

# Liverpool Mayoral Challenge: Smart Environment

Smarter Energy Solutions

## “Smart Environment”

What can we do to improve the urban environment to make it more sustainable:

- waste management
- improving air quality
- making energy options low carbon

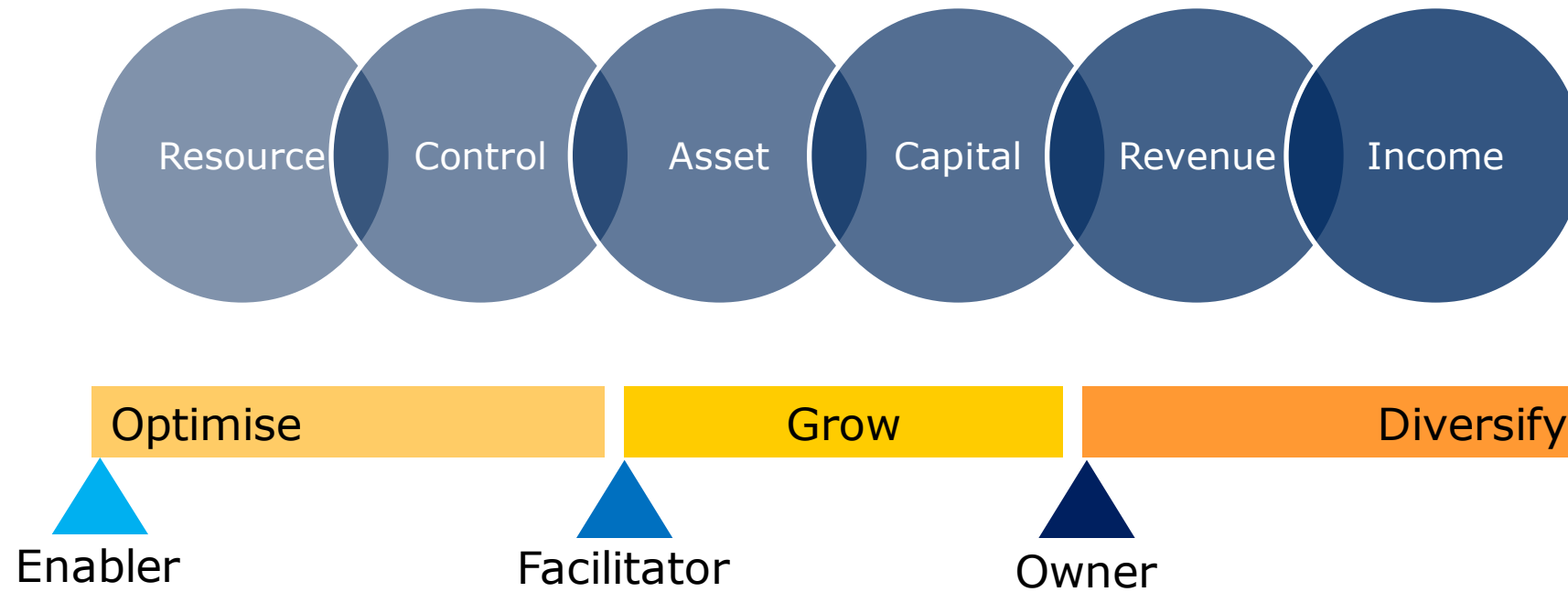
“Urban Environment” = City of Liverpool

“We” = Council & Community

“Sustainable” = Economic | Social | Environmental

The logo for SMART LIVERPOOL. The word "SMART" is written in a large, black, sans-serif font. Below it, the word "LIVERPOOL" is written in a smaller, teal, sans-serif font. The letters are spaced out and aligned horizontally.

# Council Role: Enabler | Facilitator | Owner



# def: "Smart" & "Smart City"

- having or showing a quick-witted intelligence
- (of a device) programmed so as to be capable of some independent action



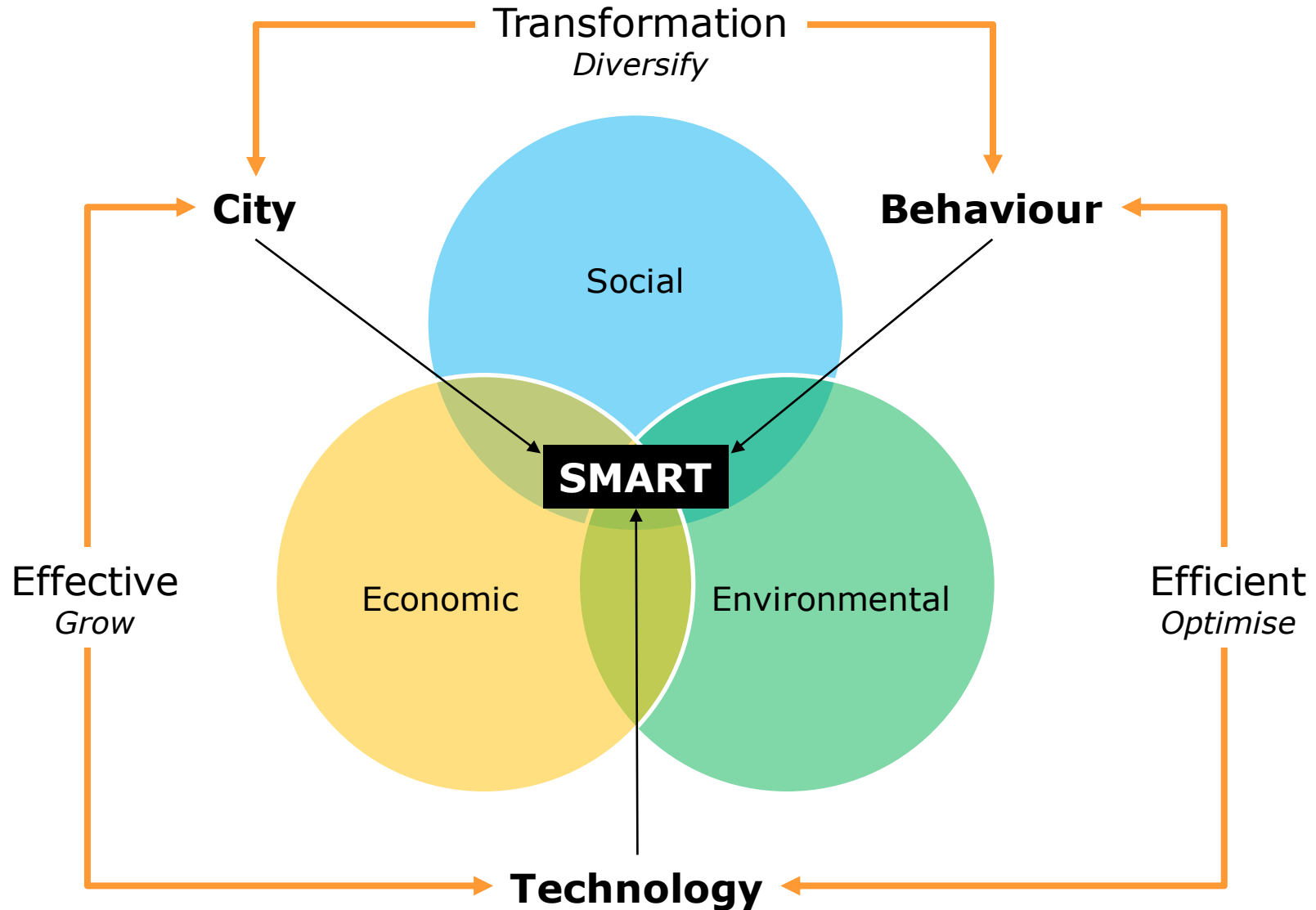
- A smart city is one that has digital technology embedded across all city functions



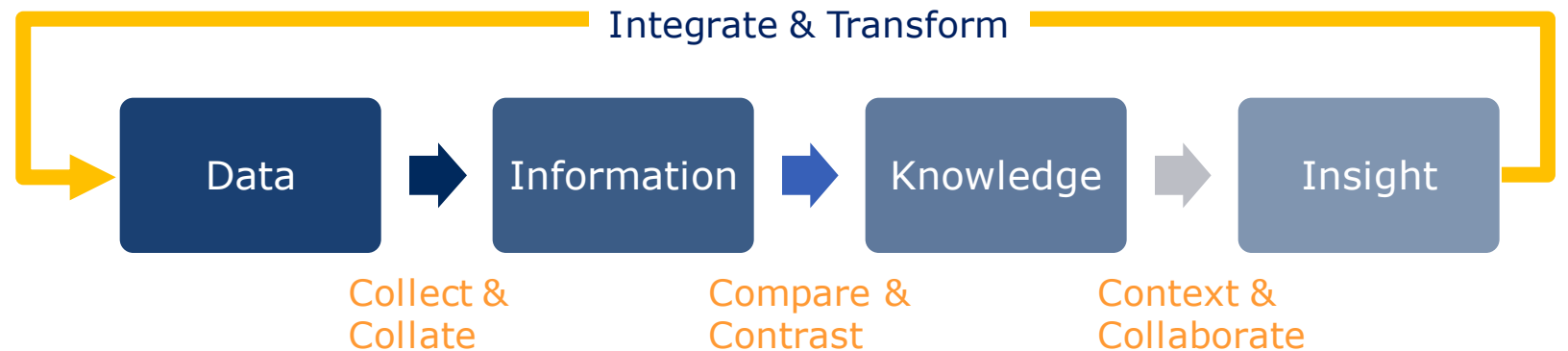
- Digital Solutions at the cross section of the city's needs, technological innovation & public service transformation



# Our Approach



# Orchestrating the City: What & How

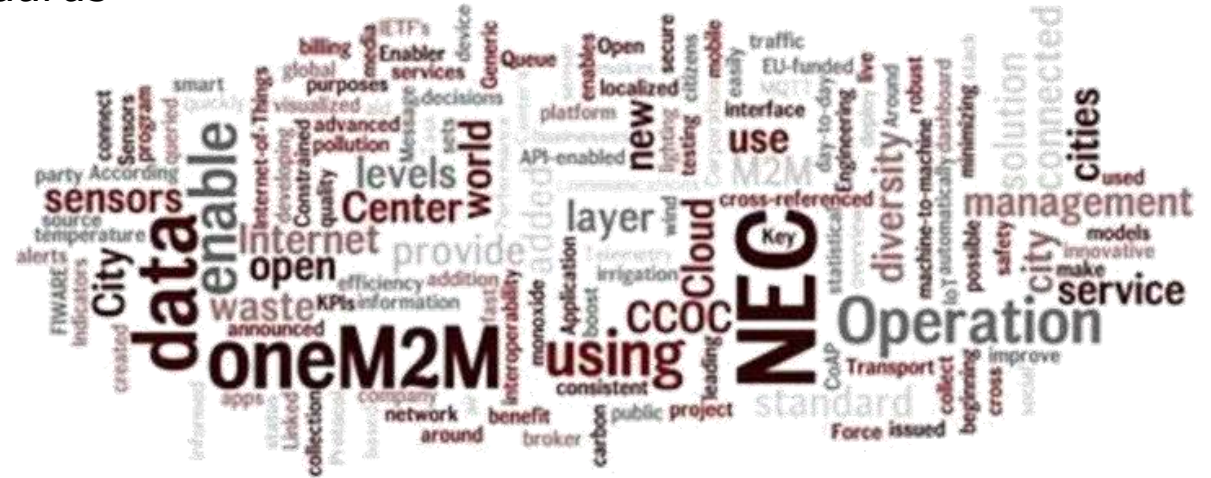


## FEATURES

- Compatible: developed using recognised industry standards
- Flexible: inputs, processes, outputs, scalable
- Innovative: collaboration, integration, visualisation

## BENEFITS

- Optimise: Understanding & Use – Horizontal view with intelligent data
- Grow: Capability & Capacity – Do more with less, smartly
- Diversify: Transparency & Transformation – Engage to effect change





**CCOC** – Cloud City Operations Center

## Integration

Generation



Transmission & Distribution



Consumption



**Renewable:**  
Distributed

**Transmission:**  
Storage

**Efficient:**  
Product

Grid  
Storage  
Systems

EV charging  
Infrastructure

Distributed  
Storage  
Systems

Smart  
Meters

Building Energy  
Management  
Systems



# Smart Energy Solutions | Storage Applications

Generation



Transmission & Distribution



Consumption



- Sweat Assets
- Pre-Fault Services
- Grid Capacity

Improve plant efficiency  
Decrease plant emissions  
Rapid deployment capability

- Pre-Fault Services
- Renewable Integration
- Upgrade Deferral

Increase grid reliability  
Enhance wind and solar  
Improve network capacity

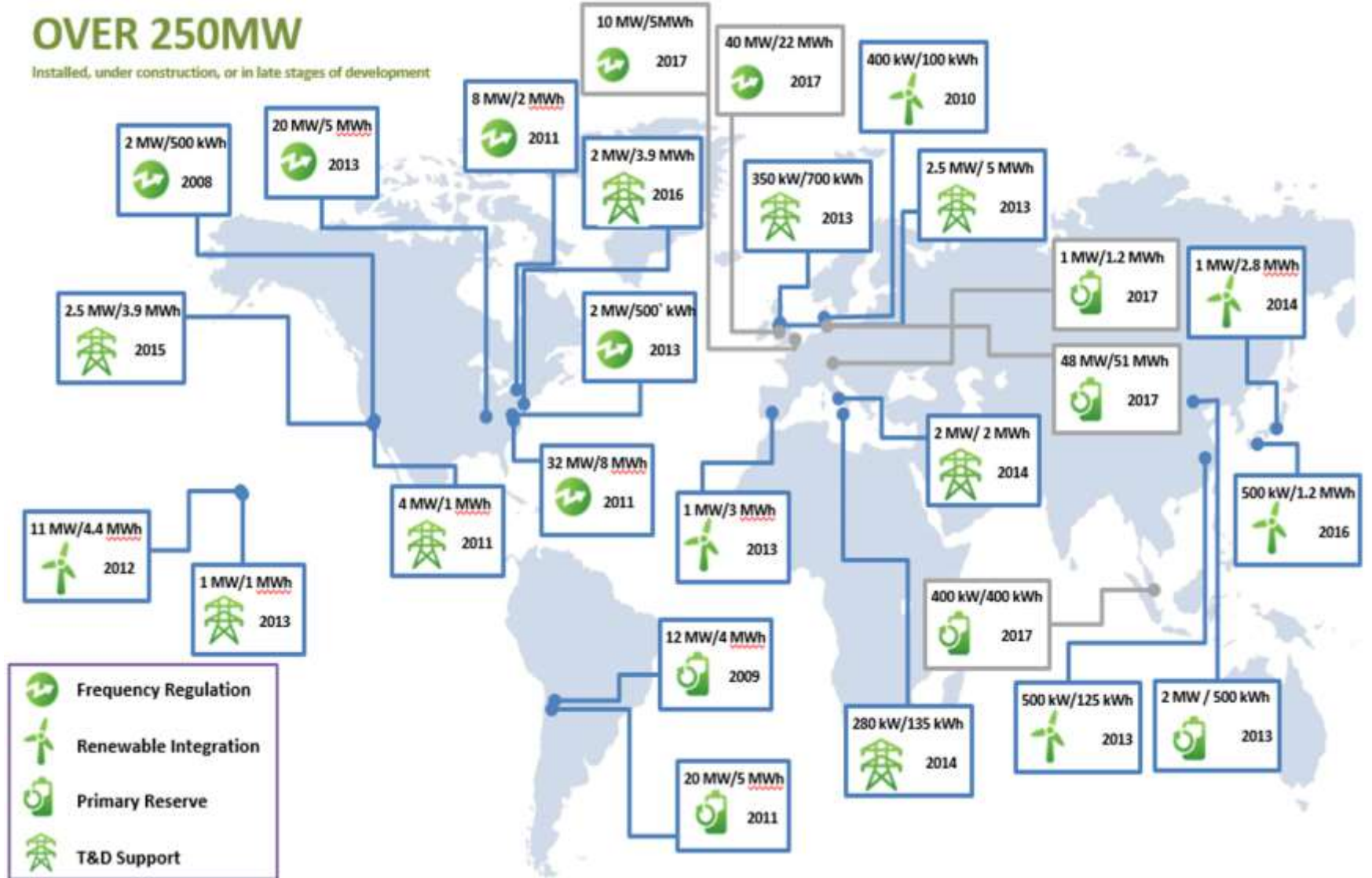
- Energy Efficiency
- Community Energy Storage
- Microgrids | VPP

Improve power quality  
Smart grid ready  
Aggregation & Automation

# Energy Storage Global Footprint

**OVER 250MW**

Installed, under construction, or in late stages of development



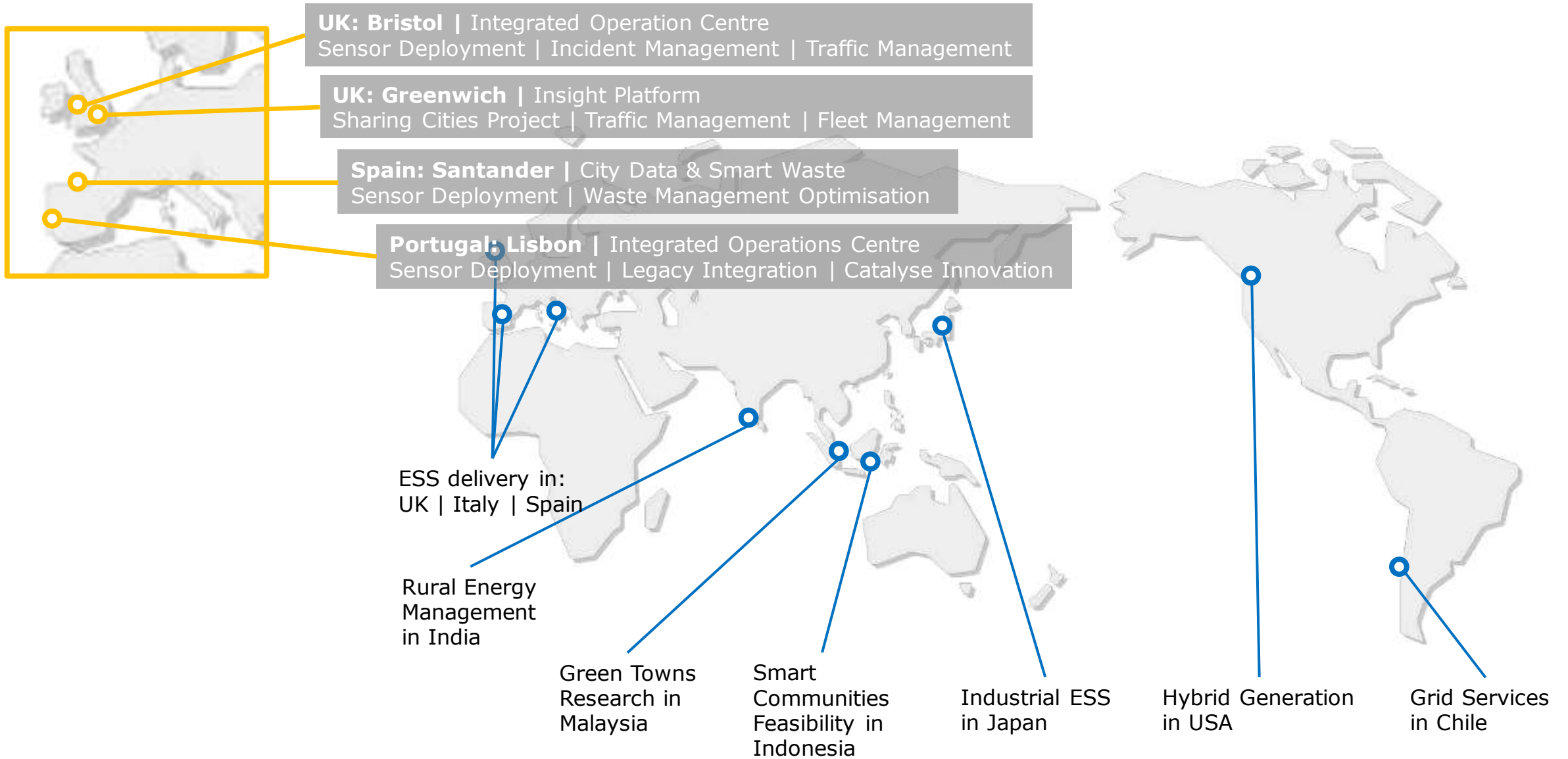
## UK credentials:

- 16/17 - 200MW
- 50% of EFR Plant

## Breaking News:

- 20MW @ Altringham

# NEC Smart Initiatives



# Smart Environment = CoCC + Smart Energy

## Technology (implement)

- Energy Storage to Enable
- Platform to Integrate & Manage

## Behaviour (use)

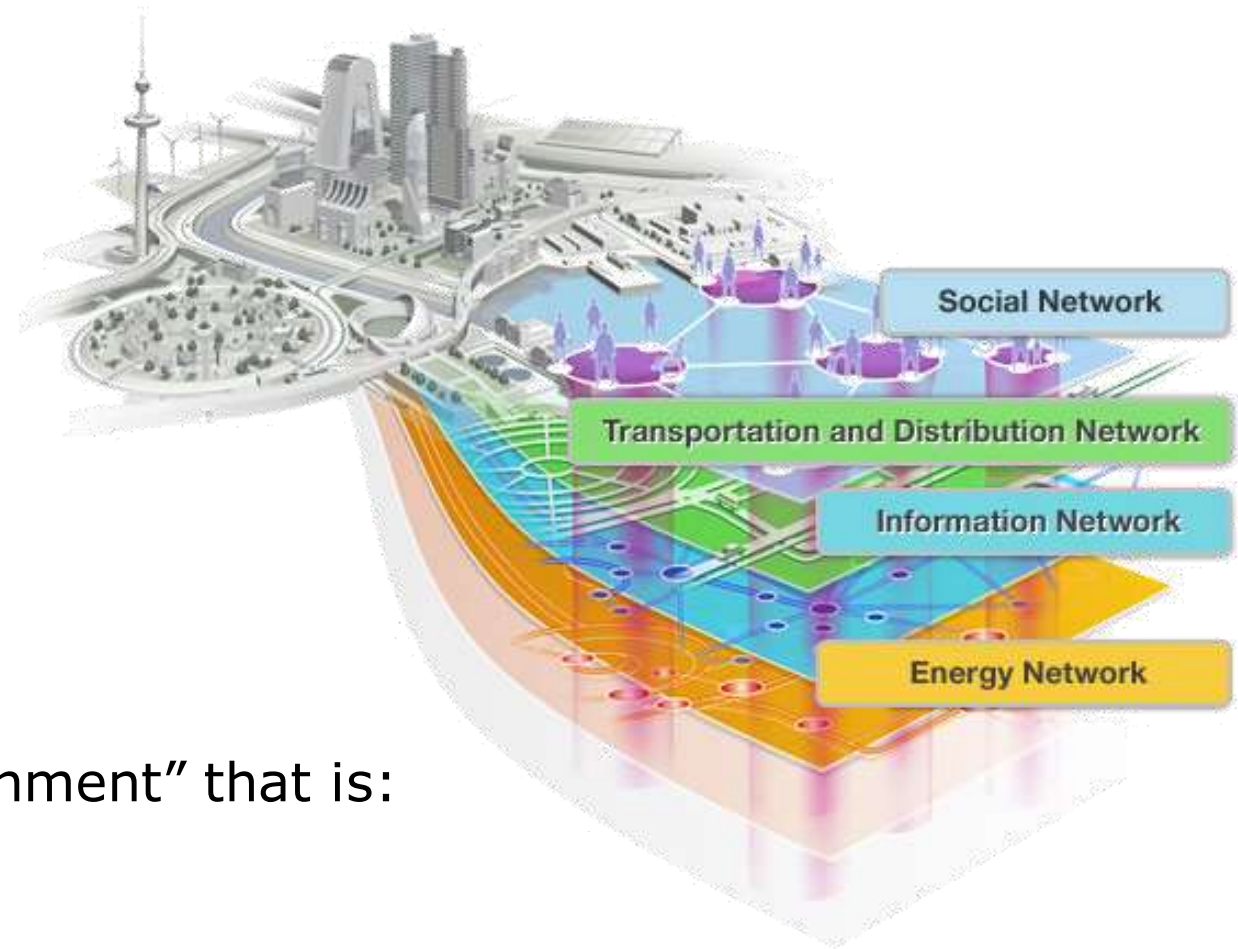
- Existing & Desired
- Patterns & Focus

## City (context)

- Circular
- Cleaner

## Goal - make Liverpool "a smart environment" that is:

- Resource Efficient
- Effective Change
- Transform the City





# NEC Corporation



Established

1899



Employees

98,882



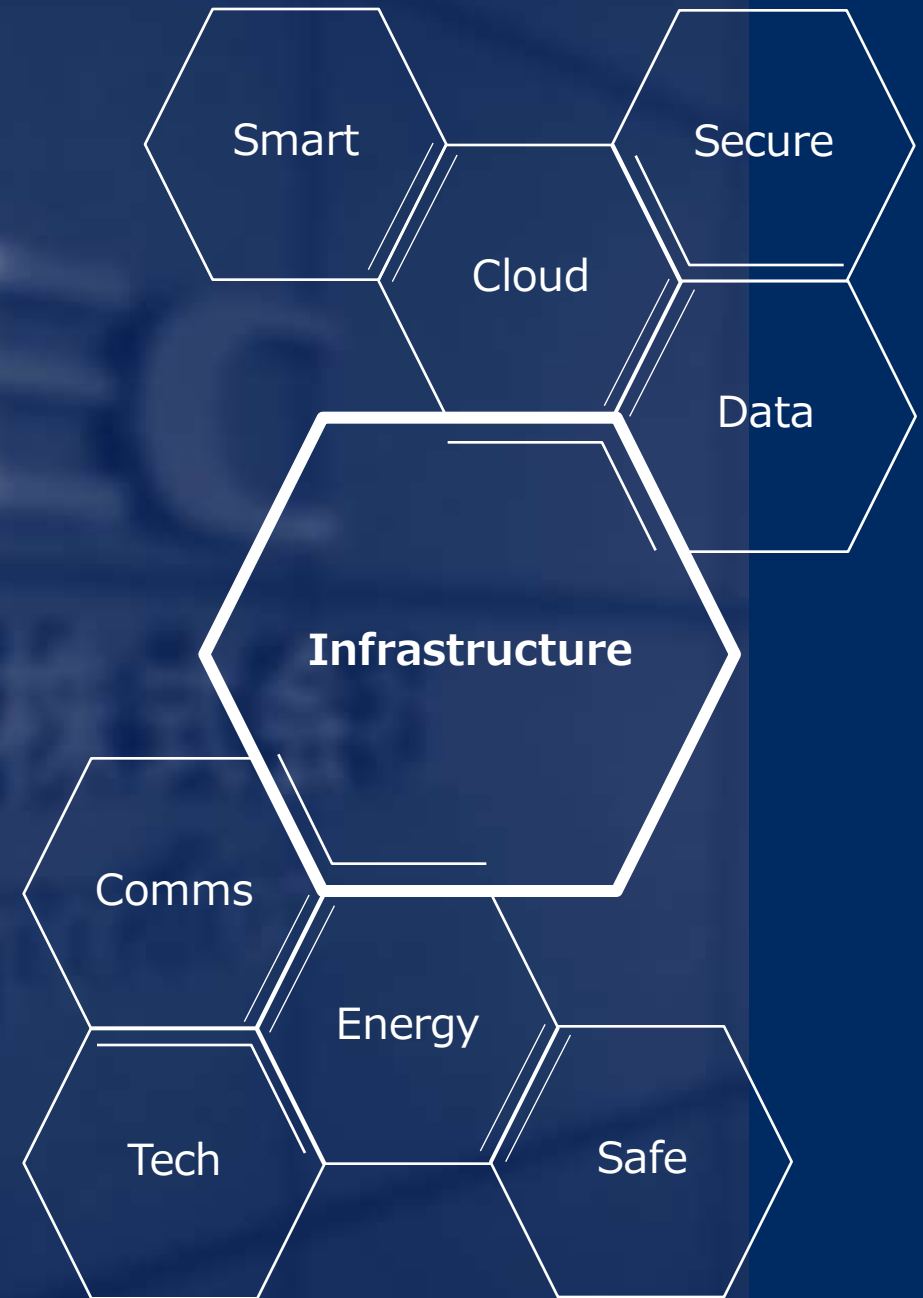
Net sales

£ 18 billion



Group companies

238



 **Orchestrating** a brighter world

**NEC**