5G & GOV TECH

BUILDING YOUR CONNECTED FUTURE

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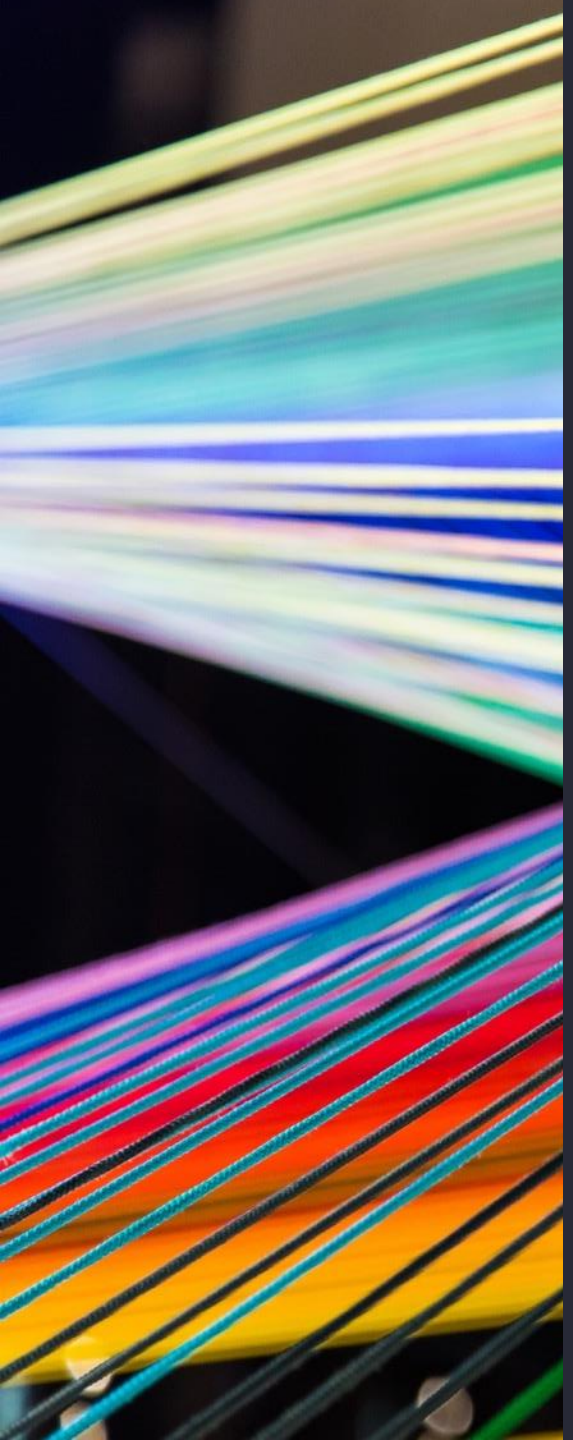
October 25th, 2023

GET THE FUTURE
YOU WANT

AGENDA

1. Intelligent Industry Vision

2. 5G Global Industry Success Stories



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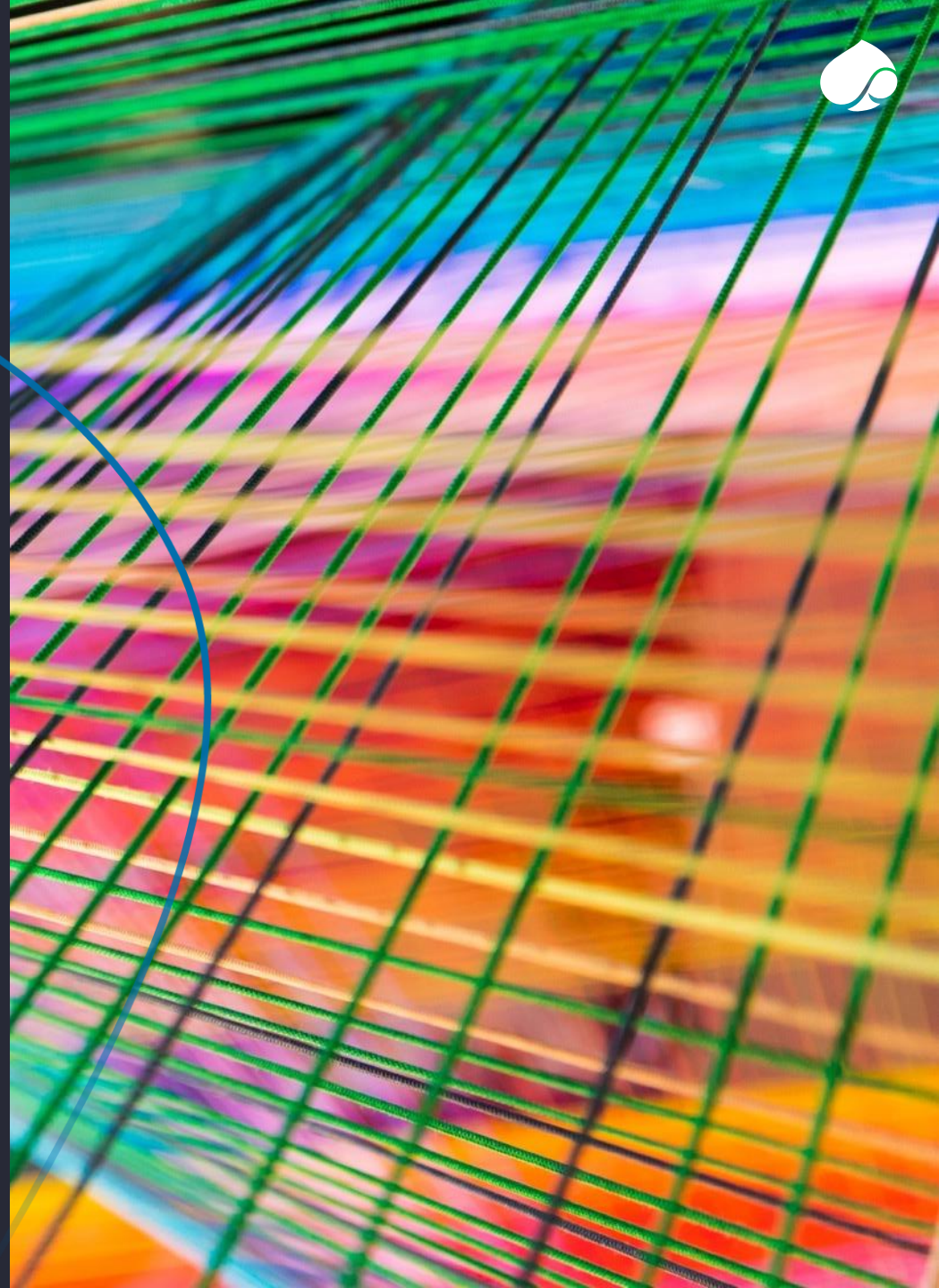
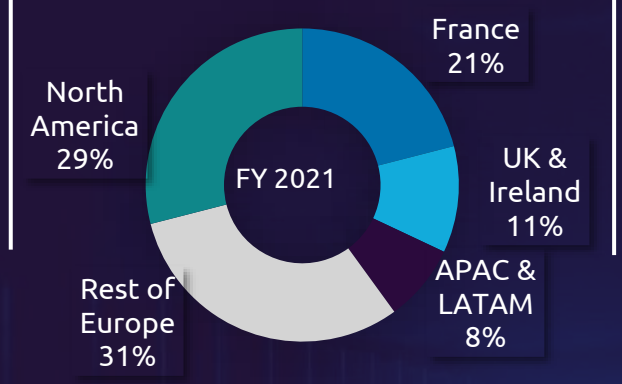
OUR VISION OF INTELLIGENT INDUSTRY



CAPGEMINI: WHO ARE WE ?

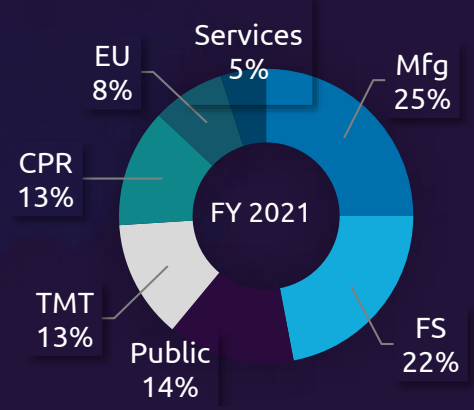
€22bn
Revenues
(FY2022)

+50 Countries



+350k
People
As per Feb. 2022

+10 prioritized Industries



Digital & Cloud

Data & AI/ML
Gen AI

Engineering
SW
Communications
Connectivity
Electronics
Chips
Mechanical

Industry & domains processes expertise

Creative design

We are the
Business & **Tech Transformation partner**
of our clients

WE ARE LIVING A TRANSFORMATION TOWARDS CONNECTED INTELLIGENT INDUSTRY

SEAMLESS CONNECTIVITY

Smooth and unobtrusive connectivity between users, enterprises & services

IMMERSIVE EXPERIENCE & THE METAVERSE

Mobile Augmented Reality Market worth $29.5 B by 2025

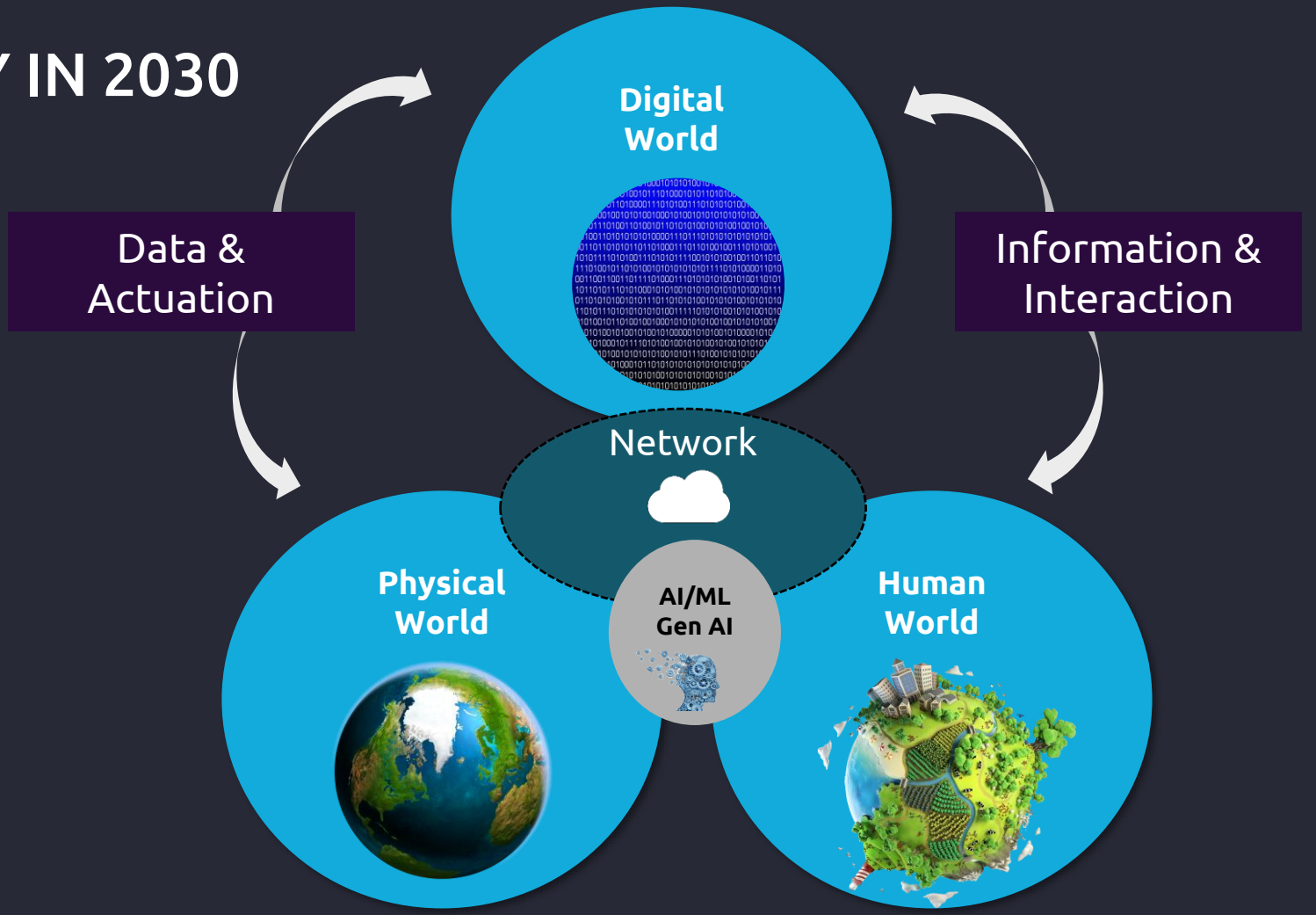
FROM AUTOMATION TO AUTONOMY

Connectivity and AI Impact on Manufacturing: $740 B of Benefits in 2030

INVISIBLE INFOSTRUCTURES

Identification, Authorisation, Anticipation / MEC

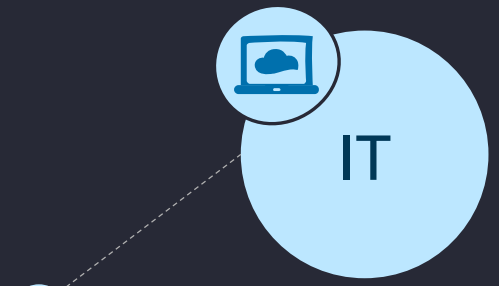
TECHNOLOGY IN 2030



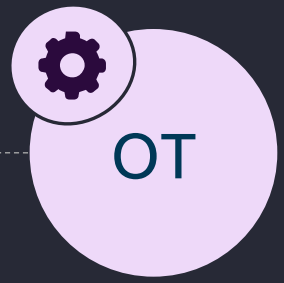
Digital convergence continuously extends the scope of human possibilities
AI-enhanced networks that sense, think and act will be vital to this evolution
Connecting the human, physical, and digital worlds to meets the needs and opportunities

DRIVING DIGITAL TRANSFORMATION REQUIRES BRINGING TOGETHER NEW SKILLS

Driving **Intelligent Industry** across the business…



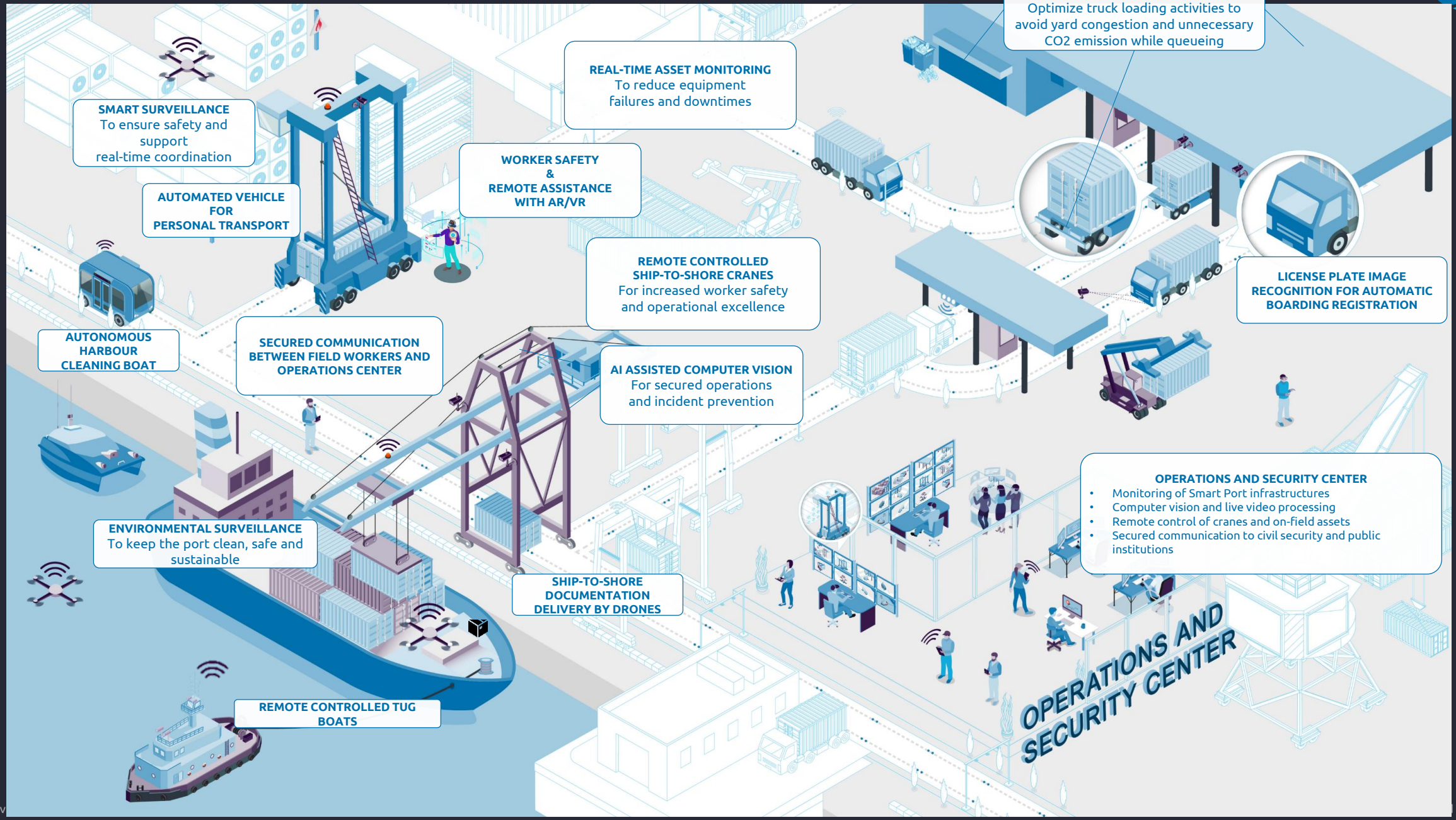
INFORMATION TECHNOLOGY
Enterprise IT services



OPERATIONAL TECHNOLOGY
Industry business solutions

NETWORK TECHNOLOGY
Communications solutions, Comms Engineering R&D

SMART PORTS


REAL-TIME TRAFFIC MONITORING AND VESSELS OPTIMIZATION
Optimize truck loading activities to avoid yard congestion and unnecessary CO2 emission while queueing
REAL-TIME ASSET MONITORING
To reduce equipment failures and downtimes
SMART SURVEILLANCE
To ensure safety and support real-time coordination
WORKER SAFETY & REMOTE ASSISTANCE WITH AR/VR
AUTOMATED VEHICLE FOR PERSONAL TRANSPORT
REMOTE CONTROLLED SHIP-TO-SHORE CRANES
For increased worker safety and operational excellence
LICENSE PLATE IMAGE RECOGNITION FOR AUTOMATIC BOARDING REGISTRATION
AUTONOMOUS HARBOUR CLEANING BOAT
SECURED COMMUNICATION BETWEEN FIELD WORKERS AND OPERATIONS CENTER
AI ASSISTED COMPUTER VISION
For secured operations and incident prevention
OPERATIONS AND SECURITY CENTER
Monitoring of Smart Port infrastructures
Computer vision and live video processing
Remote control of cranes and on-field assets
Secured communication to civil security and public institutions
ENVIRONMENTAL SURVEILLANCE
To keep the port clean, safe and sustainable
SHIP-TO-SHORE DOCUMENTATION DELIVERY BY DRONES
REMOTE CONTROLLED TUG BOATS
OPERATIONS AND SECURITY CENTER

INTELLIGENT WAREHOUSE & SUPPLY CHAIN

Connectivity Infrastructure

- 5G & Edge Private Network
- Wi-FI
- BLE
- RFID
- LoRa
- Ethernet/Fiber

WMS Platform

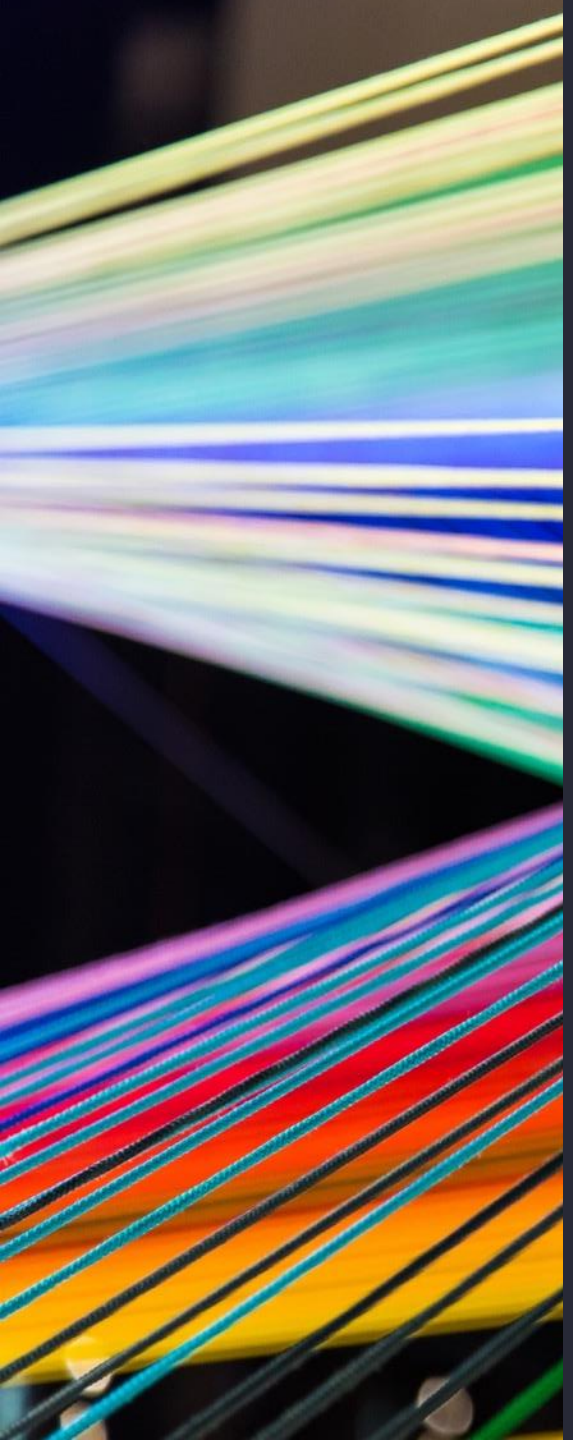
- Product data
- Order details
- Stock details
- Task group
- Workload Distribution
- Robotic / AGV / AIV task messages

IoT devices & apps platform

- Sensors
- AGV / AIVs
- Robots
- Surveillance camera
- Smart Jacket / Helmet
- Drones
- Worker Handheld devices
- Video analytics

Digital platform

- Single Sign On
- Single pane of glass, Unified View
- Control center
- Data analytics and reports
- Digital Twins
- Connecting to multiple enterprises BI



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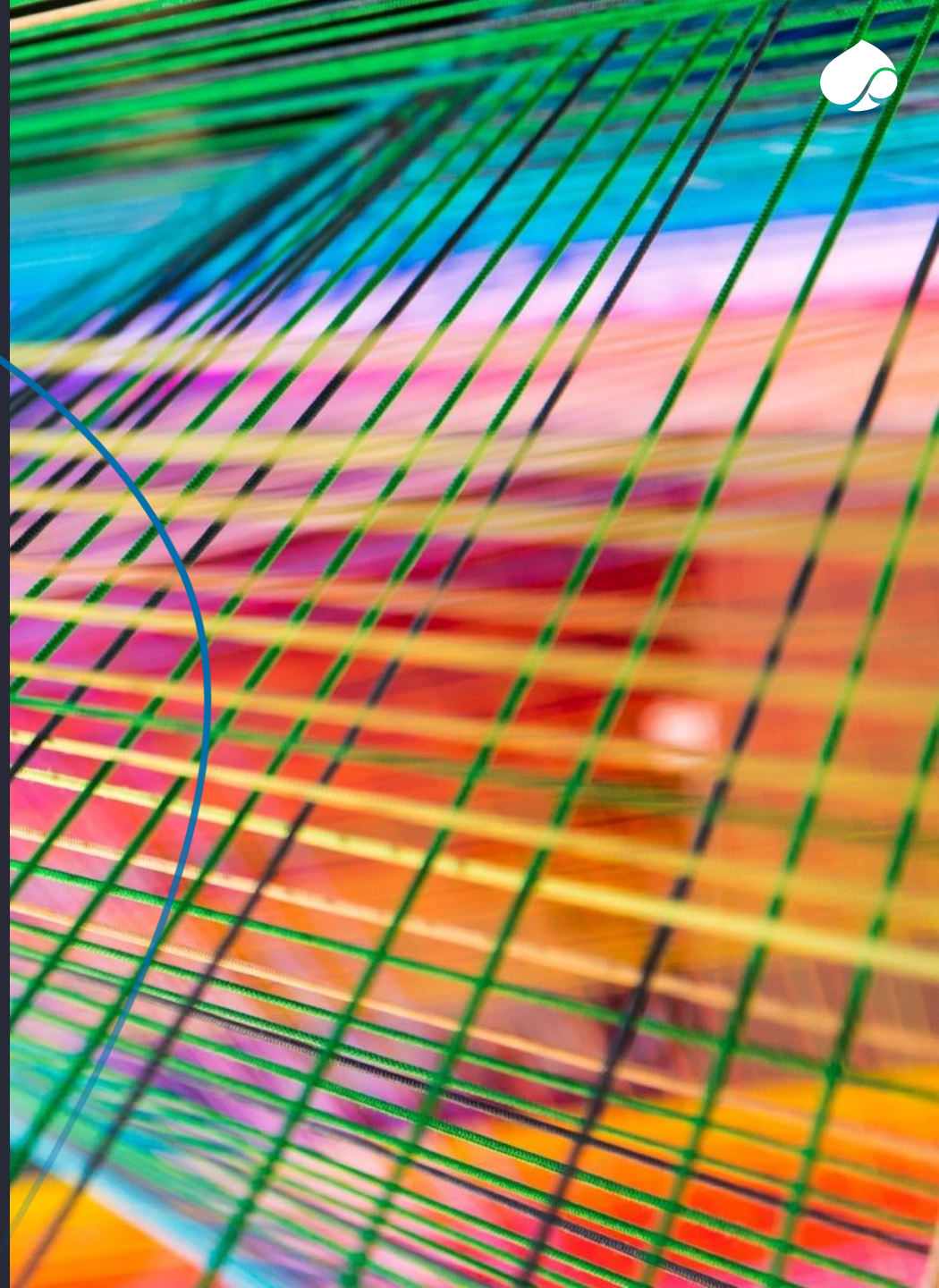
5G GLOBAL INDUSTRY SUCCESS STORIES



PRIVATE NETWORK IN INDUSTRY : INTEGRATED AUTONOMOUS CRANE SYSTEM (IACS)

CHALLENGE / CONTEXT

- **Industrial hoisting/cranes applications** are gradually getting automated to improve productivity and reduce operational costs.
- This automation **requires advanced connectivity solution with fast reaction time, high precision and reliability, and 24/7 system availability**… that Wi-Fi is struggling to address.

ACTIVITIES

- ✓ We **designed, deployed & integrated a multi vendor next-generation 5G private network** at a Schneider hoisting lab in Grenoble (France).
- ✓ We **demonstrated 5G unmatched performances and relevancy** for this use case.
- ✓ We **reduced network, operational complexities** as well as **maximizing ROI** for IACS end users.
- ✓ We run a **comparative Life Cycle Analysis of 5G & Wi-Fi network** to identify environmental impact of connectivity for this use case.
- ✓ We designed a **common Go-To-Market for at-scale deployment** of 5G IACS.

RESULTS

x3 productivity improvement

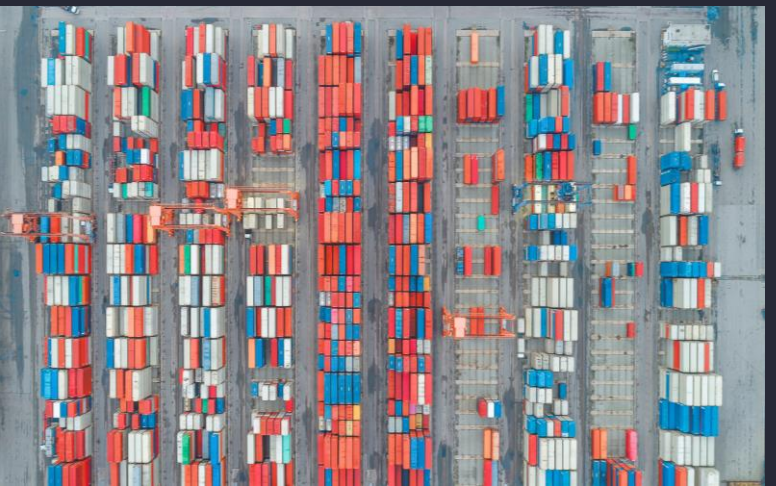
From 3 remotely controlled cranes with Wi-Fi to 9 with 5G

- 40% Maintenance effort

Replacing wired trolley controls with wireless

- 34% Sustainability impact

Reduction from 50 kg CO^2 to 33 kg per crane



SMART PORTS / INDUSTRY 4.0

CONTEXT & OBJECTIVES

- Capgemini is priming an ecosystem of partners to construct a **Standalone, Private Network-in-a-Box** solution for hosting Wireless Network Infrastructure, Smart Services and Applications in Malaysia, Sri Lanka, Nepal, Bangladesh, Cambodia & Indonesia. Small, Medium and Large solutions are identified for outdoor, indoor and mixed MPN deployments for key sectors based on local economies.

APPROACH & SOLUTION

Capgemini System Integrator	MAVENIR	O-Cloud HW	Radio Planning & Optimization Tool	EDGE and smart services/use cases	Deployment and other Professional Services (Capgemini and its partners)
Radio, Core Baseband, Smart services use cases and Professional Suppliers	(O-RU, vO-CU, vO-DU, O-Cloud SW 4G, 5G SA Core)				

The overall solution provides:

- Single Solution that can host multiple use-cases
- Secure On-Premise Data Processing
- Advanced Analytics
- Reduced Cabling, Relocatable Cameras
- Availability of advanced services as part of end-to-end portfolio (Analytics/AI/ML, Security)

Capgemini System integration services includes: Project & SLA Management, Radio planning, Design, Lab deployment, Integration, OSS Design/Development (Single pane of glass) and Managed Support Services
Field services through Partners

BENEFITS FOR THE CLIENT

- Monetizing their 5G Infrastructure
- Allowed the CSP to play in the Digital Transformation space
- Market credibility
- Reduced time-to-market
- Reduced development cost
- New GTM capabilities/portfolio

SMART CITY

5G for automated and connected mobility on Open Roads

OPEN ROAD

OBJECTIVES

- Evaluate the benefits of 5G in terms of safety, performance, quality of life, new mobility services
- Define a framework for the deployment of these new services
- Experiment these services on the first open road site in Europe
- Start the marketing phase

The 1st 5G test sites on open roads in Europe

Defining the framework for the deployment of new connected services

A connected urban territory that collaborates with vehicles

PARTNERS

Coordination : NOKIA, PFA Filière Automobile & Mobilités

Mobility	Service Deployment	Telecom & Digital
PFA Filière Automobile & Mobilités	République Française, Cerema	NOKIA
Goggo network	Systematic Paris Region Deep Tech Ecosystem	bouygues telecom
MILLA	UTAC	Capgemini
Renault Group	Institut VEDECOM	montimage
Stellantis	LACROIX	SMILE
TwinswHeel		
Valeo		

with the support of: Région Ile de France, PARIS SACLAY, VersaillesGrandParc, next move, SystemX

KEY FIGURES

3-year
Program
2022-2024

90 M€
Global Budget financed by French govt, region and members

2
Experimentation sites

20
members

Use cases:

- Collaborative parking Space detection
- Smart crossroad for the protection of vulnerable people and fluidity of traffic
- Autonomous last mile logistics
- Autonomous shuttles for on-demand transportation
- Dynamic traffic control

5G OPEN ROAD : USE CASES

SMART INTERSECTION

Reduce **traffic congestion** and **secure areas** with high accidentology

- Collaborative Parking Space Detection
- Vulnerable Road Users Protection
- Traffic Regulation
- Collision Avoidance

AUTONOMOUS URBAN LOGISTICS

Develop B2B and B2C **autonomous urban delivery services** (robots, lockers, etc.)

- Autonomous Droid Delivery
- Autonomous Mobile Delivery Point
- Autonomous Foodtruck Delivery
- Remote control and messages
- Load transfer in roadways

AUTONOMOUS TRANSPORT ON DEMAND

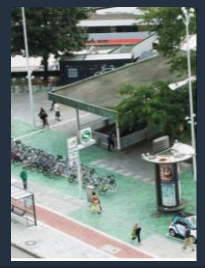
Provide **landlocked areas** (ex: private facilities, rural areas, etc.) with an **on-demand autonomous transportation service**

- Autonomous shuttle assistance
- BRT (Bus Rapid Transit) road sharing
- Platooning

DATA CORRIDOR & DYNAMIC GEOFENCING

Develop a massive and ultra-fast data **upload and download service** and Secure highly dense areas **dynamically**

- Data Corridor
- Speed regulation
- Obstacles avoidance



* Use cases where Capgemini is involved so far

5G OPEN ROAD VIDEO

LEADING THE MOVE FROM TETRA TO LTE/5G FOR PUBLIC SAFETY

We **support the French Home Ministry** in the **end-to-end creation** of a **4G/5G MVNO** to enable **mission-critical communications & services** for **400,000** first responders

Capgemini

GET THE FUTURE YOU WANT