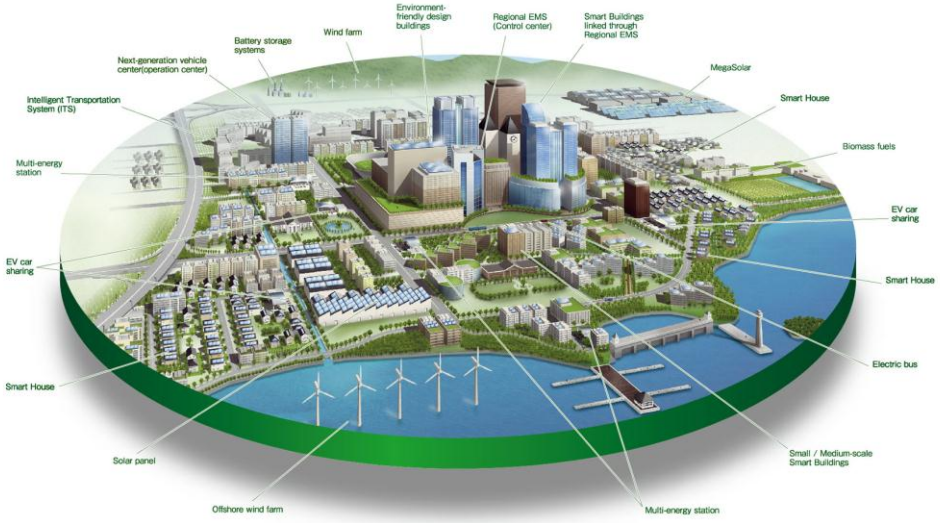
Smart+Connected Communities

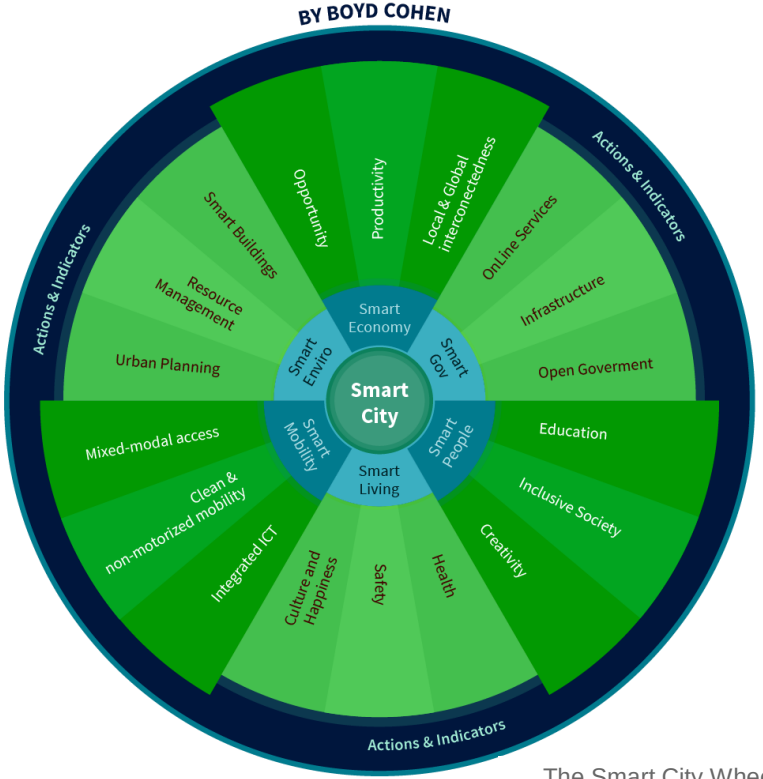
A Scalable, Sustainable Smart City Approach

March, 2016

Visualizing the Smart City



Source: Smart Cities, District of Future [http://bit.ly/1oPMWY6]



The Smart City Wheel

Organizations have traditionally addressed services in silos

- No sharing of infrastructure costs, assets, and resources
- No sharing of intelligence and information
- Waste and duplication of investment
- Difficulty in scaling

Traffic management

Public safety

City lighting

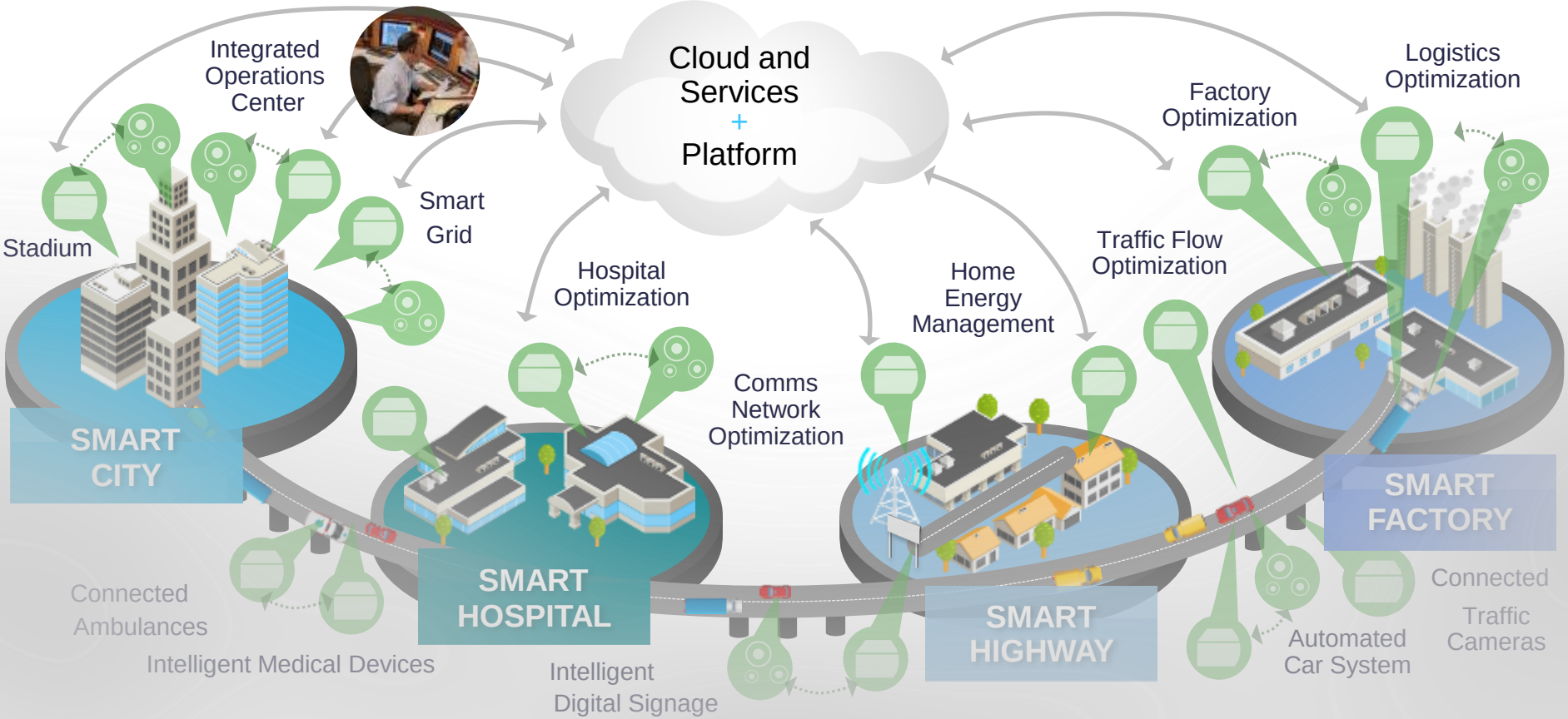
Pollution/ environment

Waste management

Parking optimisation

This fragmented approach is inefficient, has limited effectiveness, and is not economical

Building a Digital Overlay



Smart+Connected City Solution Architecture

MOBILE APPS

APPLICATIONS AND URBAN SERVICES

- Transport Management
- Water Management
- Parking Management
- Lighting Management
- Waste Management
- Environment
- Safety and Security
- Traffic Management

Monitoring/Command Control Centers

Foundational Network Infrastructure

Wireless (2G/3G/4G/ …)

Public/Private Wide Area Network

Internet

S+C City Wi-Fi and Multi Sensor Network

SENSORS

VEHICLES

- Vehicles

BUILDINGS

- Residential
- Industrial
- Commercial

STREET

- Water
- Parking
- Street Lighting
- Waste
- Environment
- People
- Street Furniture
- Safety and Security
- Traffic

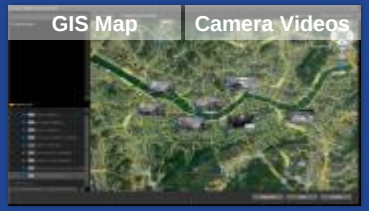
Some economic benefits from S+CC solutions

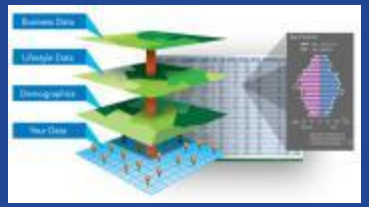
- **Up to 80%-90%** savings in Street Lighting and energy costs
- **Up to 50%-60%** reduction in Carbon Emissions
- **20%-30%** increase in Parking Revenue
- Wifi services to citizens, visitors, and city employees
- Incremental revenue through **Location Based Advertising / Wifi Offload**
- Leverage existing infrastructure to deploy Smart Traffic & Security solutions

Smart+ Connected Operations Center Across Functions

3D ESRI ARC-GIS

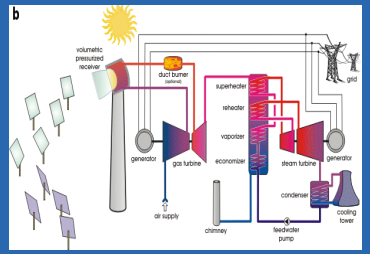
Asset & Property
BIM Management





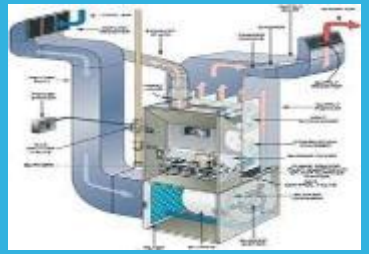
Energy Management

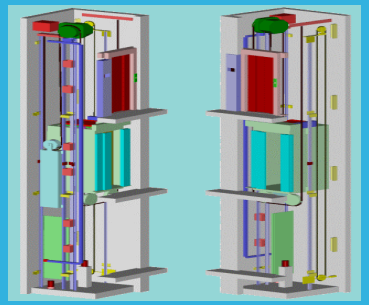
Lighting/Generator/Metering/EV



Building Management

HVAC/Lifts/Maintenance





Video Analytics

Access/Safety/Security/Intrusion

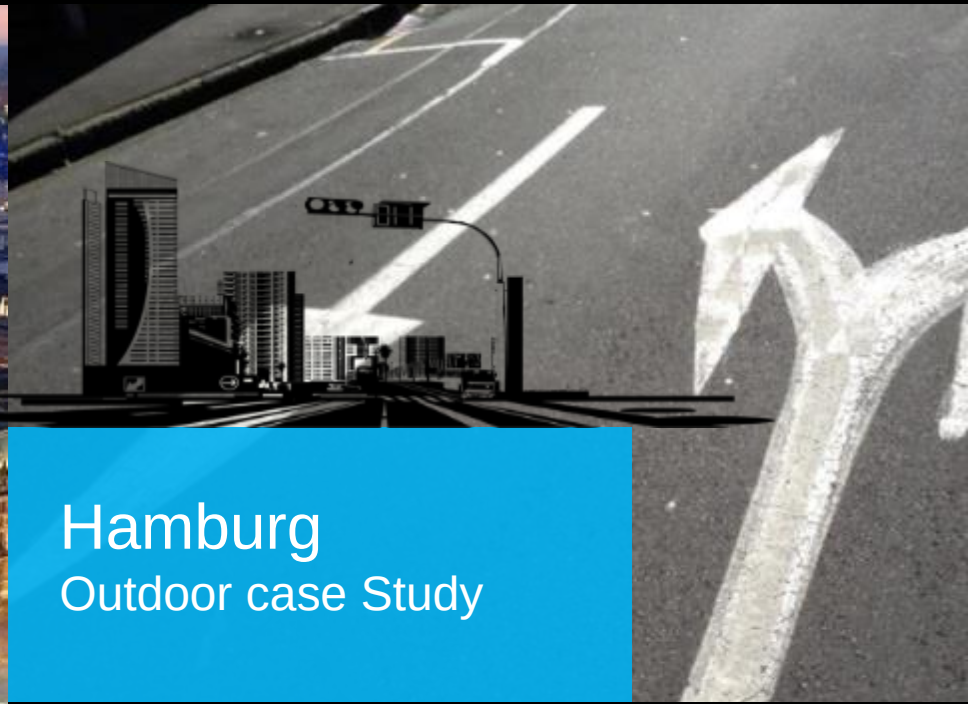
Map Zoomed-In

[Map + Camera Split] Screen

Camera Split Screen

Sample Smart City Use Cases

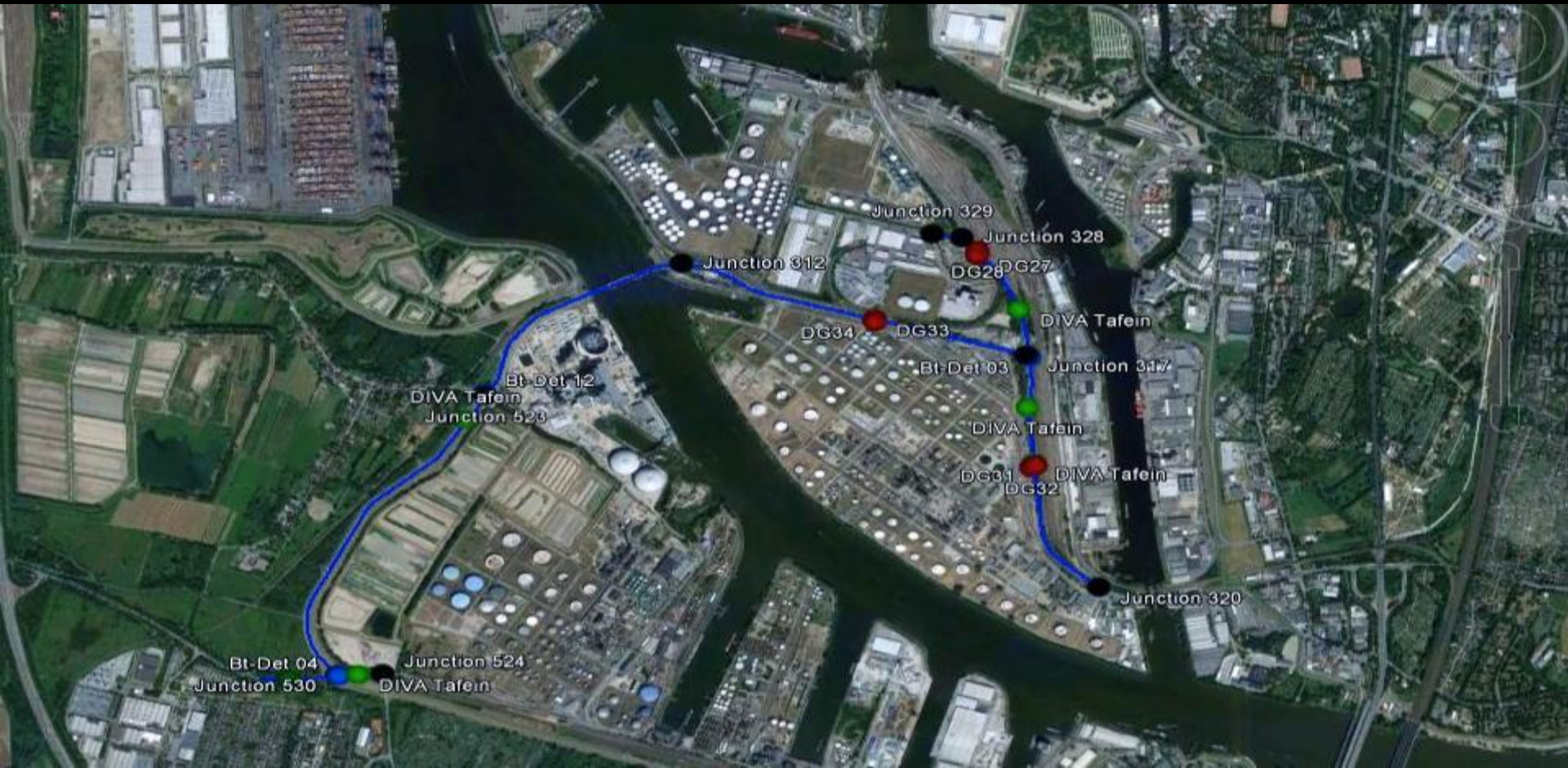
- Asset Tracking
- Street Lighting
- Energy Management
- Parking
- Connected Roadways
- Traffic Incident Management
- Connected Safety and Security
- Smart Buildings and Digital Ceiling
- Virtual Citizen Service Centers



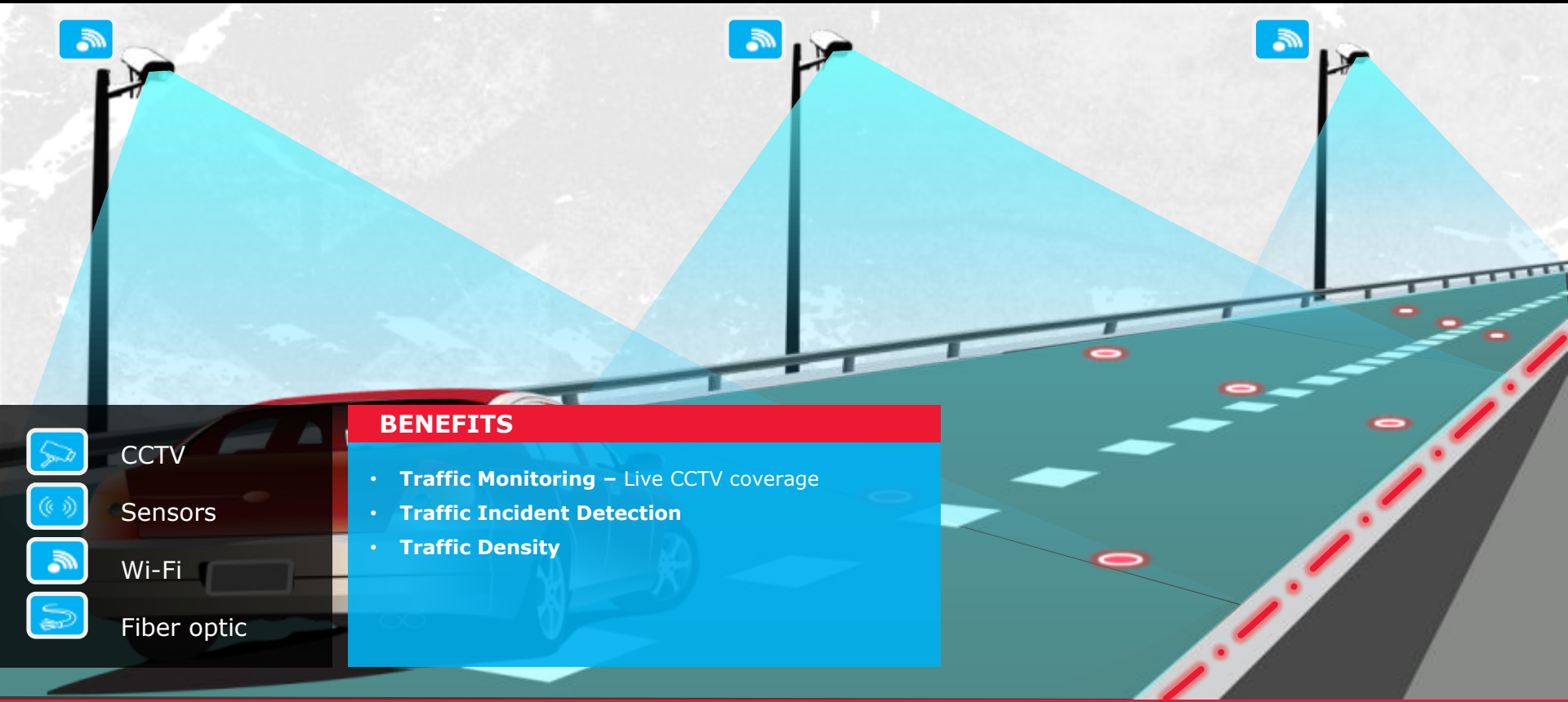
Hamburg

Outdoor case Study

Area Map


Junction 329
Junction 328
Junction 312
DG28
DG27
DG34
DG33
DIVA Tafein
Bt-Det 03
Junction 317
Bt-Det 12
DIVA Tafein
Junction 523
DIVA Tafein
DG31
DG32
DIVA Tafein
Junction 320
Bt-Det 04
Junction 530
Junction 524
DIVA Tafein

Traffic sensing & Incident Management

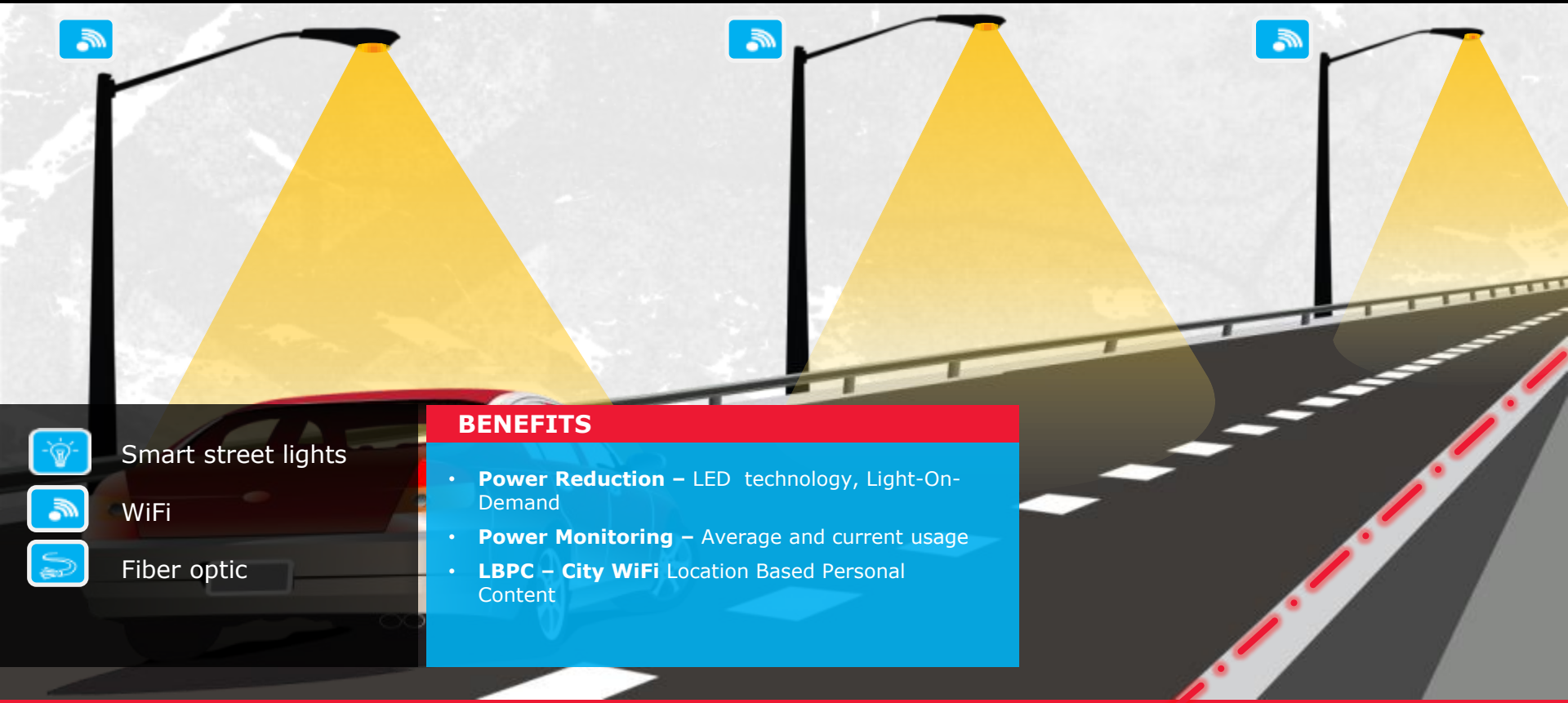


- CCTV
- Sensors
- Wi-Fi
- Fiber optic

BENEFITS

- **Traffic Monitoring –** Live CCTV coverage
- **Traffic Incident Detection**
- **Traffic Density**

Smart Street Lighting



Smart street lights

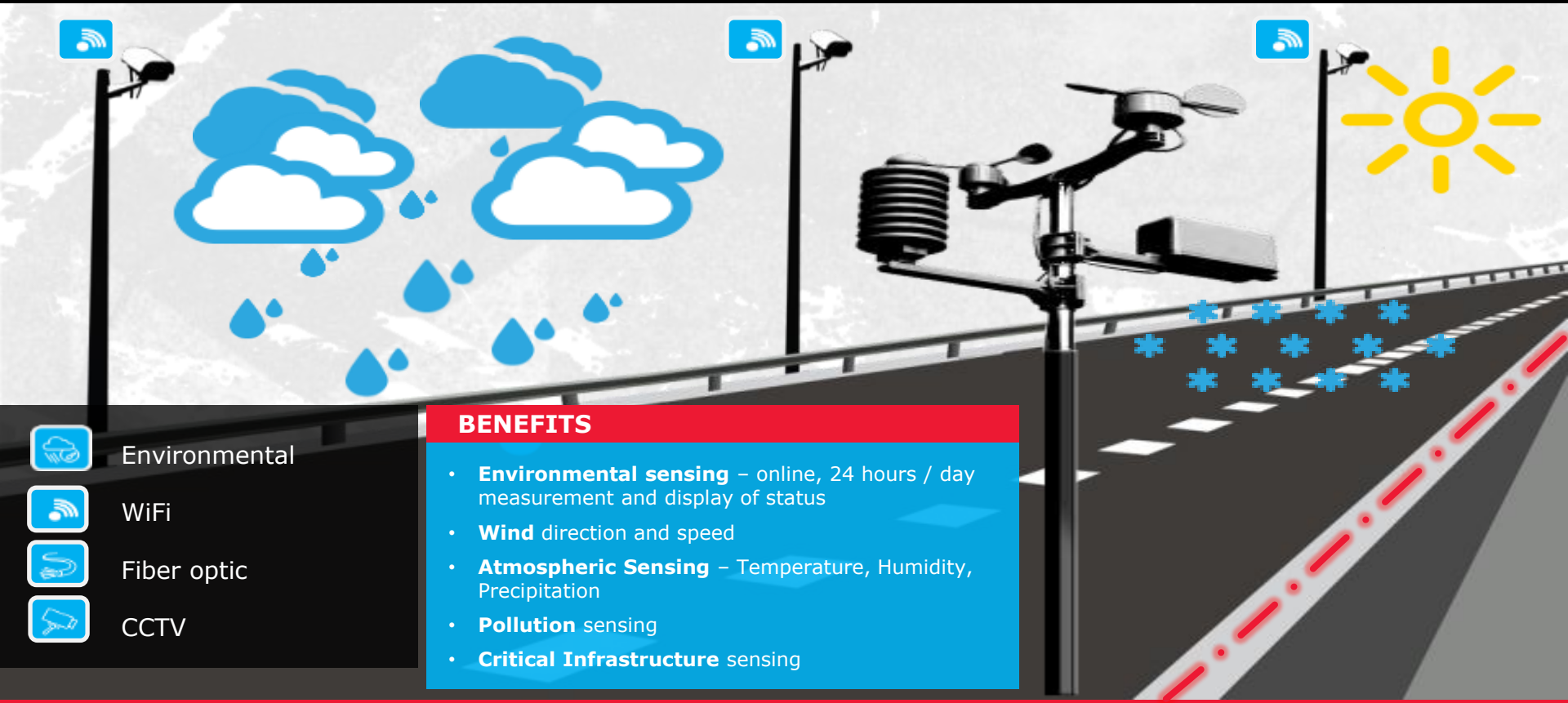
WiFi

Fiber optic

BENEFITS

- **Power Reduction –** LED technology, Light-On-Demand
- **Power Monitoring –** Average and current usage
- **LBPC – City WiFi** Location Based Personal Content

Environment / Infrastructure Sensing



- Environmental
- WiFi
- Fiber optic
- CCTV

BENEFITS

- **Environmental sensing** – online, 24 hours / day measurement and display of status
- **Wind** direction and speed
- **Atmospheric Sensing** – Temperature, Humidity, Precipitation
- **Pollution** sensing
- **Critical Infrastructure** sensing

Dashboard view

Dashboard View

Dashboard View

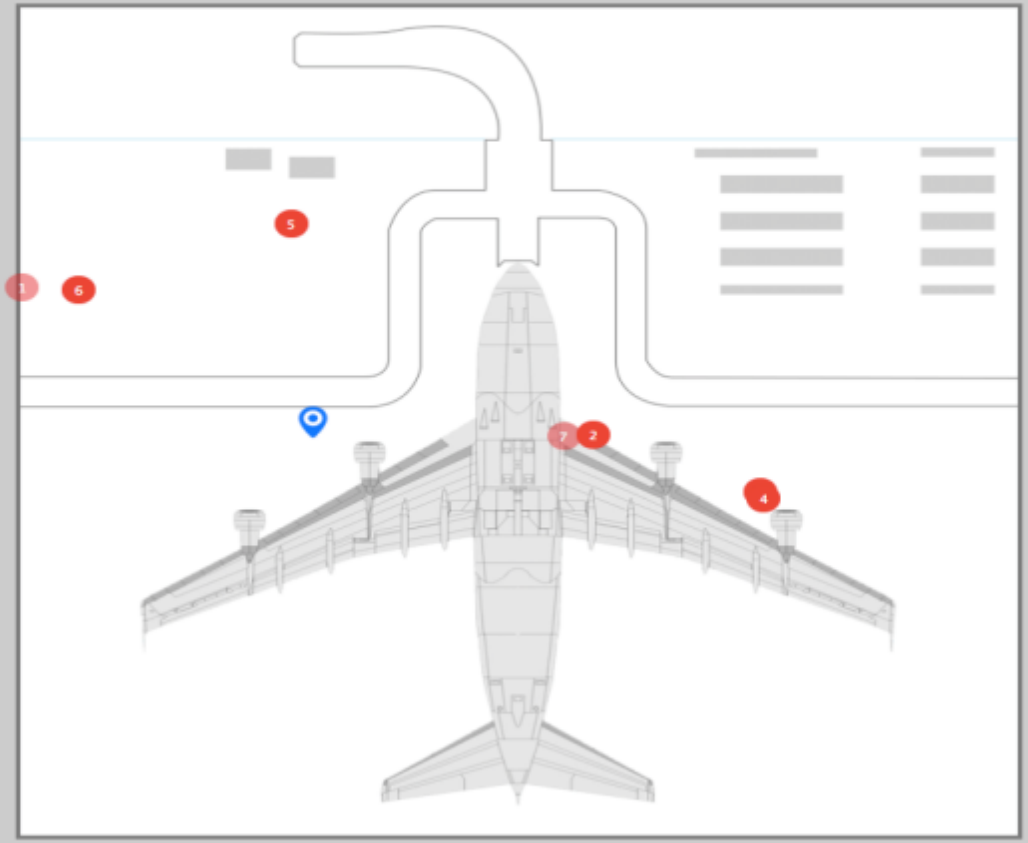
TOMORROW starts here.

Asset Tracking

Find the equipment you need, when you need it with Asset Tracking System

Additional Result Available

Hangar J



Type: All All

Distance: 100m

Identifier:

Clear Search

Auto Refresh 5s

Type	Serial#	Nearest

1
Type : Cargo Access Platform
Application : FW Cargo Platform
Serial : EK1111
Distance : 33m

2
Type : Keel Beam Access Platform
Application : Keel Beam Access Platform
Serial : EK1198
Distance : 27m

3
Type : Engine Core Stand
Application : Engine Core Stand Without Rails
Serial : EK1272
Distance : 44m

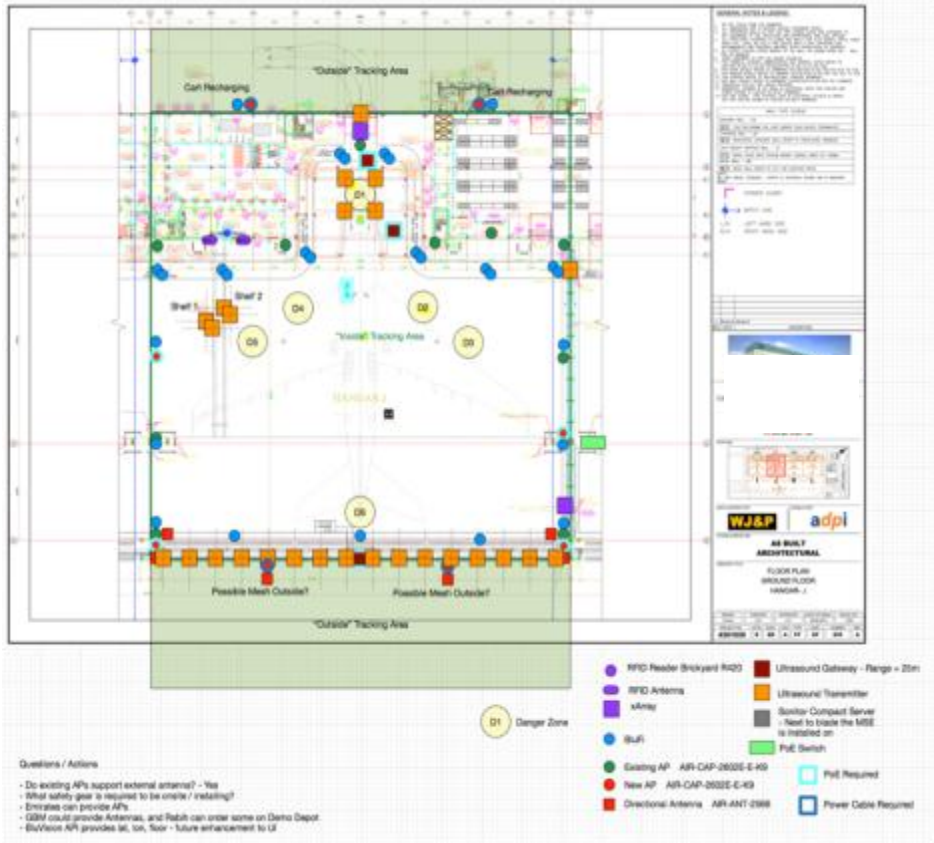
4
Type : Engine Core Stand
Application : Engine Core Access No Safety Rails
Serial : EK1557
Distance : 44m

5
Type : Spare Part
Application : HP Laser Jet 90A
Serial : EK2001
Distance : 25m

Result : 11

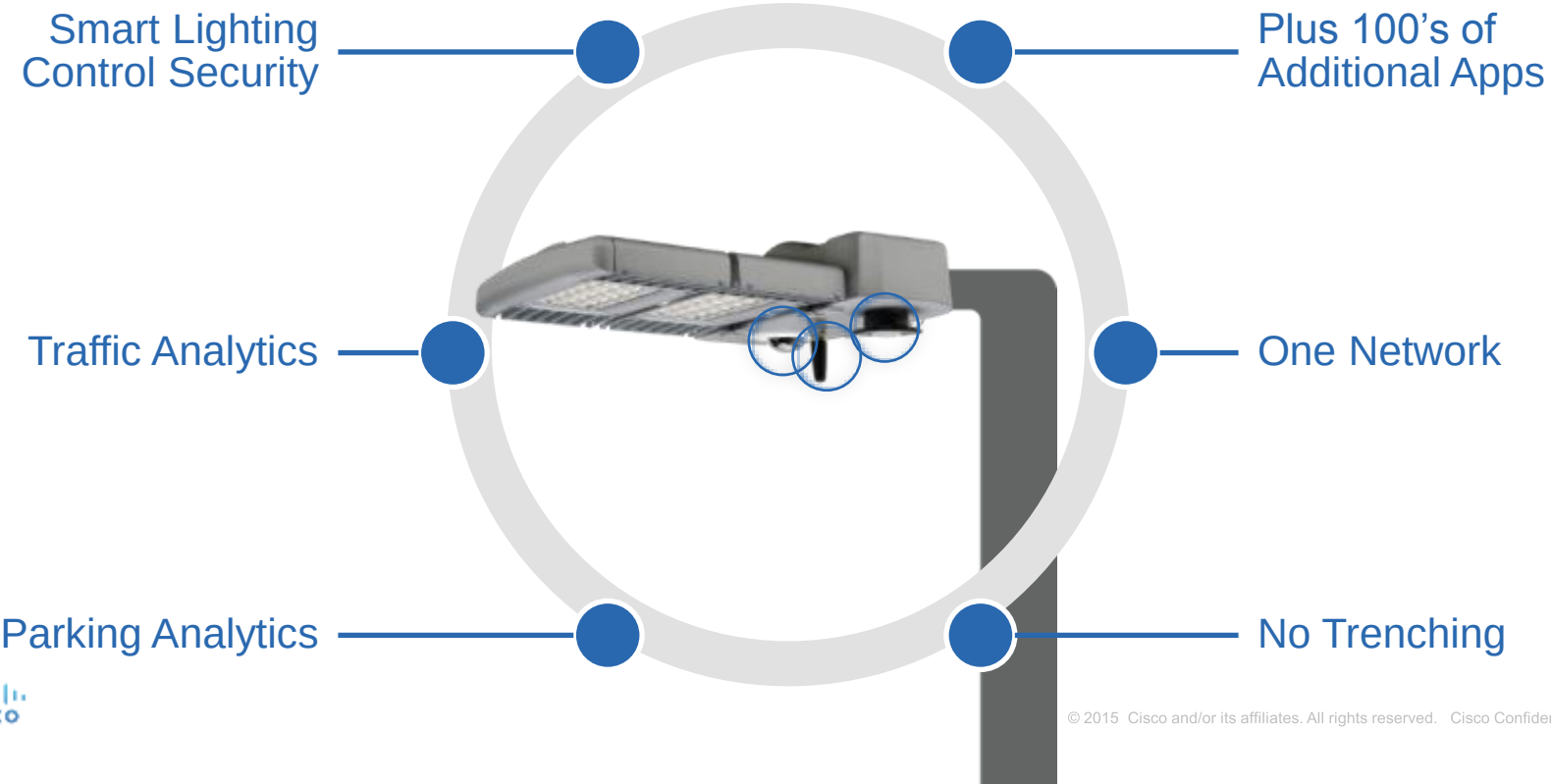
Custom Asset Tracking and Location Solution

- Currently in POC
- Collaborative effort
  - Rapid Prototyping
  - IoE Advanced Services
- Data Feed Multiple Sensors
  - RFID, Bluetooth, Ultrasound



Street Lighting

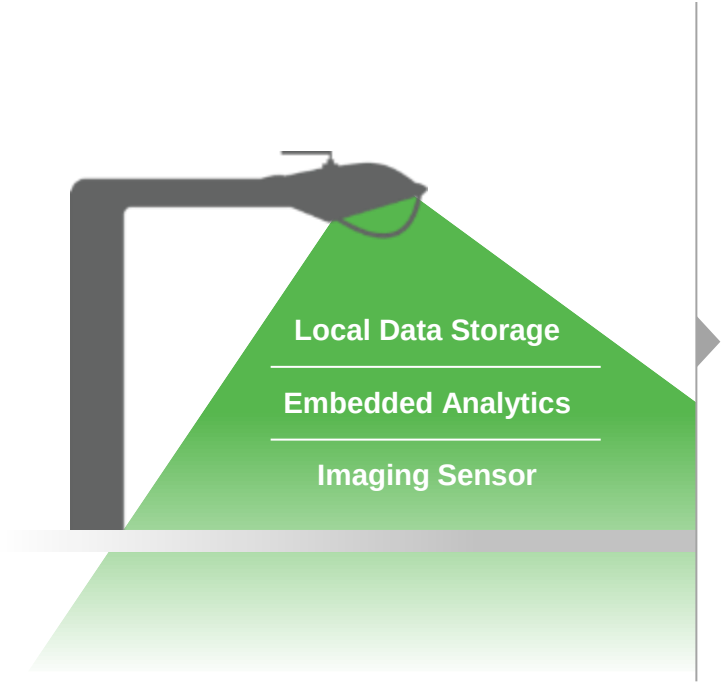
One Network, One Platform, Many Apps



Multi-Sensor Capabilities

TODAY	FUTURE APPLICATIONS	
Temperature	Pressure	RTLS
Accelerometer	Humidity	O_2 and CO_2
Ambient light		UVA/UVB
Power monitoring		Ultrasound
Motion		Radiation
		Rainfall
		Wind
		Particulate matter

Multi-Sensor Capabilities (Based on Video Analytics)

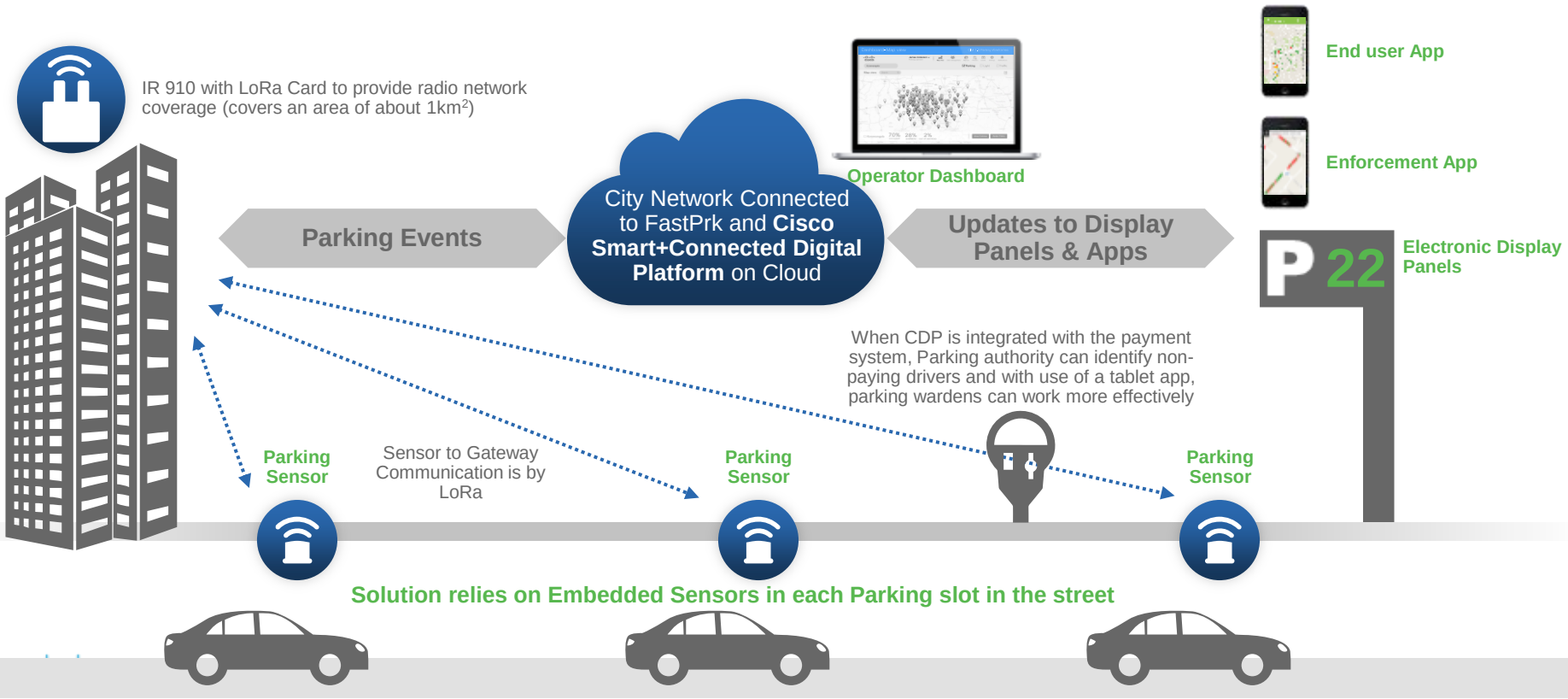


TODAY	FUTURE APPLICATIONS ...	
Parking	Surveillance	Bike/Pedestrian Counting
Motion	Unattended objects	Queue length
Car counting	Loitering	Taxi queue length
Vehicle Speed	Dwell time	Snow depth
	Jay walking	Event counting (dumpsters, plows)
		Remote condition monitoring Snow load, asphalt condition)
		Other Custom applications

Parking

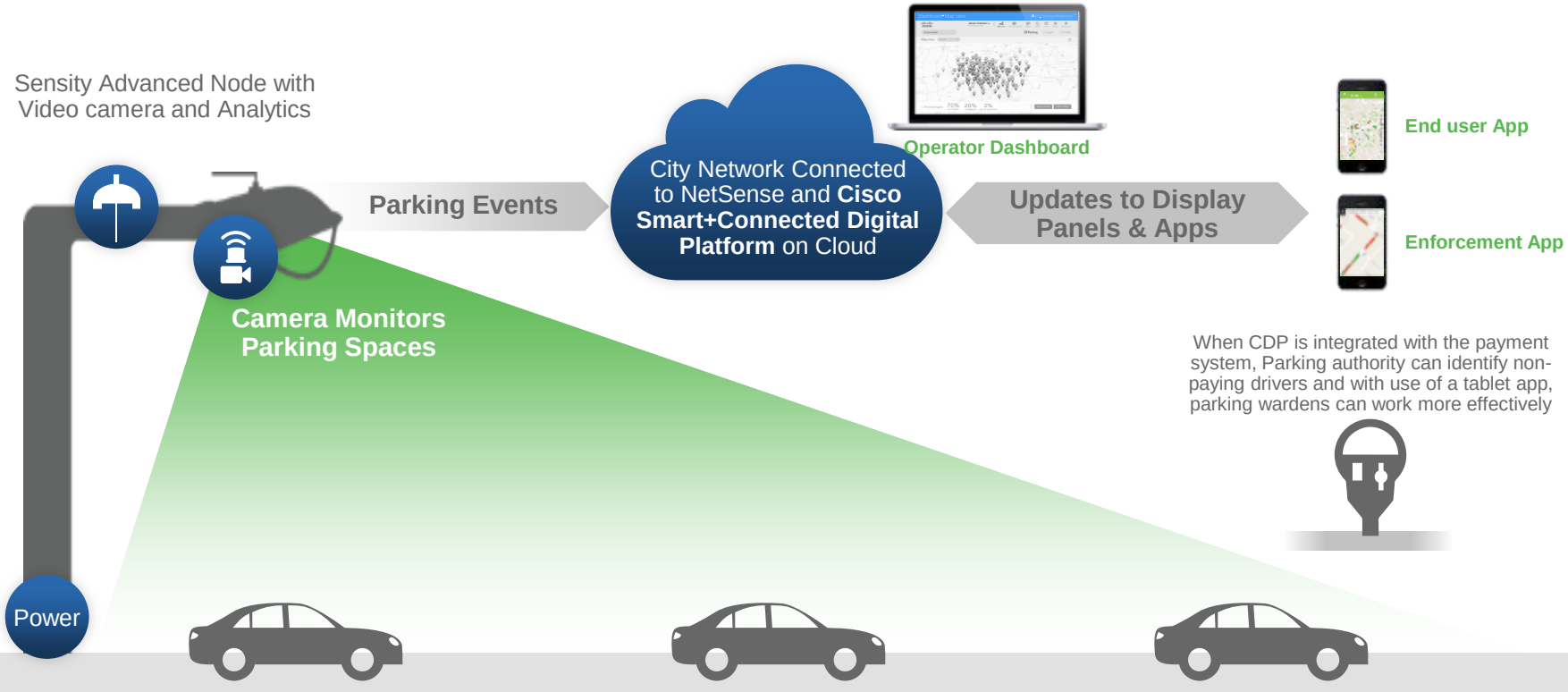
Smart+Connected Parking

Sensor based Solution: How It Works



Smart+Connected Parking

Camera based Solution: How It Works



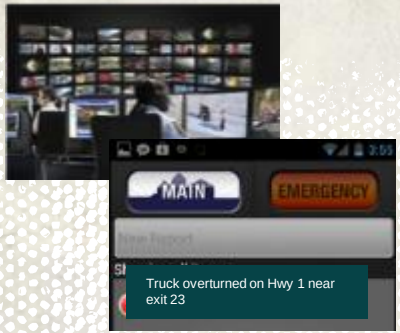
Traffic Incident Management

Traffic Incident Management

Detect & Validate

Video analytics detect motionless vehicle and alert operator

Live video identifies motionless vehicle as overturned truck



Respond

Dispatch and guide response team

Share accident information with first responders

Coordinate

Synchronize response teams

Re-route incoming traffic

Receive and evaluate citizen reports

Monitor accident scene

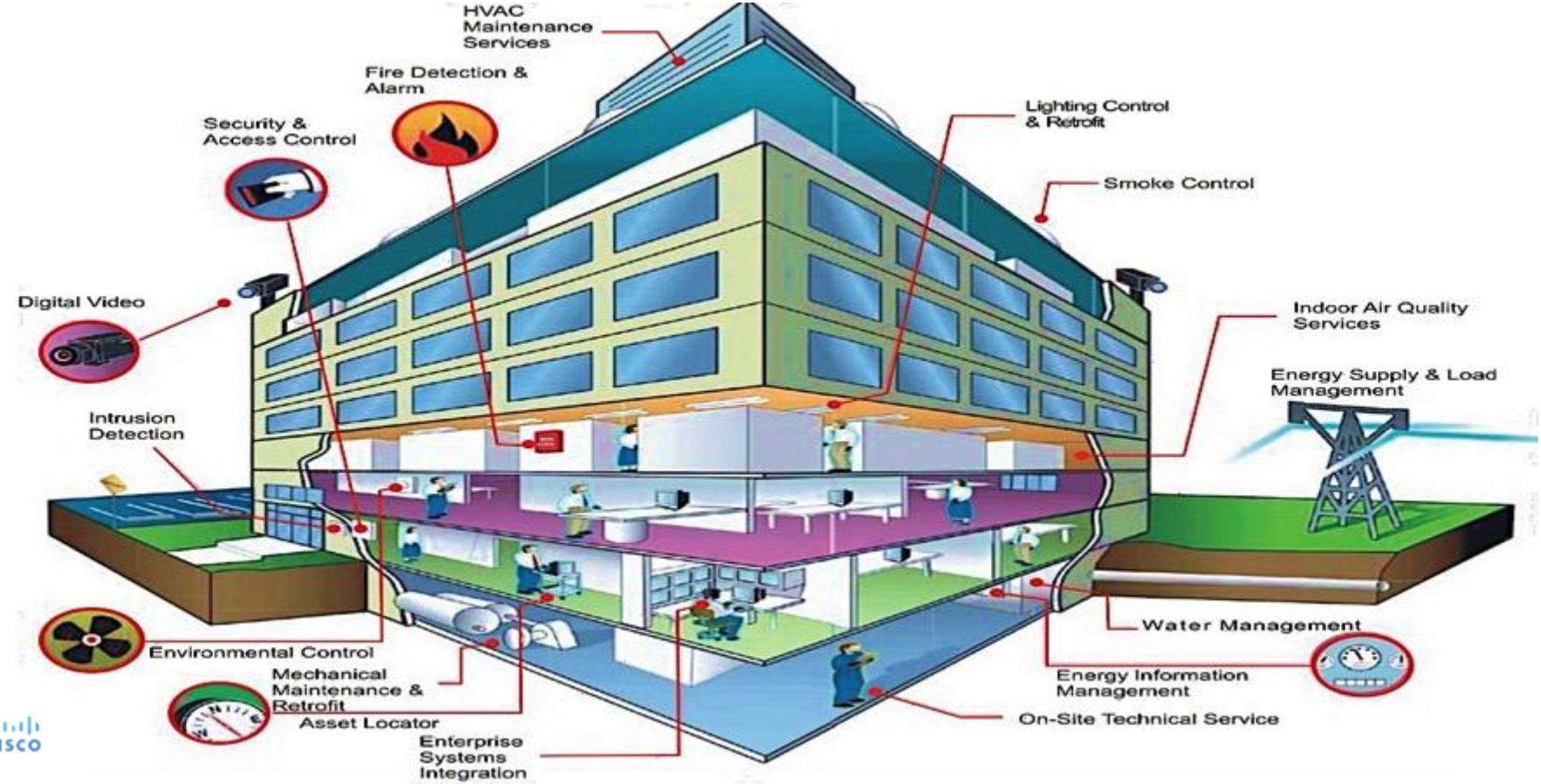
Review & Report

- Audit trail used as evidence
- Incident response team debrief and training
- Measure performance
- Identify process improvements

Smart Buildings

IoT enabled Next Generation

Building Infrastructure Management



Virtual Citizen Services

Cisco Remote Expert for Government Services

Bringing government services closer to citizens

Online Help	Contact Center	Service Center	Cisco Remote Expert for Government Services
			

Remote Expert for Government Services complements existing channels of citizen service

- Immersive, collaborative experience
- Less travel time
- Quick access to the right expert
- High-technology but light touch

REGS Case Study: City of Nice

Challenges

- Wanted to develop a new government model and sustainable city reference, while embracing IT as part of the solution
- Needed to improve public services for local residences while bringing administrative services close to the community

Solution

- Cisco® Remote Expert Smart Solution for Government Services installed in a local shopping mall (called "SPOT MAIRíE")

Benefits

- More than 30 services available to citizens
- Improved customer service through face-to-face contact with an agent as well as extended hours (same as mall hours)
- Citizens claim it is easy to use, immediate, and a better experience than a phone-based solution
- Agents state they can provide wider and more in-depth services to citizens

Customer Profile

The Cote d'Azure has 1.3 million inhabitants in 42 cities spread throughout the French Riviera

Nice is the fifth largest city in France, with 535,000 inhabitants

TOMORROW starts here.