

This presentation was live at:



# Smart Buildings

**SHOW**

18-19 October 2023 • ExCel London

# The Smart Journey to a Net-Zero office



Turner & Townsend

Emilia Cardamone – Associate Director, Digital Real Estate

Smart Buildings Show 2023



Architects: Wester + Elsner, Reflex,  
ETTELVA Renderings: TMRW



# Who we are

Through the commitment, capability and care our team brings, we build trust between clients, suppliers, governments and society. Delivering better outcomes that have a positive impact on the world around us.

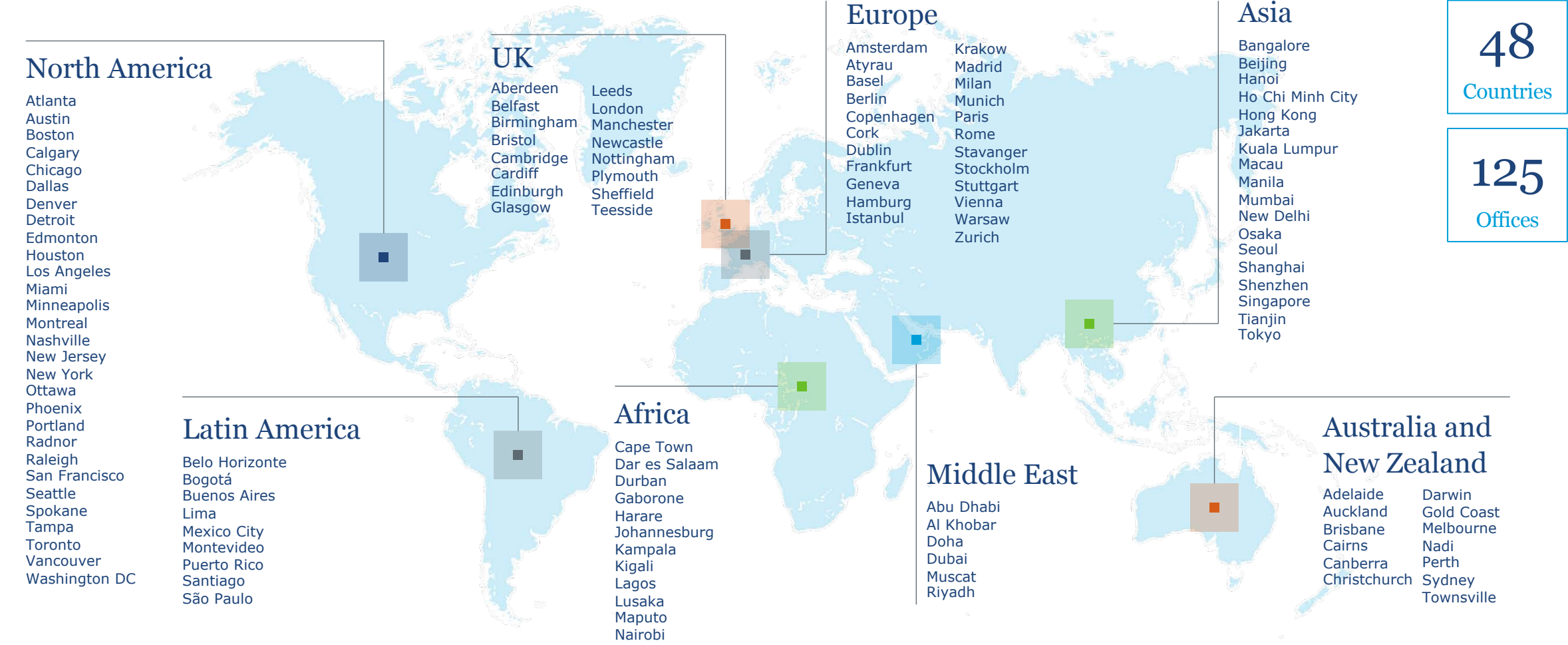
We work smarter to face the challenges of the future; bringing the clarity that helps teams realise their full potential across the real estate, infrastructure and natural resources sectors.

It's how we've made the difference for 75 years.

**Transforming performance for a green, inclusive and productive world.**



# Our offices







## Why data is important?

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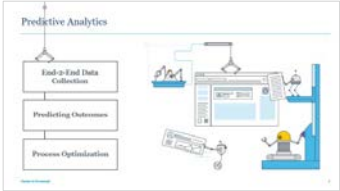
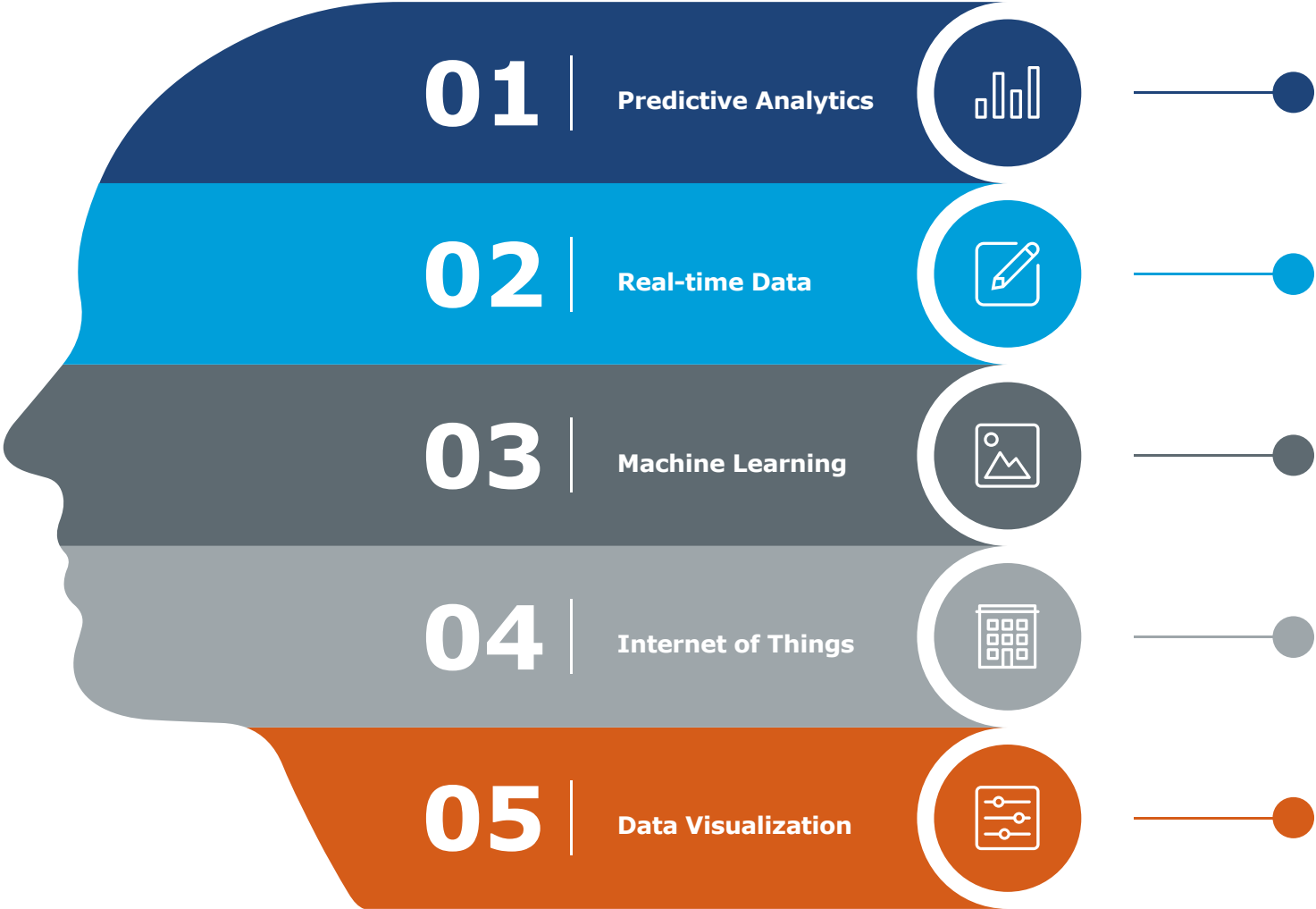


**“Without big data,  
you are blind and  
deaf and in the  
middle of a  
freeway.”**

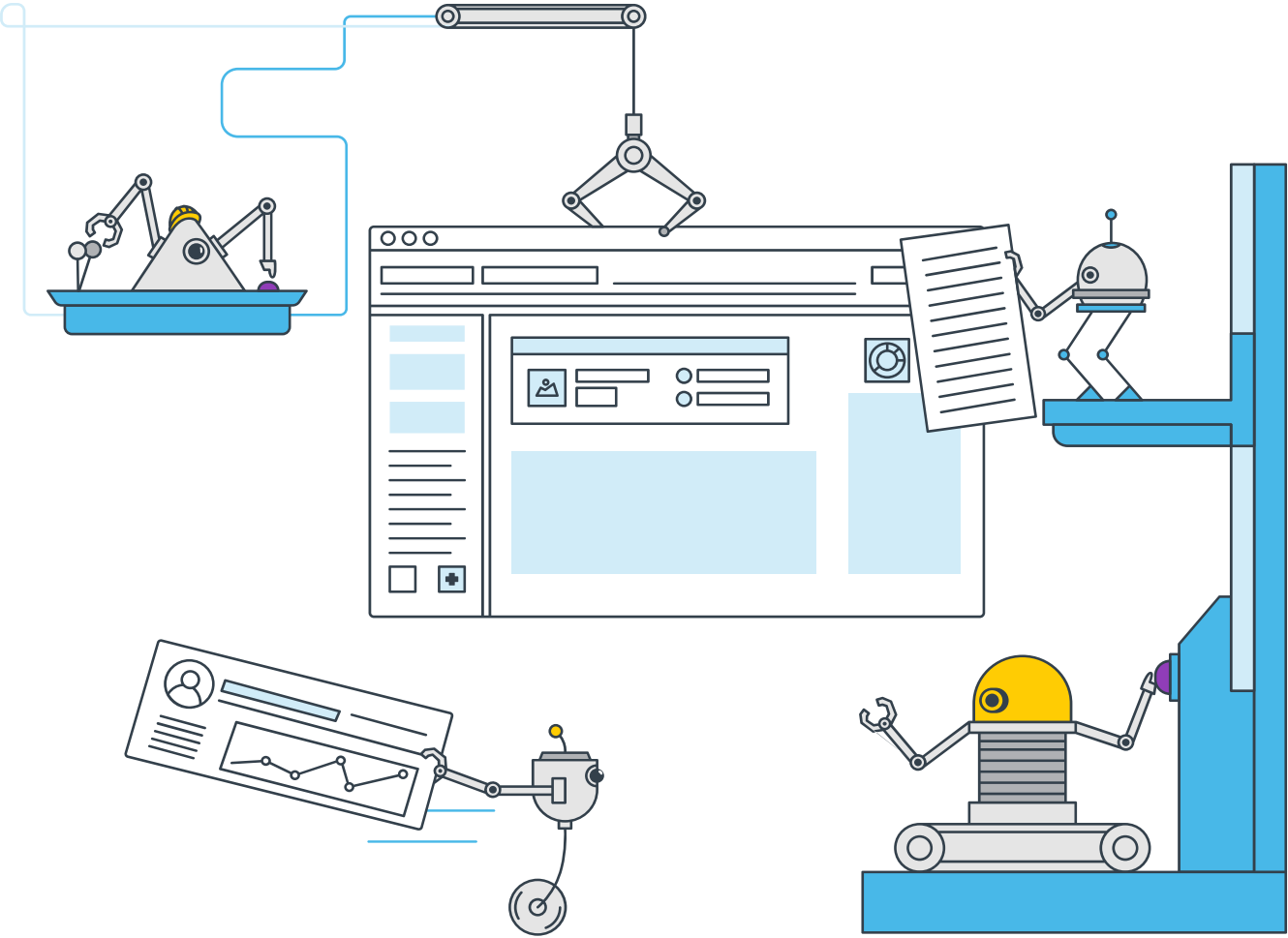
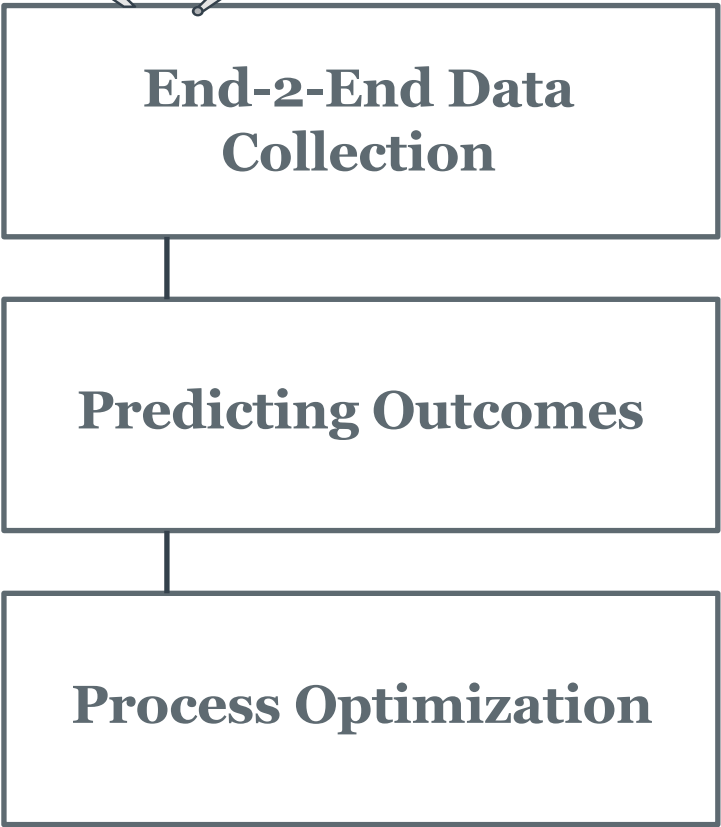
*Geoffrey Moore*



# The importance of data analytics and data science

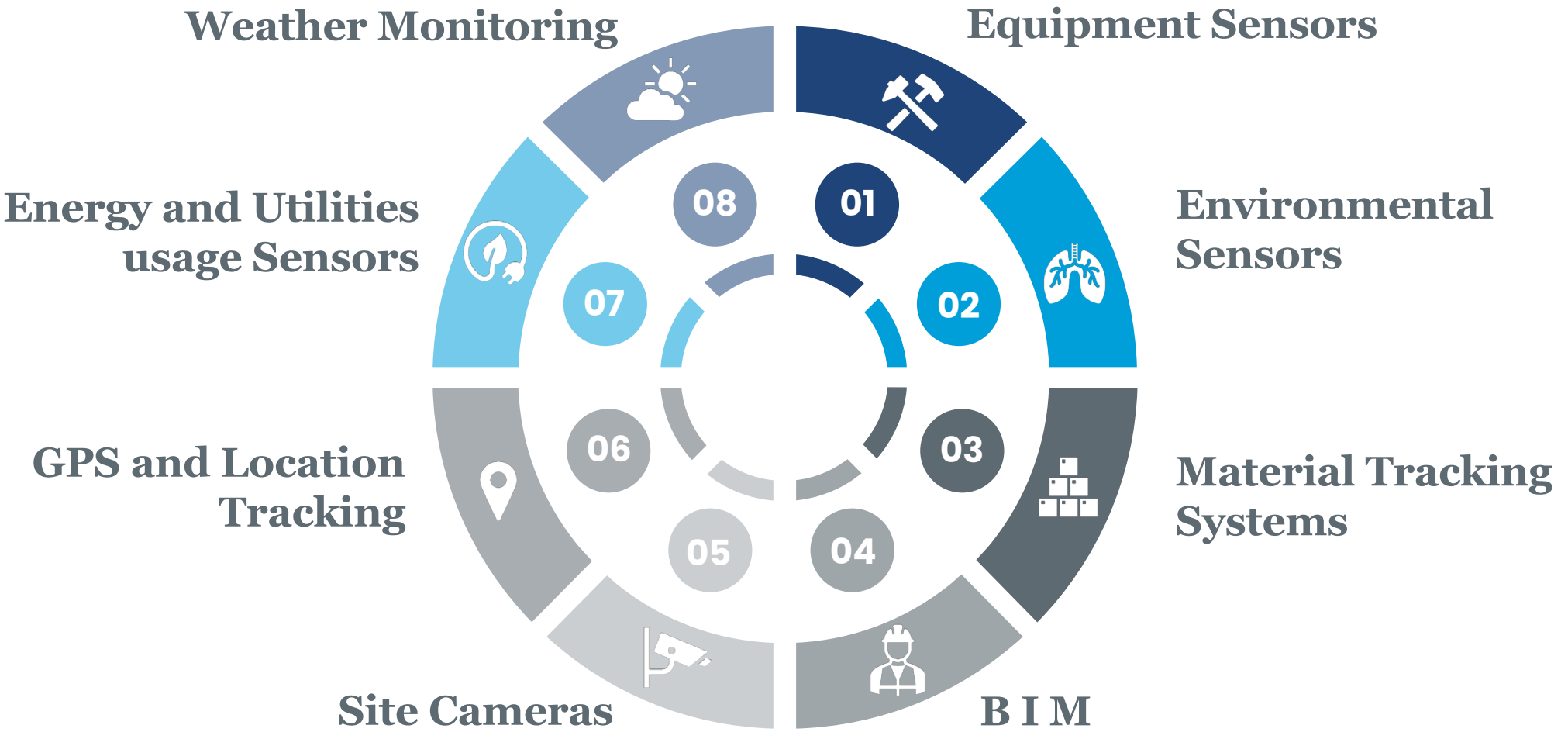


# Predictive Analytics





# Real-time Data



# Machine Learning

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**01**

**Predictive Maintenance**



**02**

**Quality Control**



**03**

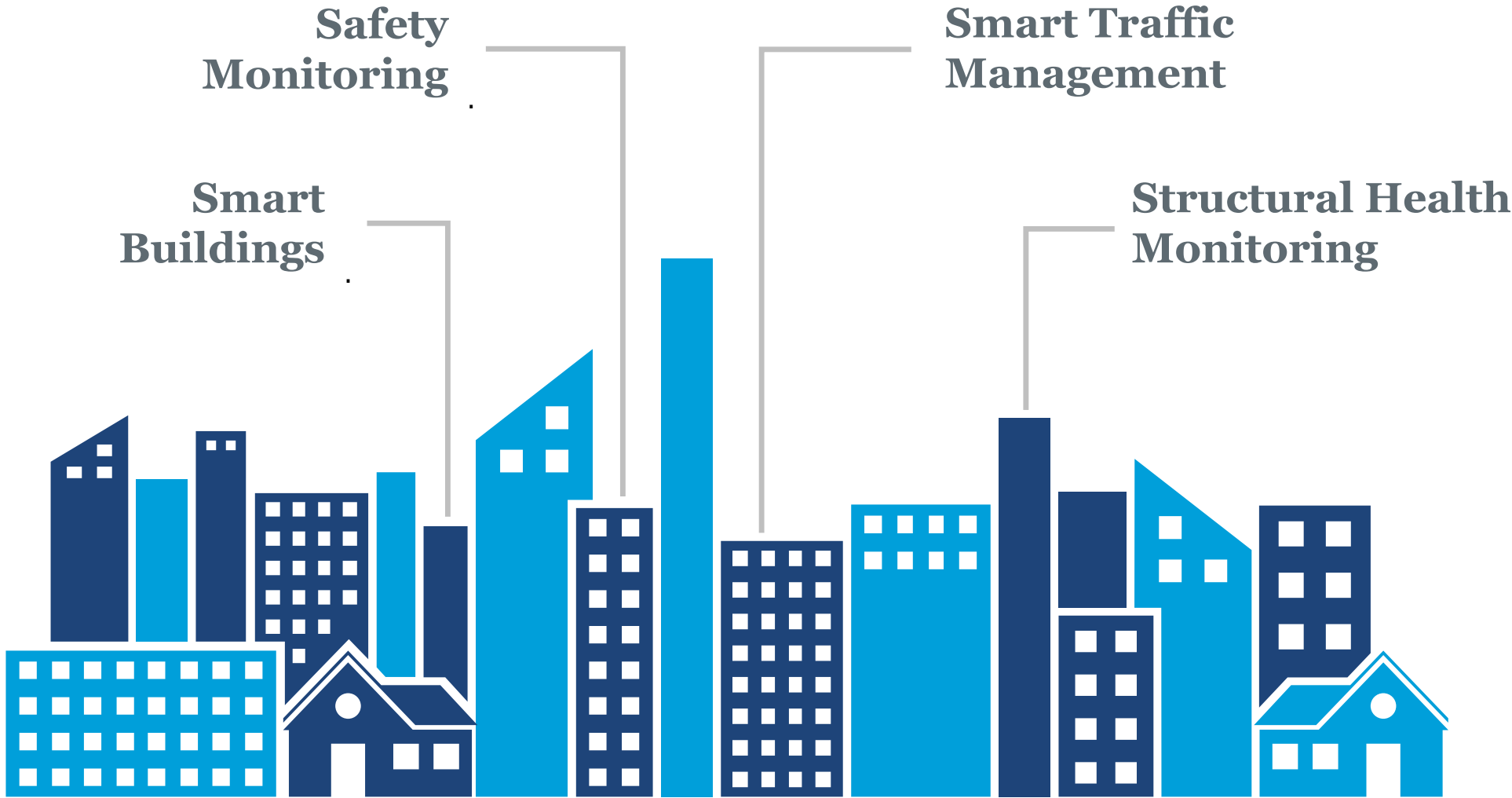
**Resource Optimisation**



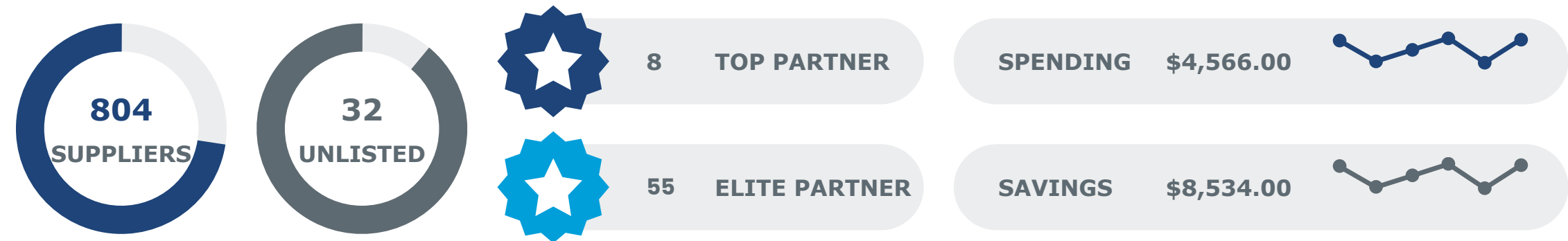


# Internet of Things

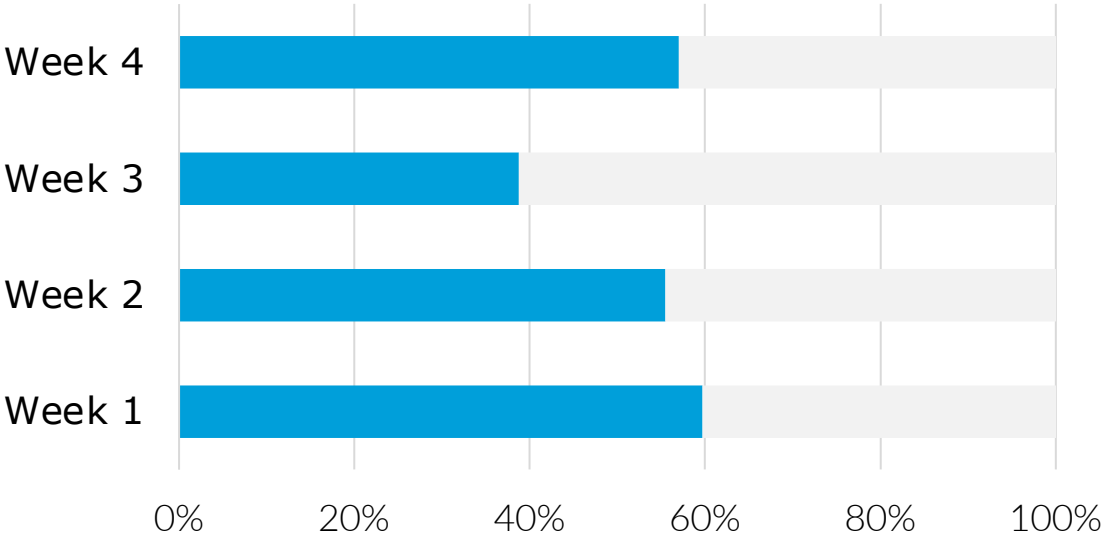
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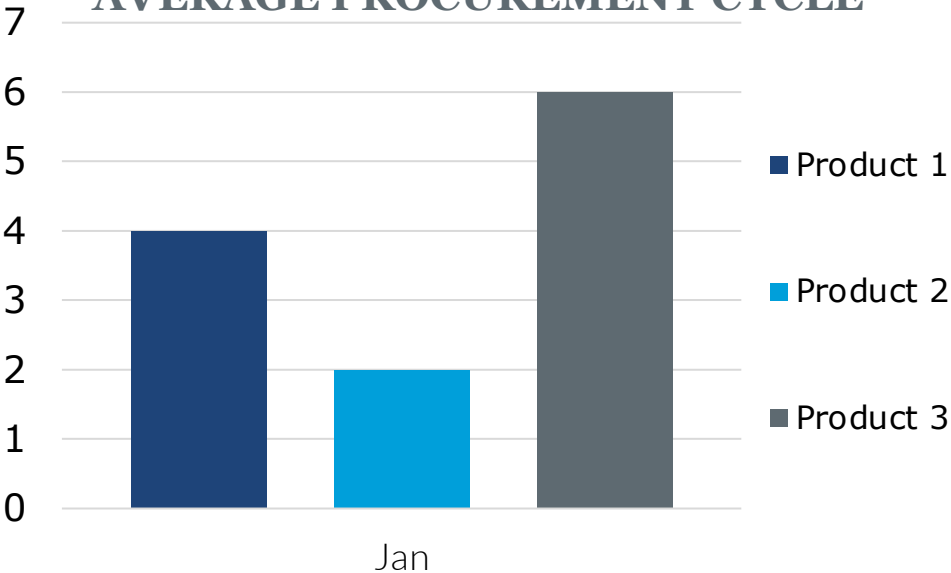
# Data Visualization



RATE OF CONTRACT COMPLIANCE



AVERAGE PROCUREMENT CYCLE







## Why data is relevant for the Real Estate Sector?

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# SMART workplace – Why?

26%

of global energy related emissions are from the operations of buildings (scope 1 and 2)

International Energy Agency

80% of buildings

that will be occupied in 2050 already exist. Modernising the Real Estate sector will be key

McKinsey & Company report

92% of Occupiers

say that Commercial RE tech will be a driver of competitive advantage for their organisation

JLL report

91% of Occupiers

would be willing to pay a premium for Buildings with Smart Technology

JLL report

150%

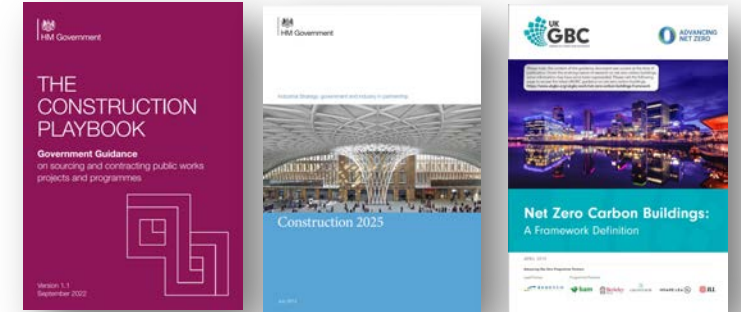
Increase in numbers of Smart Buildings by 2026.

Smart Energy international



# The role of Data in the Built Environment

- Manufacturing sees a **3.6%** annual productivity gain against **1%** in construction
  - Modern methods of construction estimated to return **c.£20Bn per annum** across US & EU
  - National Infrastructure Commission predicts a **£7Bn saving** through better use of data
- Connected devices set to reach **50 Billion by 2030**, posing the greatest security risk to SMART assets
  - **20%** of project management, **70%** data collection and **90%** of asset performance management can be automated using existing technology today



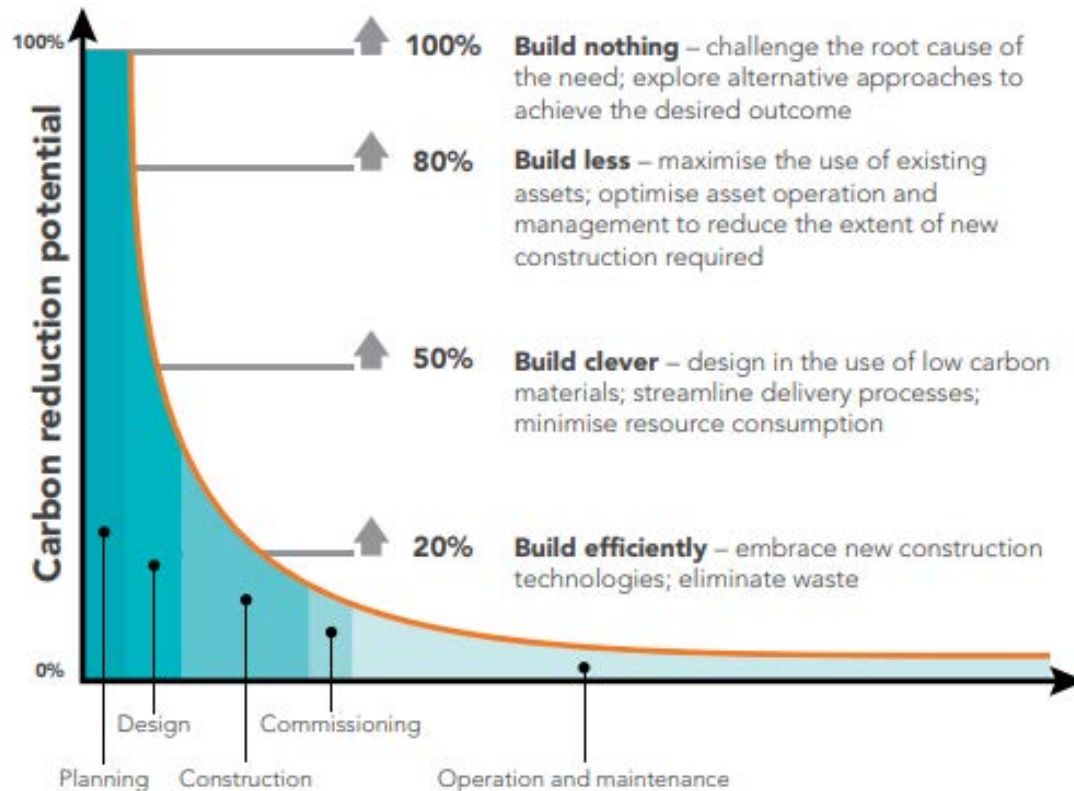
## Data driven industry

*“The ‘fourth industrial revolution’ is changing our world like never before. Data has become the world’s most valuable commodity.”*

# Carbon Reduction potential in buildings

## Embodied carbon reduction potential at different stages of a building project

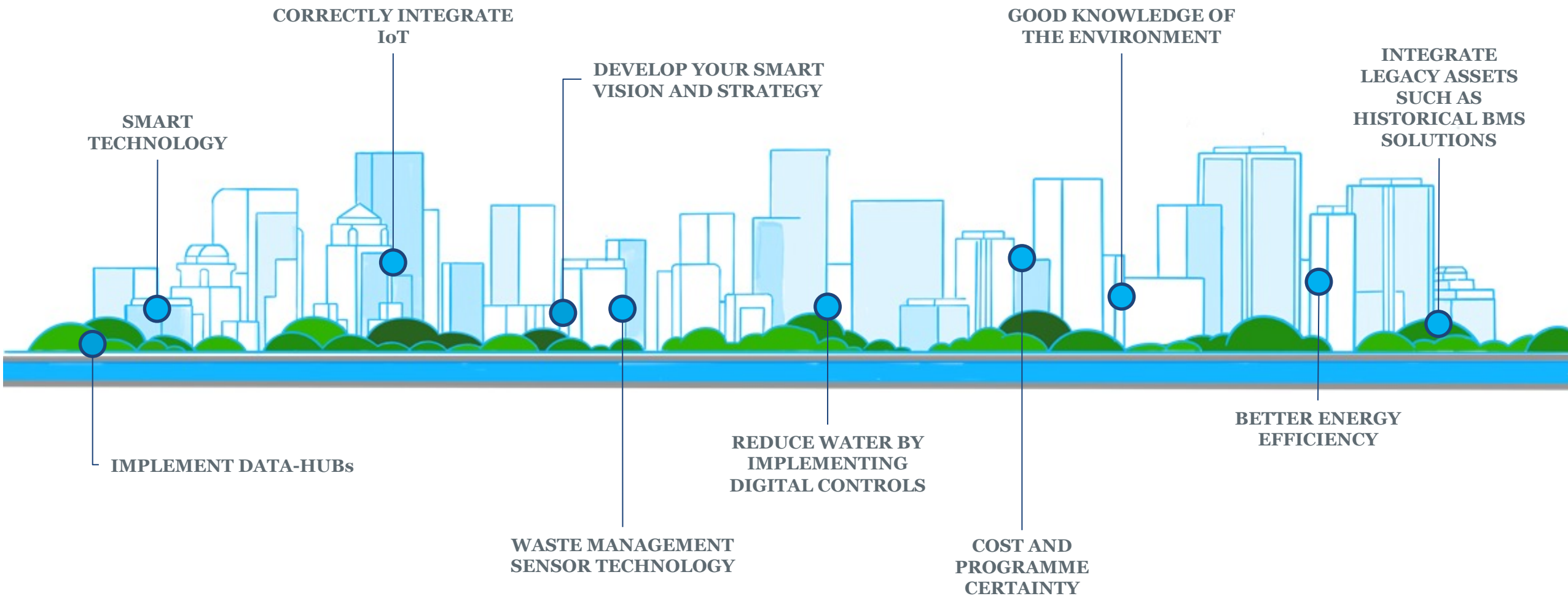
© HM Treasury; Green Construction Board



\*GBC - Net Zero Carbon Buildings

- The earlier we can impact on the carbon lifecycle of an asset the better ( refer to PAS 2080:2022 if you can)
- A whole life carbon assessment should be undertaken and disclosed for all construction projects to drive carbon reductions.
- Calculate and account for embodied carbon during the Design and Construction stage of a project
- Reduce operational energy use
- Increase Sustainable and renewable energy supply

# Make your buildings future ready





# Make the most of your office space

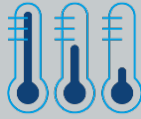
1



## DESIGN IS IMPORTANT

Always think about natural light, ventilation and materials

2



## MANAGE ENERGY WISELY

Make sure you your utilities run smoothly

3



## USE DATA

Invest in sensors to understand performance and make informed decisions

4



## BE MORE EFFICIENT

Use smart systems to reduce consumption and manage your office more efficiently

# Why do we need Smart Offices?

## Smart HVAC

- Automating HVAC, lighting, and window shading can save 30% to 50% energy.
- Automating HVAC and lighting can save 23% energy.



## IOT-enabled sensors

- IoT sensor solutions have seen energy savings up to 70% in three years.



## Seizing the potential of 'big data'

- Unlock potential of the data and information modelling.
- Drive performance, support great decision-making.
- Create collaborative working environments.



## Water usage monitoring system

- Can save 80% of time spent on manual compliance.



## Cost

- Surveys indicate 54% respondents noted the technology made buildings more environmentally friendly.
- 51% said it helped to drive down building costs.



## ROI

- Surveys indicate 15% of respondents noted a higher than anticipated ROI from their smart technology.
- 53% are seeing the expected results.
- 15% see ROI was lower than expected.



## Employees' Wellbeing and productivity

- 71% of employees are willing to concede other benefits to work in a well-designed workplace.
- As a result of increased comfort, your employees will be more productive at work.



## Impact

- Digitalisation of buildings cut total energy use in residential and commercial buildings between 2017 and 2040 by as much as 10%.



## Driving Net Zero

- Achieve LEED, WELL, or BREEAM certified buildings.
- On average could have 34% lower CO2 emissions.
- Consume 25% less energy.



## Hypersmart future

- Smart buildings extend beyond energy efficiency and sustainability.
- Smart technology has the power to have a direct, tangible impact on the places we live and work.



# Digital Challenges

**Do you have sustainability and digital goals ?**

*...we have ambitious ideas but we aren't sure how to make them a reality!...*

**Are you confidently delivering your objectives?**

*...we have made some investments but we aren't convinced we are seeing a return, or achieving our objectives...*

**How do you think you are doing against the competition?**

*...we hear about the advances other business are making, we think we are fine but may be missing opportunities...*







# What we do

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# Our capabilities

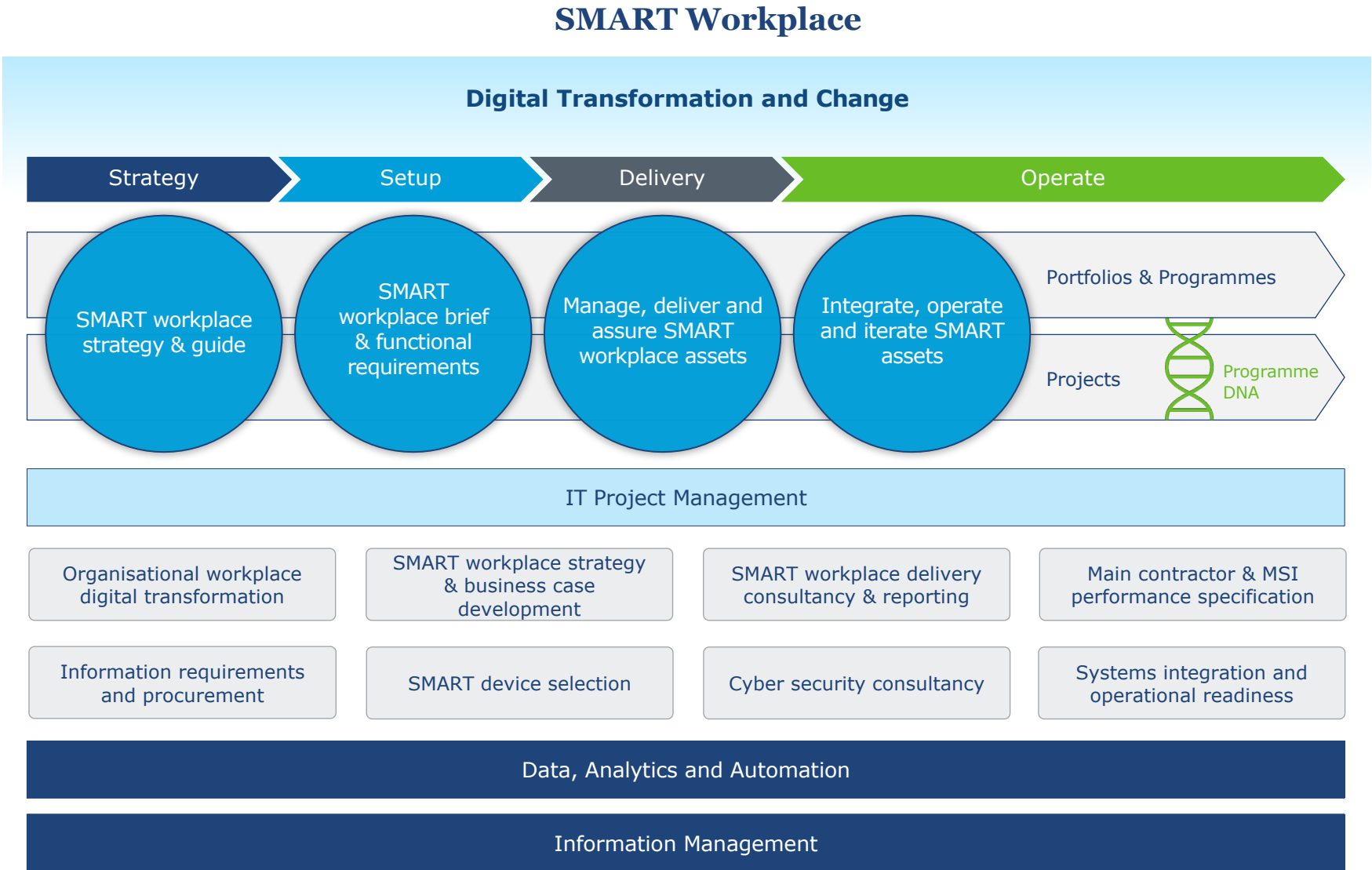
## What does SMART mean to you?

For us, SMART is a process for enabling data driven value from real estate, using embedded technology.

There are several maturity stages to SMART:

- 1. **SMART enabled Building** – Integrated systems ICT/AV/Security/FAS/BMS
- 2. **Intelligent Building** – Integrated and intelligent building providing real time analytics
- 3. **SMART Building** – Integrated, intelligent building and automated building services
- 4. **SMART Portfolio**– Integrated and intelligent estate functions providing real time analytics and automation estate wide.

Our **SMART Workplace** model was created by combining the project controls expertise of Turner & Townsend with our knowledge of construction and digital transformation to produce a robust service that helps our clients achieve their strategic goals.



# Our case studies

From global strategies to retrofitting assets, we are with you end-to-end: from net zero commitments to delivering decarbonisation using Data and technology



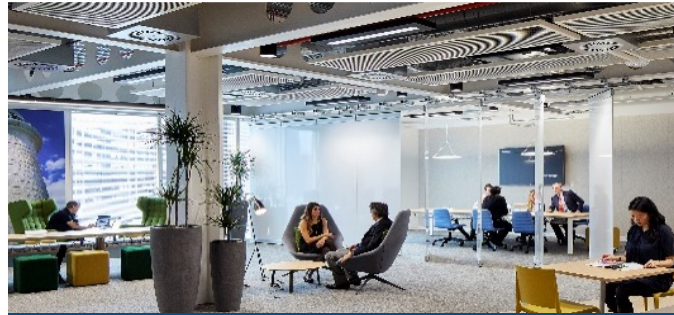
**Global net zero programme delivery partner – leading energy player**

## Action

- Portfolio decarbonation pathway development
- Looking at data through a PMO approach together with SMEs
- Applying net zero approach to pilot projects before scaling up action

## Output

- Baselining performance, strategy development and transitioning existing systems to deliver NZ outcomes
- Implementing supply chain assessments and launching tendering and reporting criteria



**Redefining Campus Strategy– leading tech company**

## Action

- Enhancing flexibility & resilience
- Redefining workplace with IoT
- Wellness equipped offices and world class environment
- Governed and secured

## Output

- Integrate complex systems through a central hub for multiple CRES systems
- Programme planning and in-time delivery as per project, cost governance



**Carbon data and climate risk – national infrastructure client**

## Action

- Data management role to evolve carbon impact reporting and disclosure
- Climate risk assessments
- Inputting into business decision making

## Output

- Data management structure implemented for asset performance management
- Embedded climate resilience and net zero in governance structures



# Conclusions

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1



## DATA DRIVEN

Data is key to deliver your Sustainability goals

2



## SMART

Smart technology can make things easier for you

3



## COLLABORATIVE

Collaboration across departments in your organisation and with the wider industry is necessary

4



## SUSTAINABLE

Data helps you drop down carbon emission but considering other factors is vital for change





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9-10 October 2024 • ExCeL London

We look forward to seeing you in 2024