REIMAGINING ENERGY FOR A SUSTAINABLE TOMORROW

Tuesday 20th June 2023

Capgemini

IBM
Platinum Partner

AGENDA

1 Welcome

2 Sustainability within the Utilities sector

3 Mayflower Immersive Experience

4 Intelligent Networks

5 Drones As A Service

6 Challenges within the Utilities Sector

7 ESG Reporting

8 Spot the Robot

SUSTAINABILITY WITHIN UTILITIES SECTOR

June 2023

Agenda

1. WHAT DOES SUSTAINABILITY MEAN FOR THE SECTOR?

2. WHAT ARE THE BIGGEST CHALLENGES IN THE SECTOR?

3. WHAT ARE THE OPPORTUNITIES FOR THE SECTOR?

*The United Nations 17 **Sustainable Development Goals (SDGs)** were adopted by all United Nations Member States in 2015 as a **universal call to action** to end poverty and to protect the planet and ensure that all people enjoy peace and prosperity by 2030.*

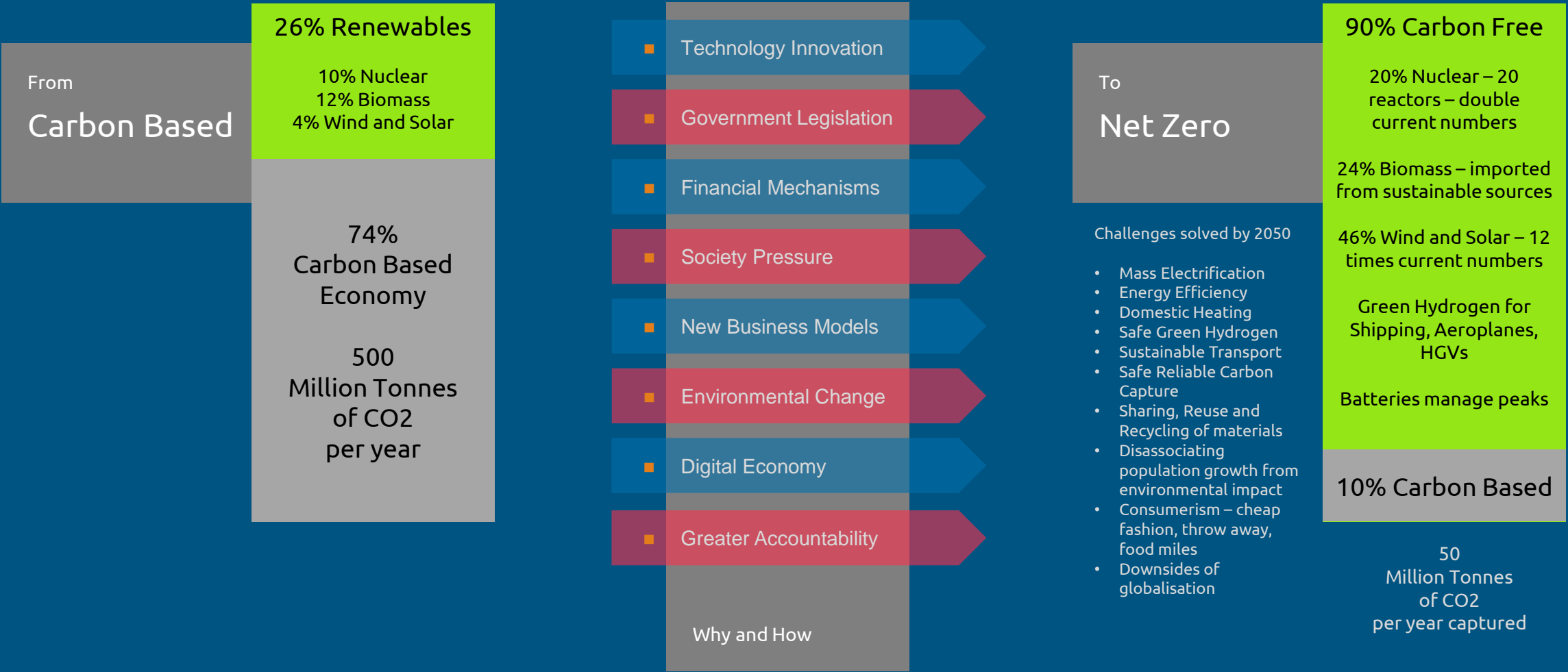|					
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS	SUSTAINABLE DEVELOPMENT GOALS

ENVIRONMENTAL SUSTAINABILITY

Ability to develop and thrive within **earth's planetary boundaries** by maintaining ecological integrity and consuming natural resources at a rate where they are able to replenish themselves.

We will be focusing particularly on this pillar of sustainability throughout this pack.

There is no universal definition of sustainability but the ones that are widely agreed upon include:

Understanding how to meet the needs of the present without compromising the needs of future generations to meet their own needs.

The ability to maintain a balance between natural resources, economic development, and social equity.

A seismic shift in energy to be delivered in 10,000 days

Over the next 30 years the UK economy will reinvent itself from a Carbon based industrial player, to a net zero economy with new business models and technology

From

Carbon Based

26% Renewables

10% Nuclear
12% Biomass
4% Wind and Solar

74%
Carbon Based
Economy

500
Million Tonnes
of CO2
per year

Technology Innovation

Government Legislation

Financial Mechanisms

Society Pressure

New Business Models

Environmental Change

Digital Economy

Greater Accountability

Why and How

To

Net Zero

Challenges solved by 2050

- Mass Electrification
- Energy Efficiency
- Domestic Heating
- Safe Green Hydrogen
- Sustainable Transport
- Safe Reliable Carbon Capture
- Sharing, Reuse and Recycling of materials
- Disassociating population growth from environmental impact
- Consumerism – cheap fashion, throw away, food miles
- Downsides of globalisation

90% Carbon Free

20% Nuclear – 20 reactors – double current numbers

24% Biomass – imported from sustainable sources

46% Wind and Solar – 12 times current numbers

Green Hydrogen for Shipping, Aeroplanes, HGVs

Batteries manage peaks

10% Carbon Based

50
Million Tonnes
of CO2
per year captured

FORCES OF CHANGE: the pressure points pushing businesses to become more sustainable

Risk mitigation & resilience building

Businesses are facing growing climate-related risks that are exposing them to financial as well as reputational impacts. There is therefore a clear need for resilience building through planning, measuring and flexibility-building.

~3 million metric tons

of carbon dioxide will be averted annually through the renewable energy projects announced

Political direction & regulatory change

The topic of climate change has never been as high on the political agenda. This materialises through an increasing number of policies, regulations and laws being introduced and affecting businesses.

5 years

Number of years by which the ban on selling new petrol, diesel or hybrid cars in the UK has been brought forward, after experts said 2040 would be too late

Consumer preferences & investor pressure

Environmental awareness is growing rapidly among civil society and investor groups. This translates into an uptake of more sustainable behaviours, demand for greener products and services and shifts in investment patterns.

65%

of UK millennials want to reduce their carbon footprint through renewable fuels and 71% of adults believe the Government should be acting faster to develop clean energy

Recent News & Commitments

BP will cut its oil and gas output by 40% by 2030, increase its low-carbon investment tenfold by then and will not hunt for oil in any new countries

London Mayor and TfL target a zero-carbon railway by 2030

"Total shares the ambition to get to net-zero emissions by 2050, together with society, for its global business across its production and energy products used by its customers."

EDF, Octo Energy partner on hybrid solar and storage projects

"At Schneider Electric, our commitment is to be the partner of our customers in their journeys toward sustainability and become carbon positive ourselves."

Onshore wind energy to boost UK economy by £28.9bn with government support
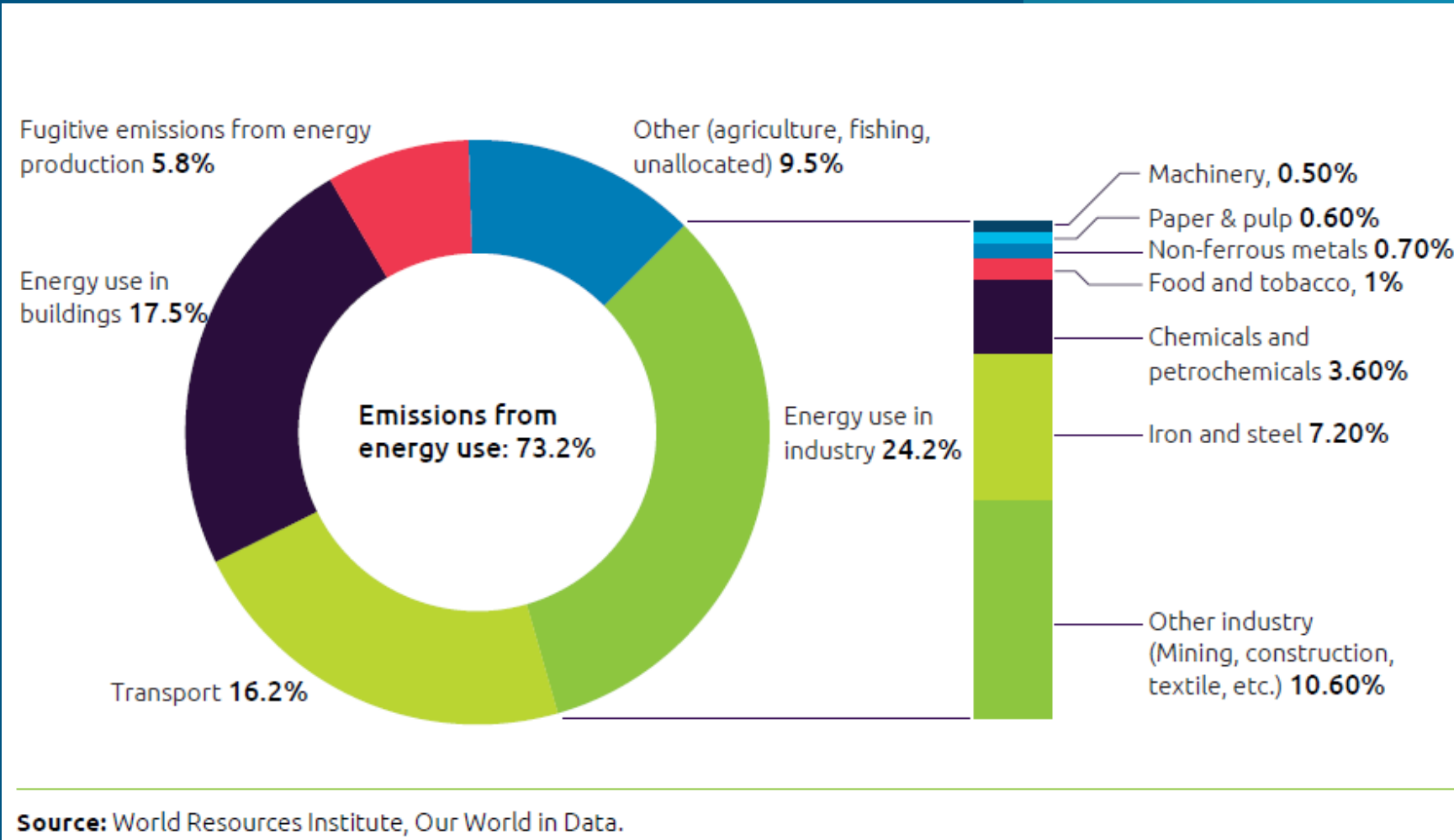
SSE wants green economic recovery

Agenda

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73% of GHG emissions are coming from Energy use. It's critical to act before 2030 (IPCC statement). Less than 10,000 days ahead

Fugitive emissions from energy production **5.8%**

Other (agriculture, fishing, unallocated) **9.5%**

Energy use in buildings **17.5%**

Emissions from energy use: **73.2%**

Energy use in industry **24.2%**

Transport **16.2%**

Machinery, **0.50%**

Paper & pulp **0.60%**

Non-ferrous metals **0.70%**

Food and tobacco, **1%**

Chemicals and petrochemicals **3.60%**

Iron and steel **7.20%**

Other industry (Mining, construction, textile, etc.) **10.60%**

Source: World Resources Institute, Our World in Data.

How can energy and utilities companies accelerate sustainability?

Where are organizations falling behind in their sustainability initiatives?

How can energy and utilities organizations radically transform and prepare for a sustainable future?

Evolving expectations from energy and utility companies on sustainability

From a milestone...	...to table stakes
Commit to reducing GHG emissions	Declare net-zero ambition; commit to science-based targets
Measure and reduce emissions from own operations and purchased fuel (Scope 1 and 2)	Also take responsibility to reduce emissions from the use of sold energy products (Scope 3)
Arbitrary ESG disclosures	Align disclosures with standards such as TCFD1, GRI2, etc.
High ESG rating or inclusion in sustainability indices are good to have	Low ESG ratings can lead to restricted or high cost of funds and low valuations
Commit capital to renewables, environmentally friendly products/services (electri? cation, energy storage, hydrogen, etc.)	Also no new capital in fossil fuels and plan exit from fossil-based operations
Intensity-based GHG targets	Incorporate absolute GHG targets

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Limitless Opportunities

Sustainable Mobility

As of 2035, people in the UK will **only be able to buy electric or hydrogen vehicles** which are expected to be **cheaper to purchase than conventional models by 2030**. This will require installing **25 million charging points** across the country

Energy Efficiency – Water Sector Focus

The **largest proportion** of the water industry's of carbon footprint is attributed to energy use. The water industry is the **4th most energy-intensive** industry in the UK, using approximately **3% of UK generated electricity**

Energy Supply Decarbonisation

The electrification required to reach net-zero by 2050, would result in a **doubling of electricity demand**. All of this power would need to be produced by **low-carbon sources, which must quadruple** their supply by 2050

Energy Transition – Oil & Gas Focus

The Oil & Gas industry's operations account for **9% of all human-made greenhouse-gas (GHG) emissions** and produces the fuels that **create another 33% of global emissions** when consumed

Sustainable Energy Consumption

Home energy efficiency improvements, such as insulation, draught proofing and new windows, reduce the rate of heat loss, and can come with **net benefits worth £7.5bn to the UK**

Support Functions

Sustainable Operations

Sustainable Supply Chain

Sustainable IT/ Tech

The Role for Capgemini is in creating **new business models** and **the digital economy**

Why and How

- Energy Asset Innovation
- Government Legislation
- Financial Mechanisms
- Society Pressure
- New Business Models
- Environmental Change
- Digital Economy
- Greater Accountability
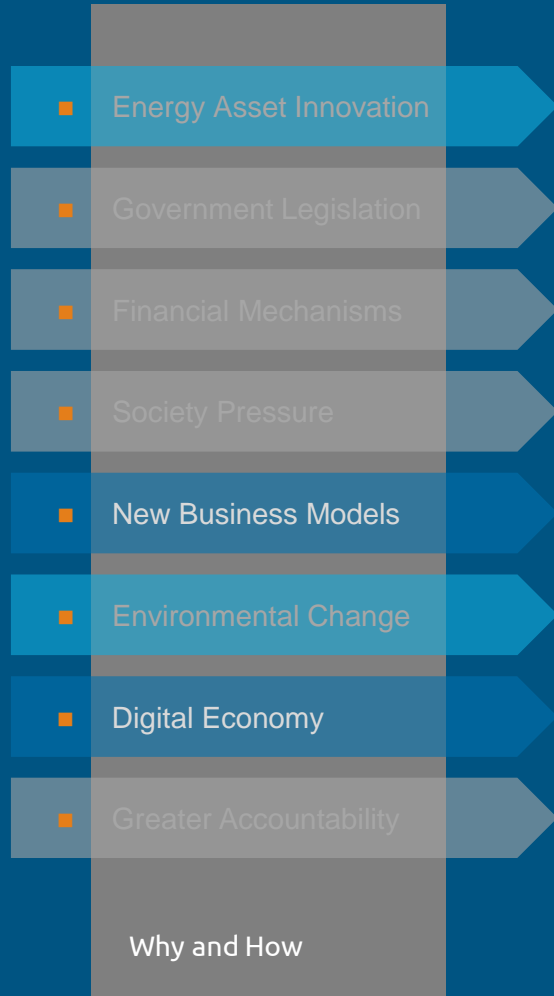
New Business Models

New and evolving models are required
- Virtualised Energy Prosumer
- Customer* Demand Aggregator
- System Integrator and Optimiser
- Energy Asset and Infrastructure Delivery and Enabler

Sources of value for these models
- Aggregating and balancing demand and supply using virtual storage to manage the load cycle and arbitrate power prices at scale (city, region, community, business)
- Providing, orchestrating and aggregating integrated energy services on behalf of the customer
- Earning fees for providing services across an energy network management
- Creating, managing and owning energy assets and infrastructure. Earning fees for this.

Across these roles some players will be fully integrated and some will fill niche roles

Digital Economy

We will create Digital Platforms that support the Net Zero economy:

- Customer interaction and relationships
- Energy Data Interoperability
- Financial, Capital and Money Flows
- Energy Trading and Risk Management
- Asset Management and Control
- Design and Planning

Deeper capabilities that we will build to support these new tools

- Customer understanding, prediction, loyalty and interaction
- Data acquisition, storage and analysis, including forecasting
- Whole System orchestration and optimisation
- Trusted data interchange

Customer / Consumer = individual, building, community, business, city, region…

SUSTAINABILITY AT CAPGEMINI

Our Positive Planet Strategy

WE ARE:

TARGET:

PERFORMANCE:

ACCOUNTABLE

To reduce our carbon emissions per employee by 20% by 2020 and by 40% by 2030 (vs. 2014)

39% reduction in carbon emissions per employee since 2014

RESOURCEFUL

To reduce office energy consumption by 20% by 2020 and by 40% by 2030 (vs. 2014)

42% reduction in office energy use since 2014

IMPACTFUL

To help our clients save 10 million tonnes of CO2e by 2030 through our client services

30 Capabilities defined from within our portfolio for that purpose

SCIENCE BASED TARGETS

WORLD CLIMATE SUMMIT

Capgemini Invent **Global Partner of the World Climate Summit** in 2022

PLATINUM Top 1%
2022
ecovadis
Sustainability Rating

Capgemini awarded **platinum rating from Ecovadis in 2022 for its CSR performance**

CDP
DISCLOSURE INSIGHT ACTION
A LIST 2022
CLIMATE

Capgemini named on prestigious **A List for leading effort against climate change**

Capgemini Group at a Glance

Group Revenue

Groupe Revenue for 2022:
€21.9 billion
15.3% YTY

Region	%
North America	31%
Rest of Europe	29%
France	22%
UK & Ireland	11%
Asia/Pacific & Latin America	7%
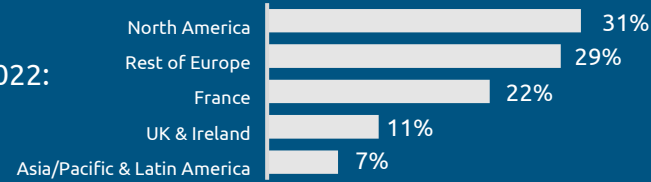
One team

Capgemini is present in **more than 50 countries and more than 120 nationalities.**

325,000+ people worldwide working together as **one team***

*post Altran merger

Our services

Revenue by Business

- 7%
- 31%
- 62%

■ Strategy & Transformation
■ Operations & Engineering
■ Applications & Technology

Business sub-brands

Capgemini invent
Capgemini Invent is the strategy, technology, data science and creative design offering that aims to solve the most complex business and technology challenges

Capgemini engineering
Capgemini and Altran join forces in Engineering and R&D to create the global digital transformation leader for industrial and tech companies

frog
Part of Capgemini Invent
Frog is a global design consultancy that helps organizations grow by launching new businesses and creating world-class customer experiences at scale

cambridge Consultants
Part of Capgemini Invent
Cambridge Consultants helps clients unlock innovation through highly original products and services that provide long-term sustainable competitive advantage

We are internationally recognized for our leadership and actions in addressing climate change

Organization

SCIENCE BASED TARGETS	WORLD ECONOMIC FORUM	ecovadis	CDP	RACE TO ZERO	UN GLOBAL COMPACT

Award

| **Ambitious target validated** by the SBTi in line with a 1.5°C pathway | Member of the Alliance of **CEO Climate Leaders** | **Platinum rating** for our performance as a responsible and sustainable business | Position on CDP's prestigious '**A List**', and member of **supplier engagement leader board** | **Founder member** of the UN's Race to Zero Campaign | **Signatory** of the UN's Global Compact's Business Ambitions for **1.5°C CEO statement** |

"**[Capgemini] must spearhead this transition, and in so doing, demonstrate that low-carbon business models are sustainable and profitable**" **– Aiman Ezzat, Capgemini CEO**

We are at the forefront of sustainability challenges thanks to our continuous research

Capgemini research webpage

We have been publishing research on global environmental challenges for business since 2011, with already 40+ publications shared to date
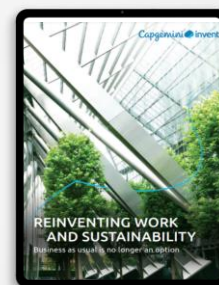
Strategy and business model

Data and technology

Mobility

Energy and utility

Financial services

Customer experience

ⓘ All pictures are clickable

Check out our latest report!

REINVENTING WORK AND SUSTAINABILITY
Read this report to understand why organizations must face unprecedented societal and environmental changes and how they handle it

Capgemini recognized as a leader in Sustainability Enablement Technology Services by Everest Group

Everest Group Sustainability Enablement Technology Services PEAK Matrix® Assessment 2022[1,2]

Capgemini strengths against 14 providers:

- Strong focus on **data-driven solutions** for net zero strategy, LCA, product engineering
- A robust set of **sustainability-specific partnerships** with joint GTM with select partners
- **Technical capabilities** and ability to effectively deploy **emerging technologies** in the engagement
- **Transparency and honesty** about our maturity level
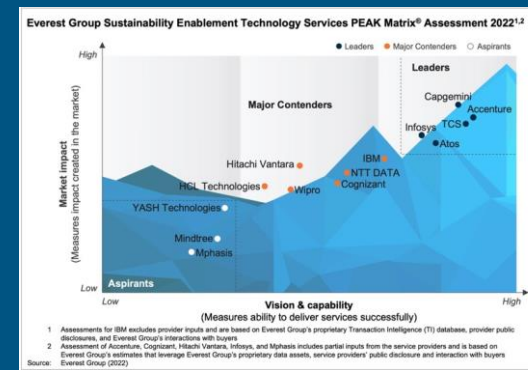
Analysts identified Capgemini's differentiators

Gartner

HFS Research

FORRESTER®

IDC

Communicating honestly about our accounting process and maturity level

Applying service offerings to our own transformation

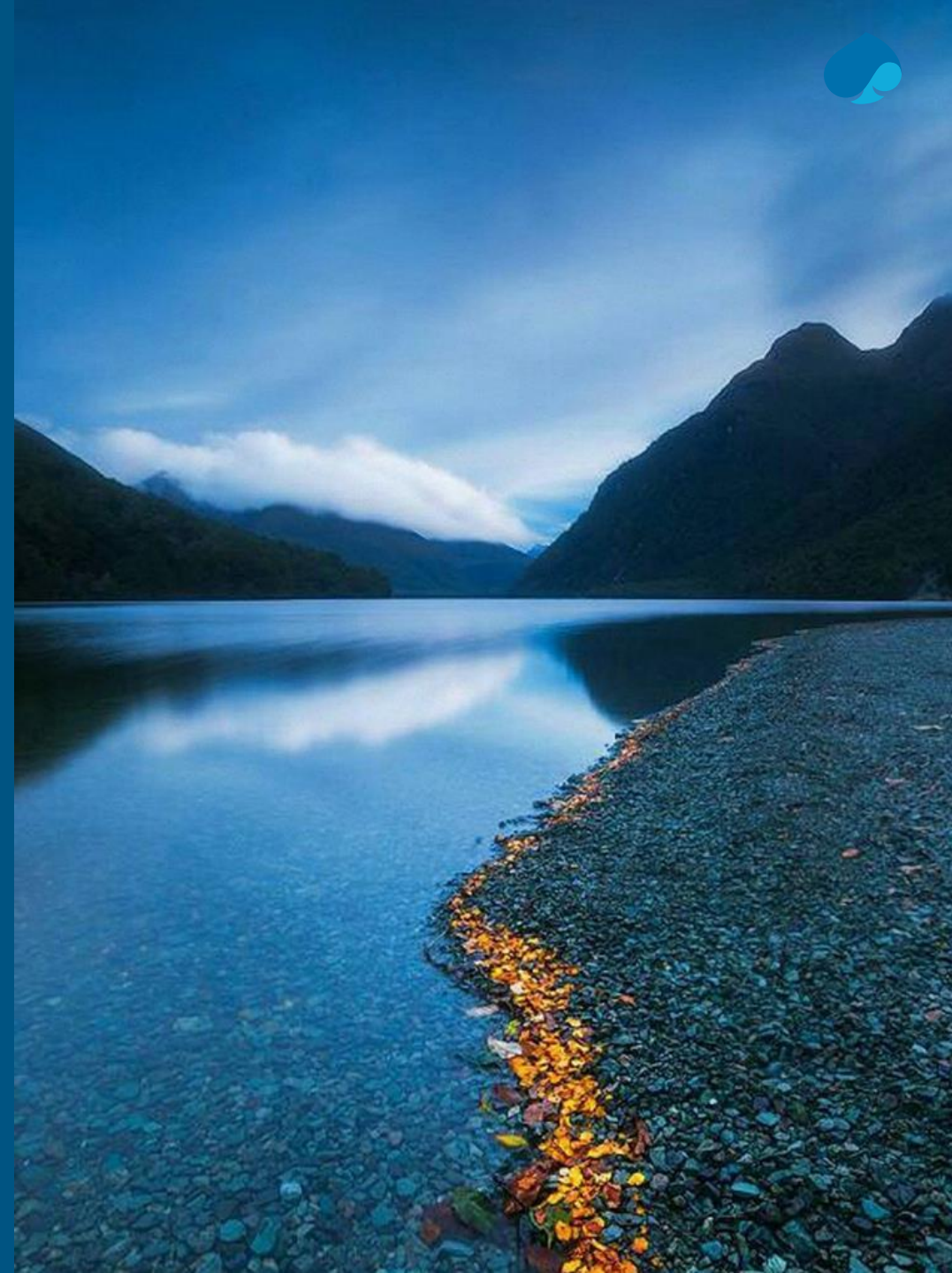**Building our training program** internally in a context of talent war

*Business has a critical role to play in stabilizing global warming – **the climate crisis must be the next catalyst for widespread reinvention and transformation.** This is why we have made tackling climate change issues a number one priority for us and we are delighted to have been recognized for our approach by the CDP. This recognition reflects our active commitment toward the Net-Zero Economy. As a leading responsible company, we aim to leverage our expertise, innovation and technology to also help our clients transform for a sustainable future.*

Paul Hermelin,
Chairman and CEO of the Capgemini Group

ABOUT CAPGEMINI INVENT

As the digital innovation, consulting and transformation brand of the Capgemini Group, Capgemini Invent helps CxOs envision and build what's next for their organizations. Located in more than 30 offices and 10 creative studios around the world, its 6,000+ strong team combines strategy, technology, data science and creative design with deep industry expertise and insights, to develop new digital solutions and business models of the future.

Capgemini Invent is an integral part of Capgemini, a global leader in consulting, technology services and digital transformation. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2022 global revenues of EUR 22 billion.

Visit us at www.capgemini.com/invent

People matter, results count.

INTELLIGENT NETWORKS

Capgemini Energy Transition & Utilities

The UK energy grid is aging infrastructure facing new challenges that demand rapid digitalisation in order to overcome them

NEW CONSUMPTION PATTERNS & PRODUCTION MODES

RENEWABLES
Higher share in the mix endangering grid stability

ELECTRIFICATION
Transportation (EV Charging, V2G), Heating

STORAGE
Batteries today, Hydrogen tomorrow competitive at consumption or utility scale

NEW REGULATIONS AND ENVIRONMENTAL CONSTRAINTS

ENERGY SAVINGS
Self consumption, Microgrids and Energy conservation hit T&D revenues and margins

GLOBAL WARMING & WEATHER EVENTS
Increase heat waves, wildfires, floods... Must increase the networks resiliency

CARBON REDUCTION ENABLEMENT
TSO/DSO accountable for enabling markets operations and energy transition to multiple stakeholders

REGULATION CHANGES
Compensation for risk and software investments; true price realization

FOUNDATIONS IN PLACE & TECHNOLOGY MATURATION

SMART GRID EXPERIMENTATION

RAPID EXPANSION OF CONNECTIONS

DIGITAL TECHNOLOGY MATURATION

NEW GRID MANDATES

Business imperative to transform grid management and operations

From Centralised to De-centralised architecture

1 way to multi ways flow of energy

Cybersecurity imperative

Need for flexibility

From DNO to DSO, new remits and business models potential

Sustainability @ the heart

DIGITILISATION IS CRITICAL

Intelligent Networks is our solution to Net Zero challenges through digitising the grid

Addressing the network's challenges to deliver NetZero is the key to affordable, deliverable, sustainable change. In order to efficiently and flexibly balance demand and supply without unaffordable infrastructure investment, enabling the electrification of heat at scale and creating capacity for EV charging the UK needs to digitise the Transmission and Distribution Networks' Grid. We leverage the digital twin of a data driven grid built from instrumented intelligent assets and secure by design to transform networks and deliver against Net Zero ambition.

Client Key Issues and Challenges

Large Complex Infrastructure Systems which are not integrated with information held in silos

Visibility of real-time operational information to inform asset performance, network performance etc.

Understanding system performance and the upstream or downstream impacts of actions on the overall system performance

System Optimisation in response to change for example reacting to the lack of renewable energy by drawing upon battery storage

Resource Management to ensure that the right resource always addresses the highest priority within a changing system

Data Capture to ensure that the right information is captured and fed back into the systems

Selecting the right tools for the future to ensure that systems will work today and meet the required lifespans before upgrade or overhaul

Delivering an affordable network that will allow for increasing demands without unaffordable physical infrastructure

What We Do

Next Generation Advanced Metering Infrastructure: Providing the foundation of the Intelligent Network through 2-way communication to a a Meter Data Management System that monitors and analyses the data reducing OPEX and improving customer experience

Advanced Asset Management: Improving power quality while prolonging equipment life through predictive maintenance, reducing through life costs and infrastructure risk while increasing availability

Network Instrumentation: Shifting calculation capabilities and associated instrumentation out from the centre to handle multiple secured automated interactions and virtualisation including load supply balance, a key challenge for the DSO/TSO to scale up their Smart Grid transformation

Grid Operations: Improving your network stability, resiliency and ability to host a greater share of renewables, supporting the increase in electrification uses (EV, heat pumps) and leveraging new technologies to develop the network and ensure higher customer service and performance

Exploiting data: Leveraging IoT data to optimise CAPEX and investments for grid modernisation while utilising AI to drive value from existing grid data and reduce OPEX; introducing new business models to enable the transition for prosumers while delivering transparency to the markets and regulators alike.

Networks Digital Twin: Building an as-designed, as-built and as-operated virtual environment of the network where intelligent sensors harvest data from machines, performing analytics to detect status and failures. Information on real time virtual dash-boarding allows real early warnings to be set

Benefits

Key areas of benefits include:

Optimising grid operations through:
- Increased grid reliability, (cyber)security and robustness
- Improved productivity and overall safety in operations and maintenance, and enabling remote support for field personnel
- Improved customer and stakeholder experience

Enabling grid local management through:
- Local balancing, supervision and power optimisation by providing edge-of-the grid computing
- Enabling faster, more accurate and reliable local decision-making

Optimising asset management by:
- Reduce infrastructure complexity and optimising OPEX and CAPEX
- Integrating edge-of-the-grid assets
- Improved understanding of asset behaviour to optimise their usage and network performance
- Exploiting insights of grid dynamics, bringing OT to the forefront

Our framework drives a business outcome focused transformation journey to deliver the Intelligent Network, driving customer value and outperforming regulatory targets while accelerating the journey to Net Zero

We work with clients and partners to develop a tailored intelligent network roadmap focused on iterative business value

Increasing Intelligent Networks Capability

System & Platform Upgrades Required

Digital Twin

Complete digital twin of your business optimized in real time to maximise production and reduce costs

System & Platform Upgrades Required

Data Driven Grid

Optimising grid operations, enhancing asset management and delivering new services

System & Platform Upgrades Required

Grid Operations

Operations are optimised to integrate a greater share of DRs improving network resilience and efficiency

System & Platform Upgrades Required

Advanced Asset Management

Predictive maintenance, reducing TCO and infrastructure risk while increasing availability

System & Platform Upgrades Required

Network Instrumentation

Machine Learning algorithms analyse data and provide actionable insight
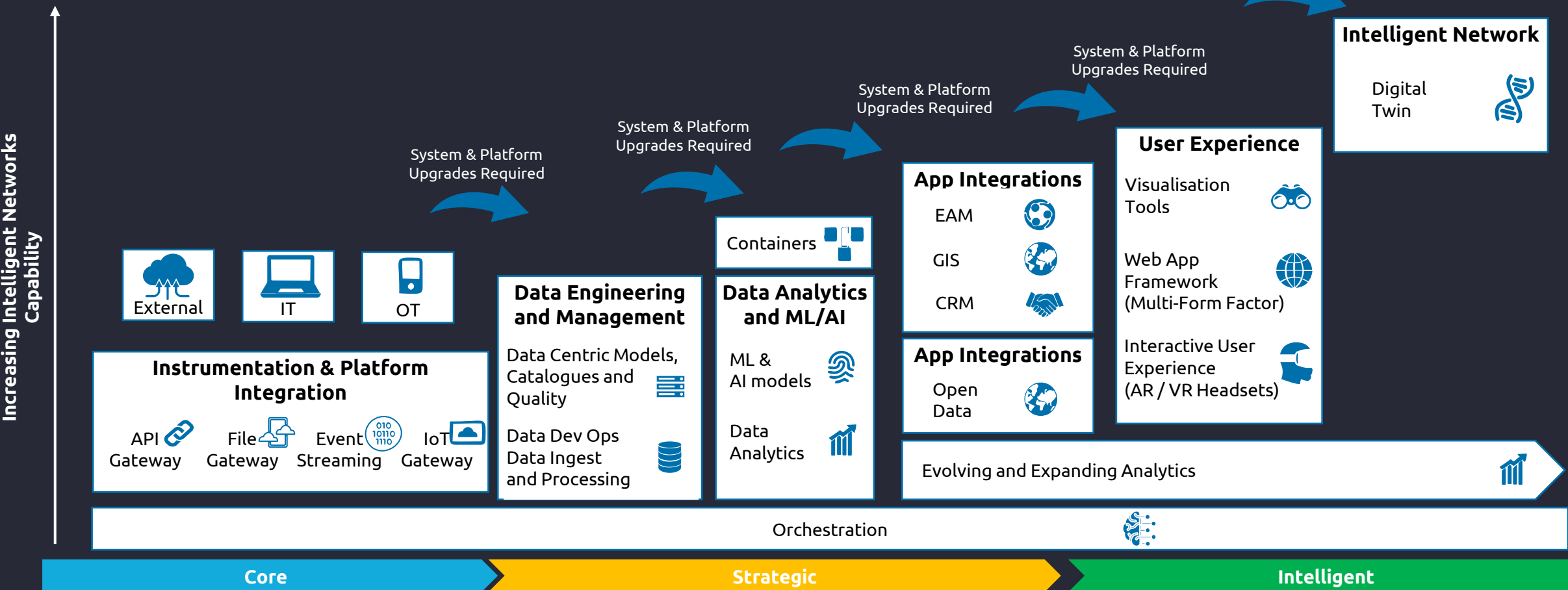
Next Gen AMI

Real Time   Real Time

Internal IT, OT and Business Data combined with External Data

Before embarking on a transformation journey, developing new capabilities, or selecting supporting Intelligent Networks platforms, it is important to understand the overall business objectives for your assets, both now and in the future. With this in mind, we have created a Intelligent Networks Roadmap, which helps to assess organisations and develop their intelligent Networks capabilities.

Core | **Strategic** | **Intelligent**

Intelligent Network Roadmap

Reactive
Only necessary digital technology to meet minimum industry standards

Proactive
Leveraging existing / traditional technology to improve existing capabilities

Optimised
Integrating digital technology to extend capabilities, with existing business and operating processes

Automated
Leveraging synchronised digital technologies with advanced changes to business and operating processes

Intelligent
Leveraging advanced digital solutions with optimised business and operating processes, transforming to new ways of working

Leveraging an ecosystem of platforms to shape the intelligent network, growing business value at every stage

Increasing Intelligent Networks Capability

System & Platform Upgrades Required

Intelligent Network

Digital Twin

System & Platform Upgrades Required

User Experience

Visualisation Tools

Web App Framework (Multi-Form Factor)

Interactive User Experience (AR / VR Headsets)

System & Platform Upgrades Required

App Integrations

EAM

GIS

CRM

App Integrations

Open Data

System & Platform Upgrades Required

Containers

Data Analytics and ML/AI

ML & AI models

Data Analytics

System & Platform Upgrades Required

Data Engineering and Management

Data Centric Models, Catalogues and Quality

Data Dev Ops Data Ingest and Processing

System & Platform Upgrades Required

External

IT

OT

Instrumentation & Platform Integration

API Gateway

File Gateway

Event Streaming

IoT Gateway

Evolving and Expanding Analytics

Orchestration

Core | **Strategic** | **Intelligent**

Intelligent Network Delivery Roadmap

Reactive
Only necessary digital technology to meet minimum industry standards

Proactive
Leveraging existing / traditional technology to improve existing capabilities

Optimised
Integrating digital technology to extend capabilities, with existing business and operating processes

Automated
Leveraging synchronised digital technologies with advanced changes to business and operating processes

Intelligent
Leveraging advanced digital solutions with optimised business and operating processes, transforming to new ways of working

Supported by an industry lens and use case library to underpin a set of value levers and business impact analysis to drive a step change in operational outcomes

VOICE OF THE ASSET
Levers
- Condition & deterioration
- Service and asset failure prediction
- Remaining useful life, Analytics & AI

Business impacts
- Quality improvement
- Reduction in waste

ENHANCE OPERATOR
Levers
- Augmented worker with AR/VR and immersive technologies
- Remote assistance
- Hands-free

Business impacts
- Zero paper
- Quality improvement
- Increased productivity
- Operator empowerment

INTELLIGENT AUTOMATION
Levers
- Robotics/Cobots
- MES/SCADA/IT-OT
- Works & Service Order, Goods I/O automation

Business impacts
- Elimination of repetitive loads/tasks
- Reduction in manual site interventions
- Reduction of fixed cost

COMPLIANCE ANALYTICS
Levers
- Process quality analytics
- Process and asset optimization & AI

Business impacts
- Improving efficiency
- Automated evidence collection

ENERGY & SUSTAINABILITY MANAGEMENT
Levers
- Smart energy management leveraging sensors and IIoT
- Analytics and AI (prescriptive & predictive)

Business impacts
- Energy savings
- Reduction of peak consumption

VIRTUAL CONTROL TOWER
Levers
- Real-time monitoring
- Intelligent Operations Platform (IOP)
- IIoT, Track & Trace
- Analytics and AI
- Real-time quality, inventory and availability

Business impacts
- Stock reduction
- Increased productivity
- Non-conformance reduction

PREDICTIVE MAINTENANCE
Levers
- Analytics, AI, IIoT/5G/Edge
- Defect RCA & FMEA, frequency & consequence
- Vibration/ acoustics/ temp/energy etc...
- Condition, behaviour patterns, deterioration models
- Predictive analytics, whole life analytics, next best actions

Business impacts
- Reliability MTTR, MTBF improvement
- Reduced reactive spend
- Increase remaining useful life, minimise downtime

REAL TIME INFORMATION MANAGEMENT
Levers
- ERP/MRP Integration
- MES/SCADA/IIoT
- PLM Integration
- Augmented worker with AR/VR and immersive technologies

Business impacts
- Quicker decision process
- ODI compliance
- Rapid escalation

NETWORK ANALYTICS
Levers
- Visualisation and Optimisation
- Faults, outages and Pollution control & predictive analytics
- Simulation with AR/VR

Business impacts
- Optimised and variance driven line balancing
- Investment case simulation
- Virtual commissioning & HS&E compliance
- Reduction of production risk

The Intelligent Network

About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 370,000 team members more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2022 global revenues of €22.8 billion.

Get The Future You Want | www.capgemini.com

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Opportunities for Growth

Drones present new **opportunities** and generate **efficiencies** in various industries such as utilities, telecom, mining oil & gas, and other large sectors.

The use of drones to conduct inspections can avoid hazardous scenarios, reduced man-hours saving costs and minimizes asset downtime.

The most common application of drones across sectors are in the areas of –
- Asset Inspection
- Surveillance
- Technician Safety
- Mapping & Surveying

$55bn
Global commercial drone market by 2030

25.82%
Global commercial drone market CAGR 2022 - 2030

14%
of drone application market belonging to Energy & Utilities

KEY CHALLENGES

Coordination and management of the available drones

1

6

Commercial Drone Pilot investments

Complexity of the task needed special training

2

Key Challenges

5

Continuous Training based on the task at hand

Specialized payload like LiDAR, thermal camera

3

4

Cutting Edge software customized to the work

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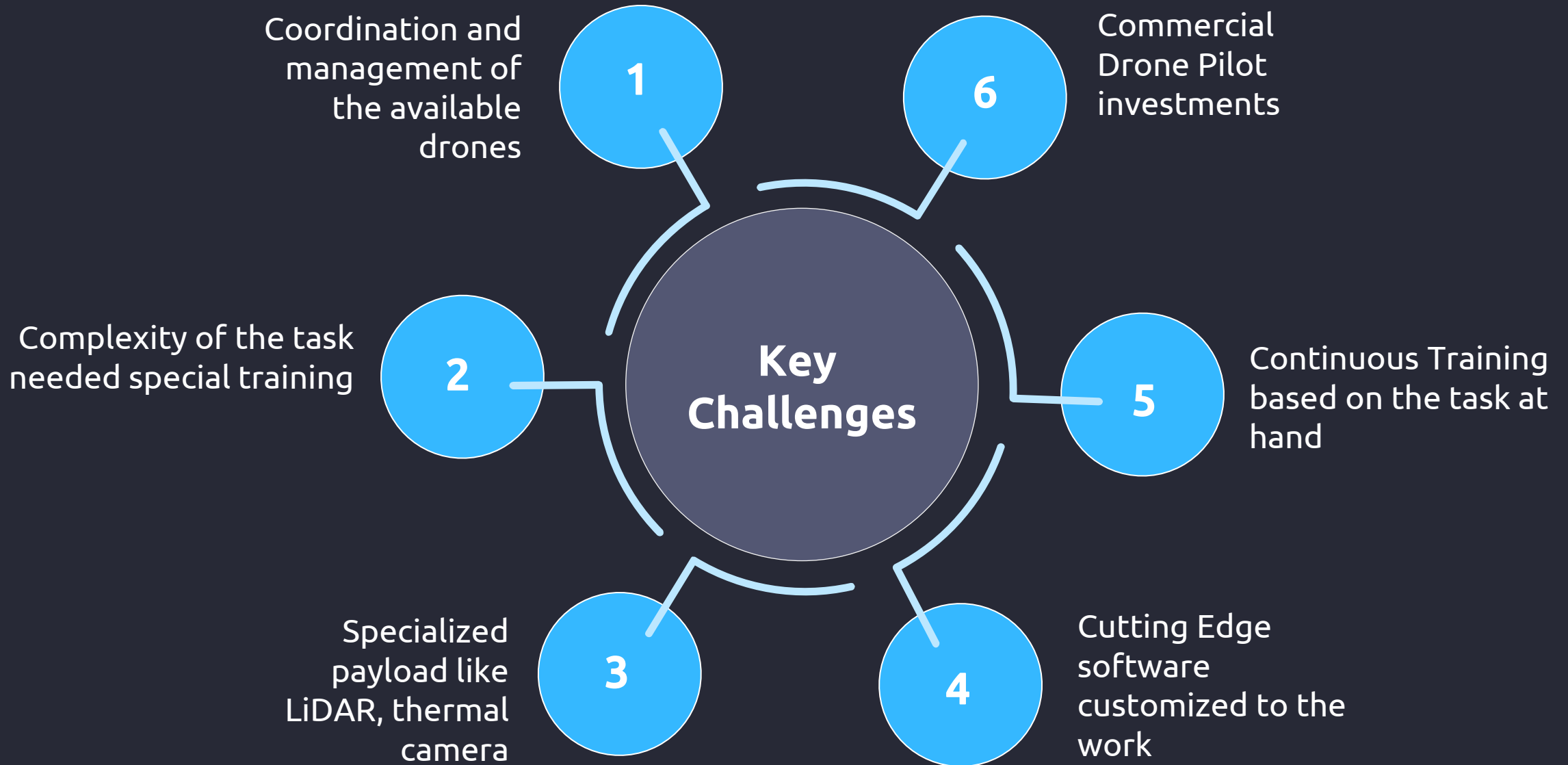
OUR OFFER

Drone-as-a-Service (DaaS) - A **Software as a Service (SaaS)-** based offering with **end-to-end** solutions to **manage and monitor a fleet of drones**, runs **inspection missions** to capture **high-quality data**, accesses inspection reports and derives actionable information through **AI-driven analytics**— all through a **single platform.**

SINGLE MULTITENANT SAAS SOLUTION

Solution can be used for a plethora of use cases in individual industries where visuals are captured and analyzed by different models

CUSTOMIZATION OF SERVICES

Industry professionals can focus on their core operations, while data collection and monitoring can be outsourced based on specific data capture requirements.

COST OPTIMIZATION

Easily scalable and substantially cuts development costs and time. There is no specific installation or configuration needed based on the activity being performed.

50% savings in capital costs due to the application of SaaS model

5% savings in OPEX costs due to the availability of readily available library of AI/ML models for multiple use cases

DRONE USE CASES ACROSS SECTORS IN DAAS

Power Utilities
- Powerline Asset Inspection
- Vegetation Management
- Wind Turbine inspections
- Solar panels inspections

Water Utilities
- Leak Detection
- Pipeline Inspections
- Overflows and pollution monitoring

New Energies
- Methane leakage detection
- Flare stack inspections
- Spill detection
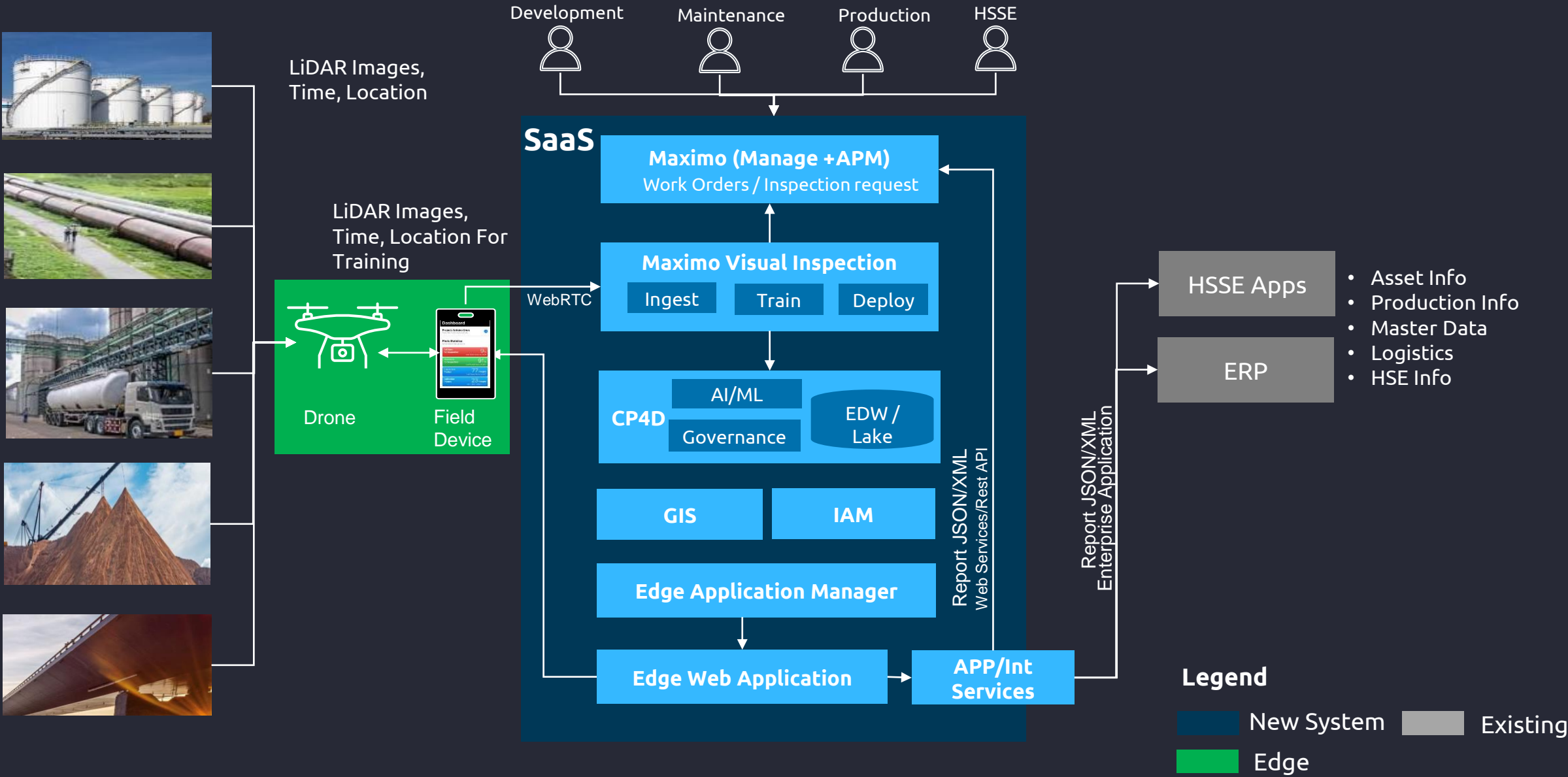- Pipeline thermal inspections

Mining
- Hazard monitoring
- Biodiversity monitoring
- Haul road inspections
- Drill and blast area monitoring

Telecom
- Mobile Tower inspections
- Network monitoring
- Surveying & Mapping

CONCEPTUAL ARCHITECTURE

IBM Platinum Partner

Development   Maintenance   Production   HSSE

LiDAR Images, Time, Location

LiDAR Images, Time, Location For Training

Drone   **Field Device**

WebRTC

SaaS

Maximo (Manage +APM)
Work Orders / Inspection request

Maximo Visual Inspection
| Ingest | Train | Deploy |

CP4D
- AI/ML
- Governance
- EDW / Lake

| GIS | IAM |

Edge Application Manager

Edge Web Application   **APP/Int Services**

Report JSON/XML Web Services/Rest API

Report JSON/XML Enterprise Application

HSSE Apps

ERP

- Asset Info
- Production Info
- Master Data
- Logistics
- HSE Info

Legend

New System	Existing
Edge	

OUR PROCESS & APPROACH

Use Case Analysis & Target Definition

- Requirement collection & analysis
- Project success criterion identification

Pilot Definition

- Define a first small scale step where hypothesis can be validated & improvements sought

Pilot Run

- Pilot installation deployment & training on a small-scale environment
- Assess use case value creation in the client's environment
- User experience evaluation

Assess

- Assess system benefits
- Assess ROI accuracy
- Validate full scale plans

Scale & Roadmap

- Deploy full scale
- Replicate in other use cases

About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 270,000 team members in nearly 50 countries. With its strong 50 year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fuelled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2020 global revenues of €16 billion.

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ENVIZI

REMOVE THE BARRIERS TO ACCELERATING SUSTAINABILITY PERFORMANCE

2023

ACCELERATE SUSTAINABILITY INITIATIVES AND ACHIEVE ENVIRONMENTAL GOALS WITH...

enVIZI

an IBM Company

The world's most comprehensive data, analytics and insights platform for Sustainability and ESG

14 yrs
time in market

150+
total clients

150
countries reached

247k
locations connected
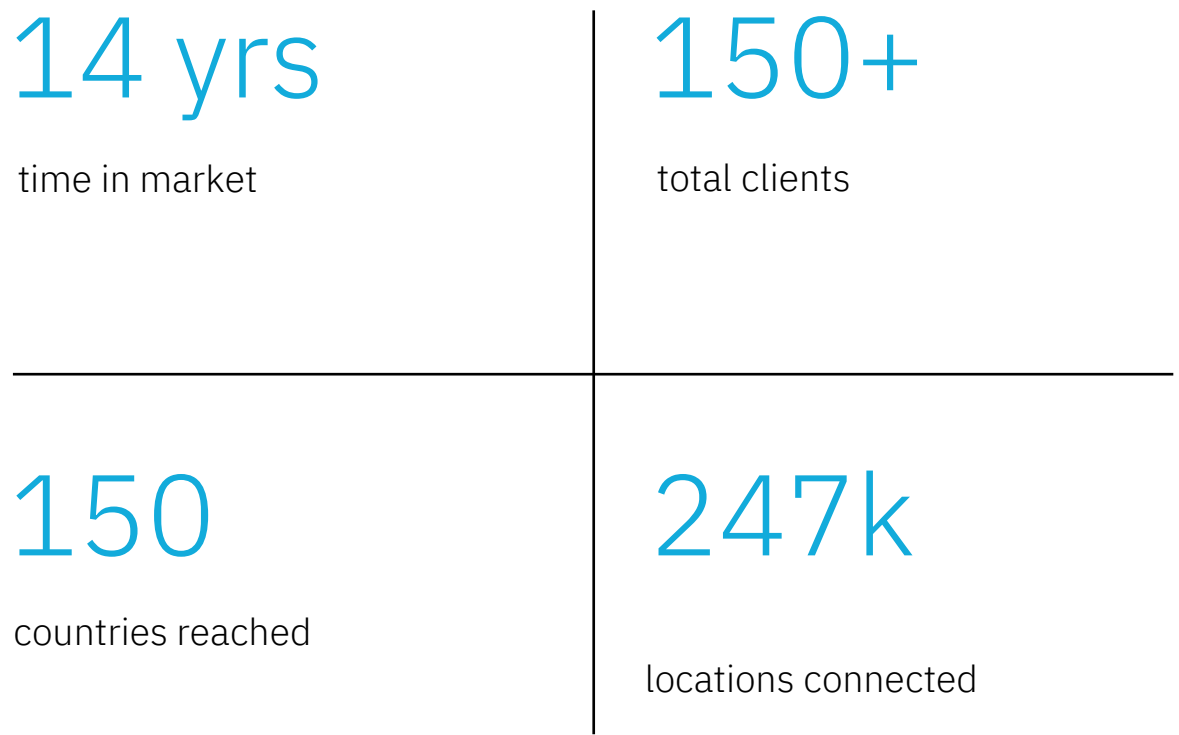
Envizi harnesses the power of data, analytics and insights to transition to a low carbon future

HOW ENVIZI HELPS ADDRESS KEY PAIN POINTS

enVIZI
an IBM Company

Build
Data foundation

A single system of record that delivers auditable, financial grade sustainability data

Streamline
Reporting & disclosure

Flexible reporting tools to meet internal and external requirements

Accelerate
Decarbonization

Unlock insights to inform the fastest and most cost-effective pathway to low carbon goal
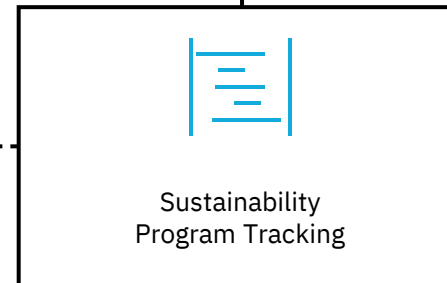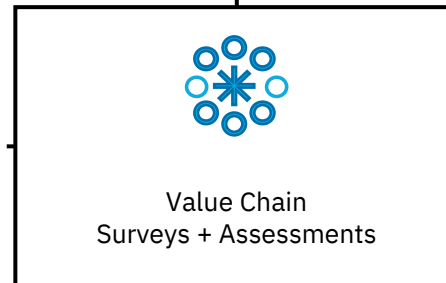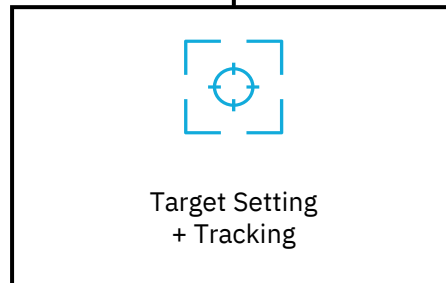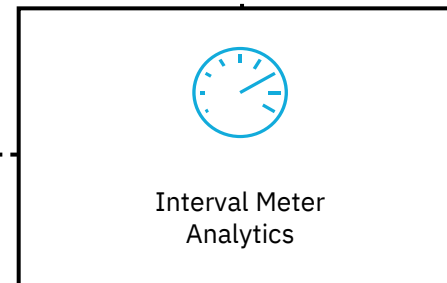
MODULAR AND COMPREHENSIVE SOLUTION

enVizi

an IBM Company

Emissions Management

Scope 1, 2 GHG Accounting + Reporting

Scope 3 GHG Accounting + Reporting

Target Setting + Tracking

ESG Reporting

ESG Reporting Frameworks

Building Ratings + Benchmarks

Value Chain Surveys + Assessments

Decarbonization

Utility Bill Analytics

Interval Meter Analytics

Sustainability Program Tracking
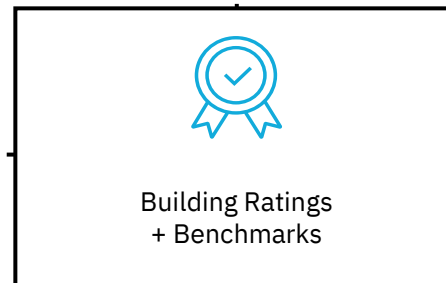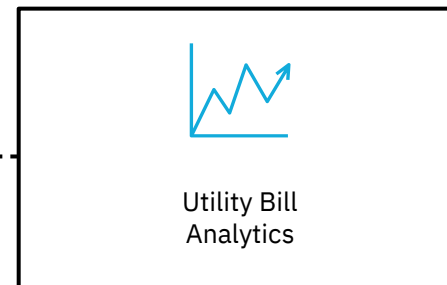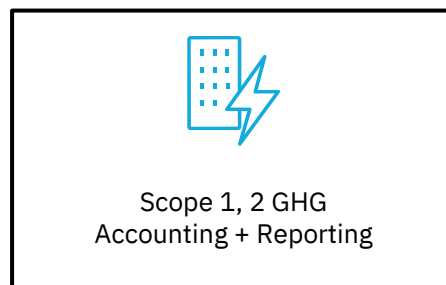
Data Management - Single System of Record

ENVIZI CONSOLIDATES SUSTAINABILITY DATA FROM PROVIDERS

Powerful ESG data capture

500+ data types

Automatic data capture:

- Bill pay providers
- Data aggregators
- Third-party providers
- Organizational systems
- Market data

Manual data capture:

- Spreadsheets, Kanban boards, web forms
- Survey data

Email, FTP, EDI

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an IBM Company

Streamlined ESG data consolidation

Auditable single system of record

- Data service hub
- Flexible organization hierarchy

Intelligent data analysis

Dynamic reporting tools

- Standard dashboards
- PowerReport (embedded Power BI)
- Custom Excel reports
- Raw data API

Customizable ESG reporting

Reports for every audience

Driving ESG performance improvements:

- Executive reporting
- ESG performance reporting
- Benchmarking
- Flexible reporting granularity

Meeting disclosure and stakeholder requirements:

- Location and market-based GHG
- Auditing reports
- Trace back to source
- Reporting templates

ESG reporting framework

SASB, SUSTAINABLE DEVELOPMENT GOALS, GRI, CDP, TCFD

Our data-driven approach enables clients to identify where to start, where to go and how to get there.

Sustainability Strategy and Roadmap

Co-creating a sustainability agenda and pathways towards delivering corporate social impact and business value

ESG Data, Reporting and Risk Management

System of record for ESG data and insights to measure, report, operationalize and achieve your sustainability roadmap

Intelligent assets, facilities and infrastructure

Operational insights to drive clean energy transition, efficient waste management, and decarbonization

Responsible computing and green IT

Optimize infrastructure and computing to enable more efficient IT and drive social impact

Sustainable supply chains and circularity

Intelligent workflows for equitable, transparent, and carbon regenerative supply chains

4

ENVIZI + MAXIMO **VALUE PROPOSITION**

SUSTAINABILITY SYNERGIES

Envizi: The building blocks that accelerate your sustainability performance

1.

Build ↻
Data Foundation

2.

Streamline ↻
Reporting + Disclosure

3.

Accelerate ↻
Decarbonization

Envizi + Maximo:

Get **transparency of your operations** and use this to
drive efficiencies across your management of assets and **elevate overall sustainability practices**

Feed data from your entire portfolio of assets and plug them into Envizi for reporting

Leverage out-of-the-box tools to simplify reporting (compliance and performance)

1.

Maximize ↻
Asset Service Life

2.

Automate ↻
Operational Processes

3.

Transform ↻
Operating Model

4.

Differentiate ↻
industry Best Practice

Maximo: Simplify and scale the maintenance of all your critical assets

WITH ENVIZI, MAXIMO USERS CAN

- Measure and track the impact of your improvement projects in the language of ESG metrics such as greenhouse gas emissions.

- Engage stakeholders by making your efforts to improve ESG metrics visible across the organization.

- Have confidence in the data being used for sustainability target setting, with both the operations and sustainability teams working from the same single source of truth.

- Reduce time and effort by automating the input of operational data into a sustainability reporting platform.

QR CODE FOR EXTRA RESOURCES