP, SCM, MES, CRM and machine data) • Real-time decision making support and optimization

The Edgenta Way
F I R S T
FUTURE FOCUSED | IMAGINE NEW WAYS | RESPECT FOR ALL | SOLUTIONING MINDSET | TRUE TO OUR WORD

Note :
ERP – Enterprise Resource Planning;   **SCM** – Supply Chain Management;   **MES** – Manufacturing Execution System;   **CRM** – Customer Relationship Management
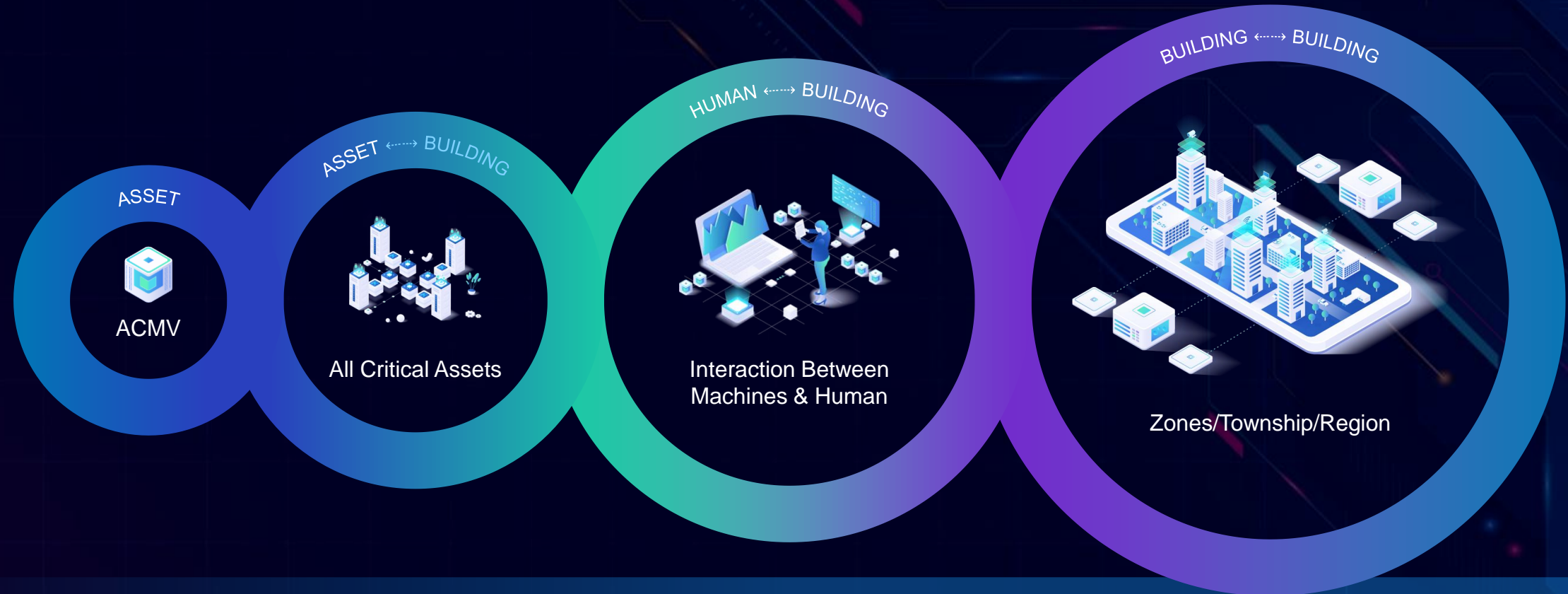
Evolution of Facilities Management

The role of facilities management is changing, with building owners increasingly expecting facilities management teams to be stakeholders and collaborators for business growth. The focus is shifting to highly efficient operations and an elevated occupant experience.

The Internet-of-Things and Machine Learning are at the heart of the technologies that will enable efficiencies of scale in facilities management. IoT, as a technology stack, reuses existing siloed investment in buildings like automation systems, fire safety, power systems, security systems etc. Machine Learning multiplies the value of data by removing manual work and bringing in data-driven intelligence.

The **Edgenta** Way

FIRST

FUTURE FOCUSED   IMAGINE NEW WAYS   RESPECT FOR ALL   SOLUTIONING MINDSET   TRUE TO OUR WORD

The Paradigm Shift Of Assets & Facilities Management Industry

ASSET

ASSET ←···→ BUILDING

HUMAN ←···→ BUILDING

BUILDING ←···→ BUILDING

ACMV

All Critical Assets

Interaction Between Machines & Human

Zones/Township/Region

Dynamic Asset

- IOT enabled
- Real time
- Everything as an Asset

Modern Dashboard

- Self-service / dynamic
- Actionable insights
- Single pane of glass

End-to-End User Experience (UX)

- Concept of B2C to B2B
- Highly personalised
- Integrated data intelligence

Enabler to Data-Driven Smart City/Metaverse

- Asset / portfolio benchmarking
- Algorithmic township / city
- Unlimited simulation

Enabling The Shift Towards A Transformative Tech Org.

ASSET ←---→ BUILDING

Tech that promotes optimisation & asset longevity

IOT sensors deployed across a building for real-time data and assets conditions & immediate responses

- Asset Longevity
- Asset Insights
- Centralized Monitoring
- Predictive Maintenance
- Unified Asset Control

OUTCOME
Operational Efficiency, Asset Longevity

HUMAN ←---→ BUILDING

Tech that promotes convenience/safety

Interaction between the IOT sensors, computer vision, and other AI technologies and the human being for personalised experience

- Contactless Interaction
- Sustainable Community
- Tenant Experience
- Physical To Digital ID
- Personalized Building Automation

OUTCOME
Convenience, User Experience

BUILDING ←---→ BUILDING

Tech that enables interoperability

Interoperability layer between different asset groups communicating to each others for optimum performance and end user experience

- System – Wide Trends
- Connected Information
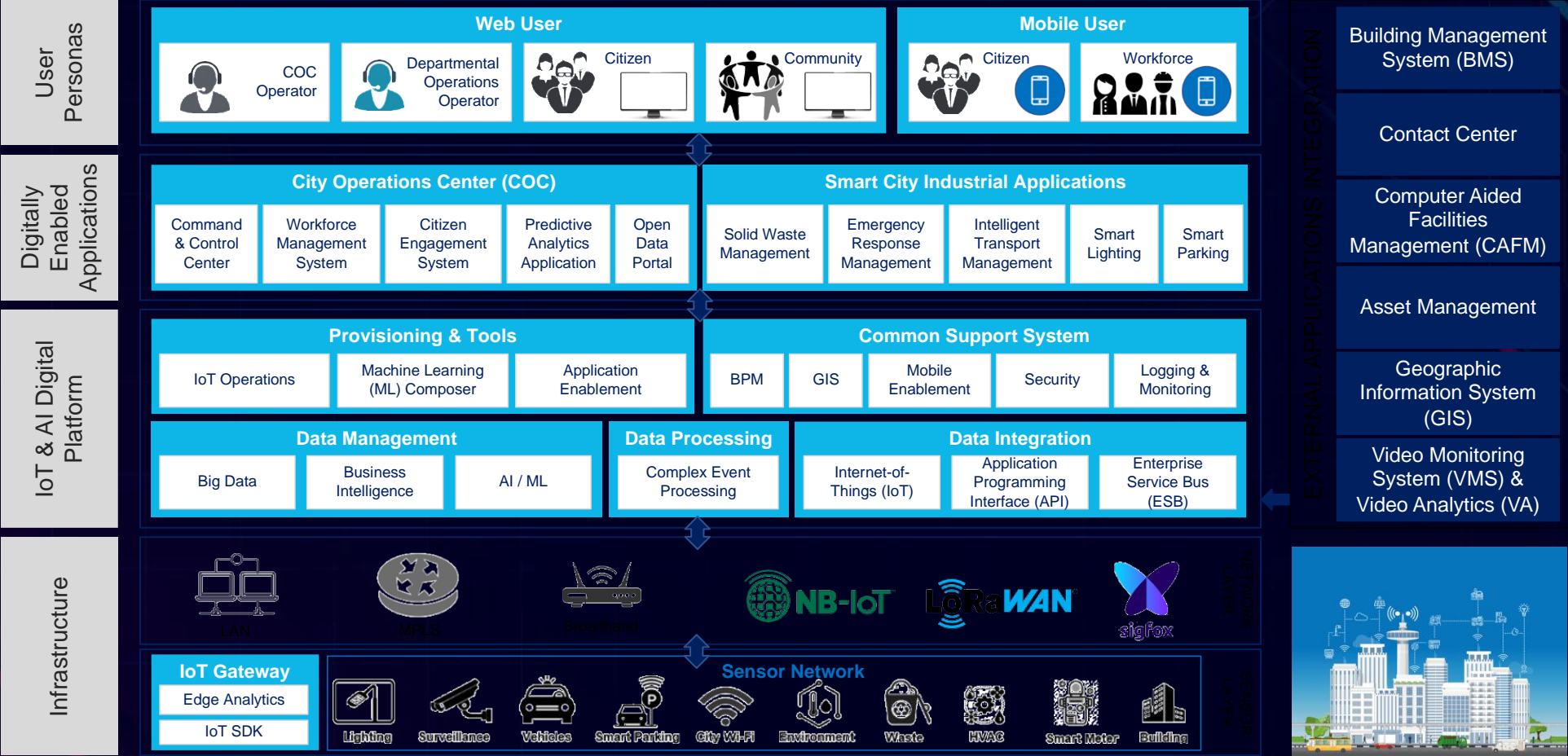- Portfolio Intelligence
- ESG Benchmarking

OUTCOME
Network Effect, Convergence

Smart City Framework from a Facilities Management Perspective

UEM EDGENTA
A member of **UEM Group**

Applicable INDUSTRY 4.0 Digital Industrial Technologies

Layer		
User Personas	**Web User**	**Mobile User**
	COC Operator · Departmental Operations Operator · Citizen · Community	Citizen · Workforce

Digitally Enabled Applications

City Operations Center (COC)
- Command & Control Center
- Workforce Management System
- Citizen Engagement System
- Predictive Analytics Application
- Open Data Portal

Smart City Industrial Applications
- Solid Waste Management
- Emergency Response Management
- Intelligent Transport Management
- Smart Lighting
- Smart Parking

IoT & AI Digital Platform

Provisioning & Tools
- IoT Operations
- Machine Learning (ML) Composer
- Application Enablement

Common Support System
- BPM
- GIS
- Mobile Enablement
- Security
- Logging & Monitoring

Data Management
- Big Data
- Business Intelligence
- AI / ML

Data Processing
- Complex Event Processing

Data Integration
- Internet-of-Things (IoT)
- Application Programming Interface (API)
- Enterprise Service Bus (ESB)

Infrastructure

LAN · MPLS · Broadband · **NB-IoT** · **LoRaWAN** · **sigfox**

IoT Gateway
- Edge Analytics
- IoT SDK

Sensor Network
- Lighting
- Surveillance
- Vehicles
- Smart Parking
- City Wi-Fi
- Environment
- Waste
- HVAC
- Smart Meter
- Building

EXTERNAL APPLICATIONS INTEGRATION

- Building Management System (BMS)
- Contact Center
- Computer Aided Facilities Management (CAFM)
- Asset Management
- Geographic Information System (GIS)
- Video Monitoring System (VMS) & Video Analytics (VA)

Applicable INDUSTRY 4.0 Digital Industrial Technologies

- Autonomous Robots
- Simulation
- System Integration
- Internet of Things
- Cybersecurity
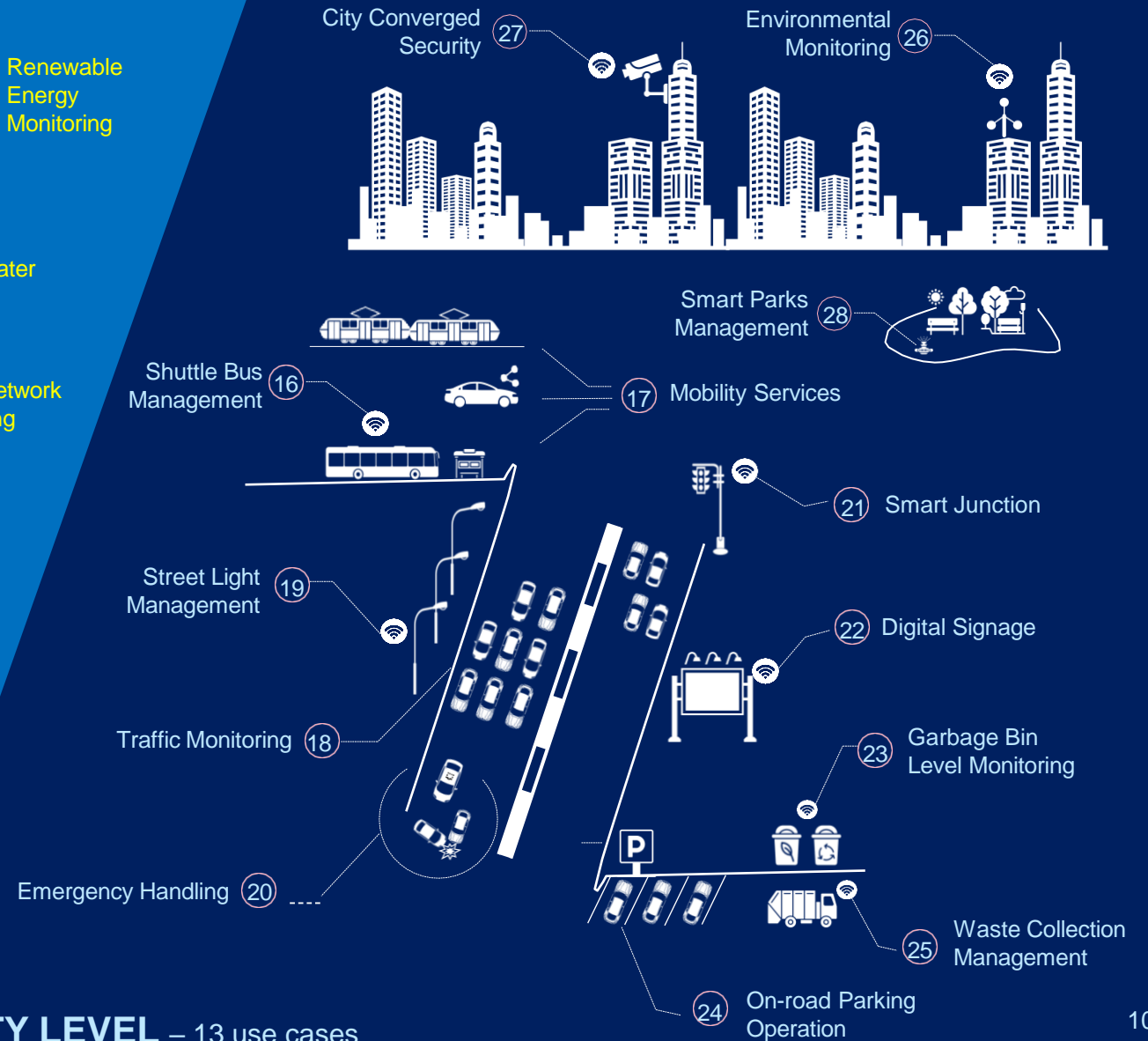- Cloud Computing
- Additive Manufacturing
- Augmented Reality
- Big Data

The Edgenta Way FIRST

Facilities Management & Smart City IoT Use Cases

Facility Level:
- Energy Management (1)
- Workforce Management (2)
- Facility Operation & Maintenance (3)
- Energy & Water Metering (4)
- Water Network Monitoring (5)
- HVAC Remote Engineering (6)
- Connected Fire Alarms (7)
- Converged Physical Security & Safety (8)
- Smart Parking (9)
- Drone System (10)
- Seamless Attendance (11)
- Indoor Navigation (12)
- Visitor Tracking (13)
- Indoor Asset Tracking (14)
- Renewable Energy Monitoring (15)

City Level:
- Shuttle Bus Management (16)
- Mobility Services (17)
- Traffic Monitoring (18)
- Street Light Management (19)
- Emergency Handling (20)
- Smart Junction (21)
- Digital Signage (22)
- Garbage Bin Level Monitoring (23)
- On-road Parking Operation (24)
- Waste Collection Management (25)
- Environmental Monitoring (26)
- City Converged Security (27)
- Smart Parks Management (28)

FACILITY LEVEL – 15 use cases

CITY LEVEL – 13 use cases

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The Industry Requires Digital Transformation To Stay Relevant

	Traditional BMS, EAM Software		**Smart Estate OS**
Overview	• Static (System of Records) • Designed for traditional asset • Traditional asset classification	▶▶▶	• Dynamic (System of Actions) • IOT-enabled smart assets, real-time • Everything is an Asset
Architecture	• Hub & spoke • Centralised database • Web 2.0 centric	▶▶▶	• Mesh architecture • Distributed database, enhanced security • Web 2.0 & 3.0 compliance
Product	• Standalone software • Complex to customize • Integral design, workflow centric	▶▶▶	• Integrated digital ecosystem • Self-service low code platform • Modular design, data-centric
Commercials	• License-based • Expensive in nature • Vendor centric, traditional	▶▶▶	• Usage-based, subscription • Low entry cost, or freemium • Ecosystem centric, future driven

Everything as an Asset: Asseto

Edgenta NXT

IOT
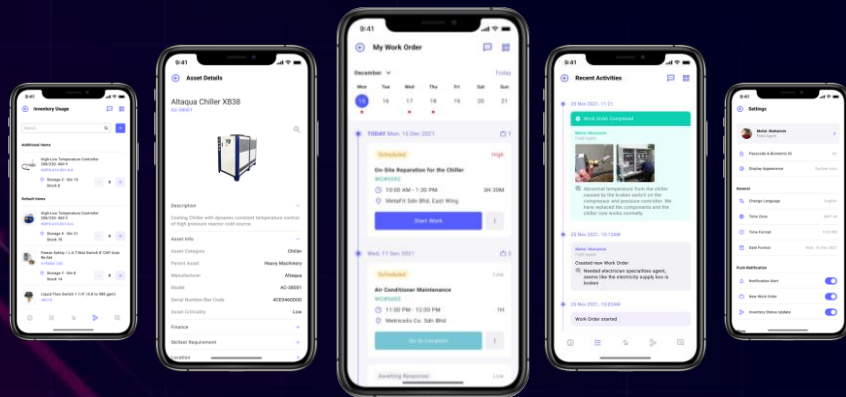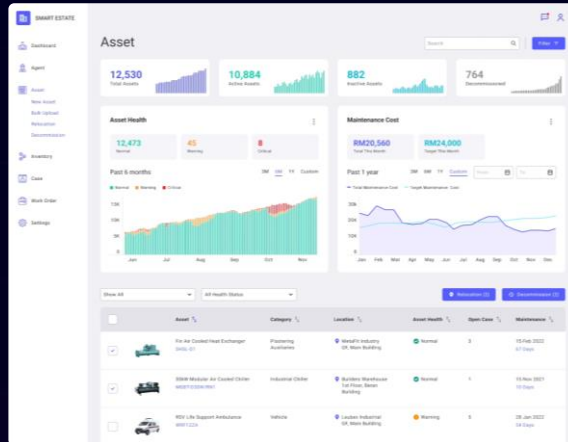
asseto

CORE PLATFORM

Smart / Greens Buildings

Asset Management	Facility Management	Platform, InterOp, IoT
Enterprise Asset Management	Smart Cleaning & Waste Management	IoT for Smart Building **DISRUPT-X**
CMMS/CAFM	Security & Surveillance	Robotics & Drones
Agent/Workforce Management	Smart Parking	C&C Deployment with Digital Twin
Fault Detection & Diagnostics	ePermits	
Inventory Management	Tenant Management	
Asset Lifecycle Management		

Predictive Maintenance

Smarter Buildings: Energy Efficiency

Greener Buildings: Carbon Neutrality