Capital Digital

MADRID

AI Transforming Urban Mobility

from data to citizen experience

EMT MADRID

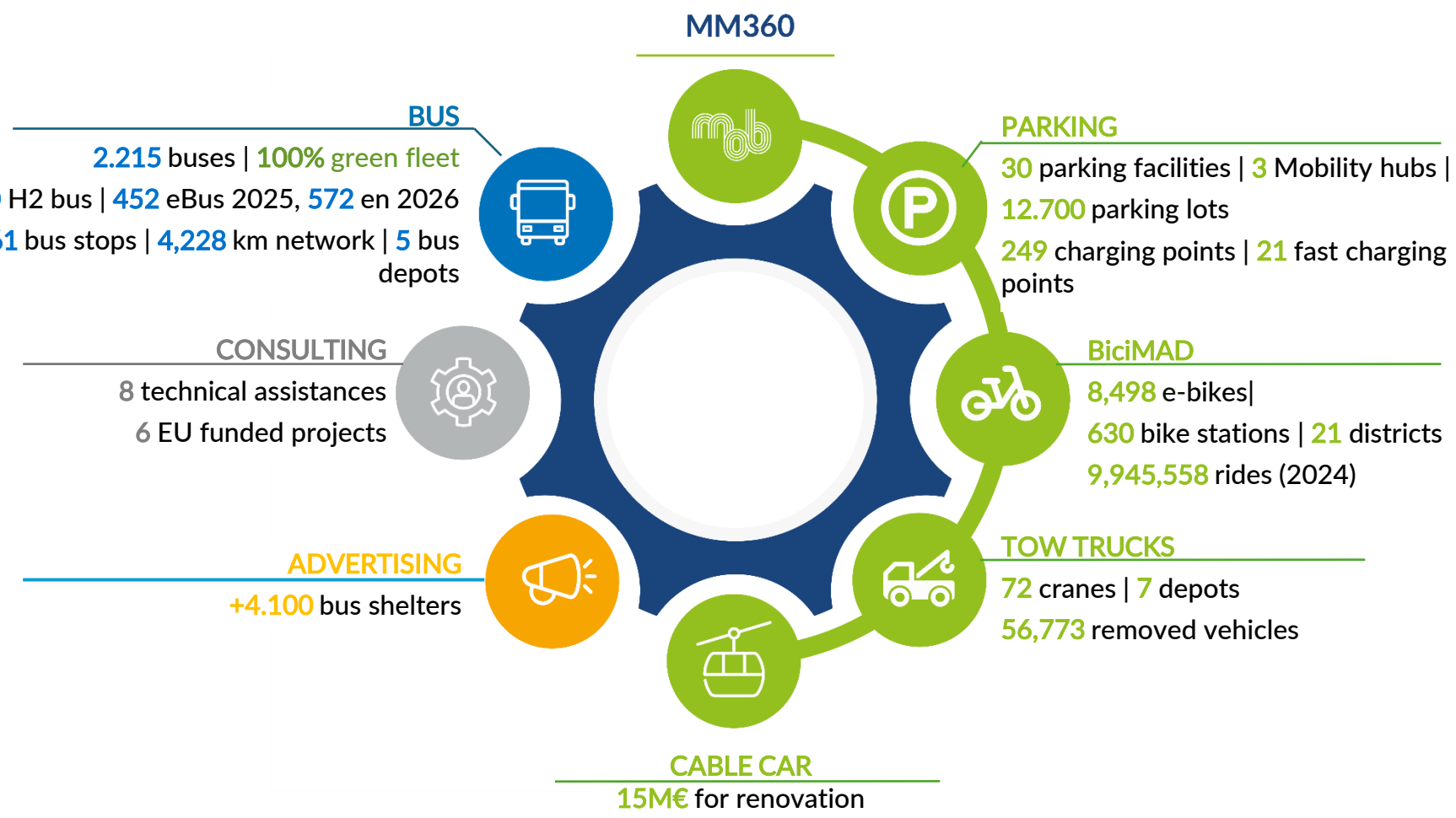
Carlos Acha Ledesma

DIRECTOR OF TECHNOLOGY AND INNOVATION

SMARTCITY EXPO WORLD CONGRESS

EMT MAIN FIGURES

EMT Madrid 2025



EMT Madrid is the reference of surface mobility in the city of Madrid. It counts with 10.100 employees, 8 business lines and 5 Bus Depots that enable the company to provide integrated and client-oriented services that foster a **sustainable and efficient mobility**.

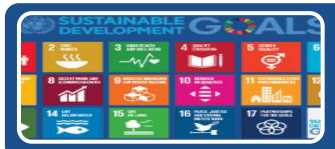
PUBLIC VALUE OF TRANSPORTATION

Transportation is a key factor

- **Transport is responsible** for a significant share of pollutant emissions in Spain.
- **Supporting public transport** means supporting air quality and the well-being of all citizens.
- It facilitates **social inclusion and universal access** to services, opportunities, and **civic participation.**
- **EMT Madrid leads innovation and sustainability,** offering efficient and environmentally friendly mobility solutions.

Every journey by public transport helps build a cleaner, more connected city, ready for the future.

EMT CORPORATE OBJECTIVES



Sustainable Development Goals & European Green deal

Madrid 360 Sustainability Strategy & Madrid 360 SUMP

EMT Madrid Strategic Plan 2021-2025

Moving towards a **green, decarbonized company** that takes advantage of the benefits of the **circular economy**

Strengthening customer orientation with **excellent** general interest service

Ensure **financial sustainability and grow** business through **new businesses and services**

Promote the **digital transformation** of EMT and **improve efficiency** in the provision of mobility services

EMT Main challenges

Decarbonization of the city.
Substantially increase the **use of public transportation vs private transportation.**

EMT DIGITAL MOBILITY

Innovation as a transformational element

Operations

Business development, diversification and partnerships

Infrastructures

Technology and innovation

People

Customers

Finance, investments and efficiency improvement

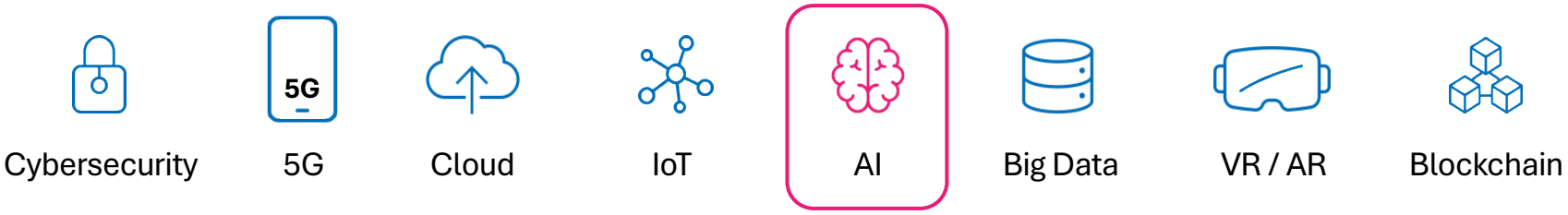
Sustainability and Corporate Social Responsibility

DIGITAL OBJECTIVE

Promote the digital transformation of EMT **at all levels, and improve the efficiency of mobility service** provision through:

- Digitalization of **customer interactions** with EMT.
- **Advanced use of specific technologies applied** to the mobility sector.
- **Fleet electrification.**
- **Infrastructure**, propulsion energy, passenger service provision, etc.
- Development of **comprehensive mobility services.**

Technology facilitates our transformation and evolution



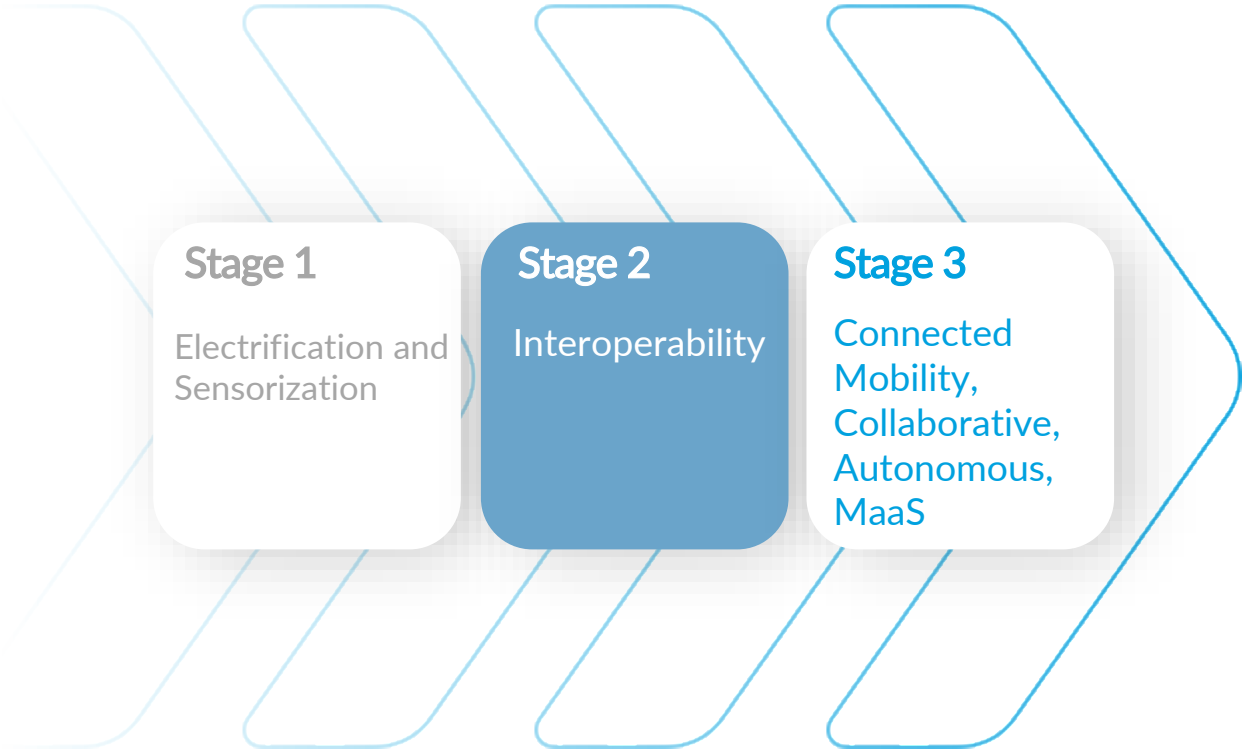
Cybersecurity | 5G | Cloud | IoT | AI | Big Data | VR / AR | Blockchain

Our digital plan focuses on **effectively applying these transformative forces and trends** in our management, integrating an **innovative vision** and the **application of artificial intelligence**

CONNECTED MOBILITY

Digital Ecosystem

Smart **mobility** has evolved into a **digital ecosystem** that connects infrastructure, fleets, and citizens for more **efficient, sustainable, and humane mobility**, offering an **improved customer experience**



Pillars:

- Infrastructure Digitalization (IoT, Connectivity)
- Mobility as a Service (MaaS)
- Data Intelligence and AI
- Digital Security and Resilience

DATA AT THE CORE OF EMT

A new dimension of data

01 **Increase analytical capabilities**

Make exhaustive use of available data

02 **Automation and efficiency**

Using Machine Learning, IA, BigData, IoT & other in operational and support processes

03 **New experiences and business models**

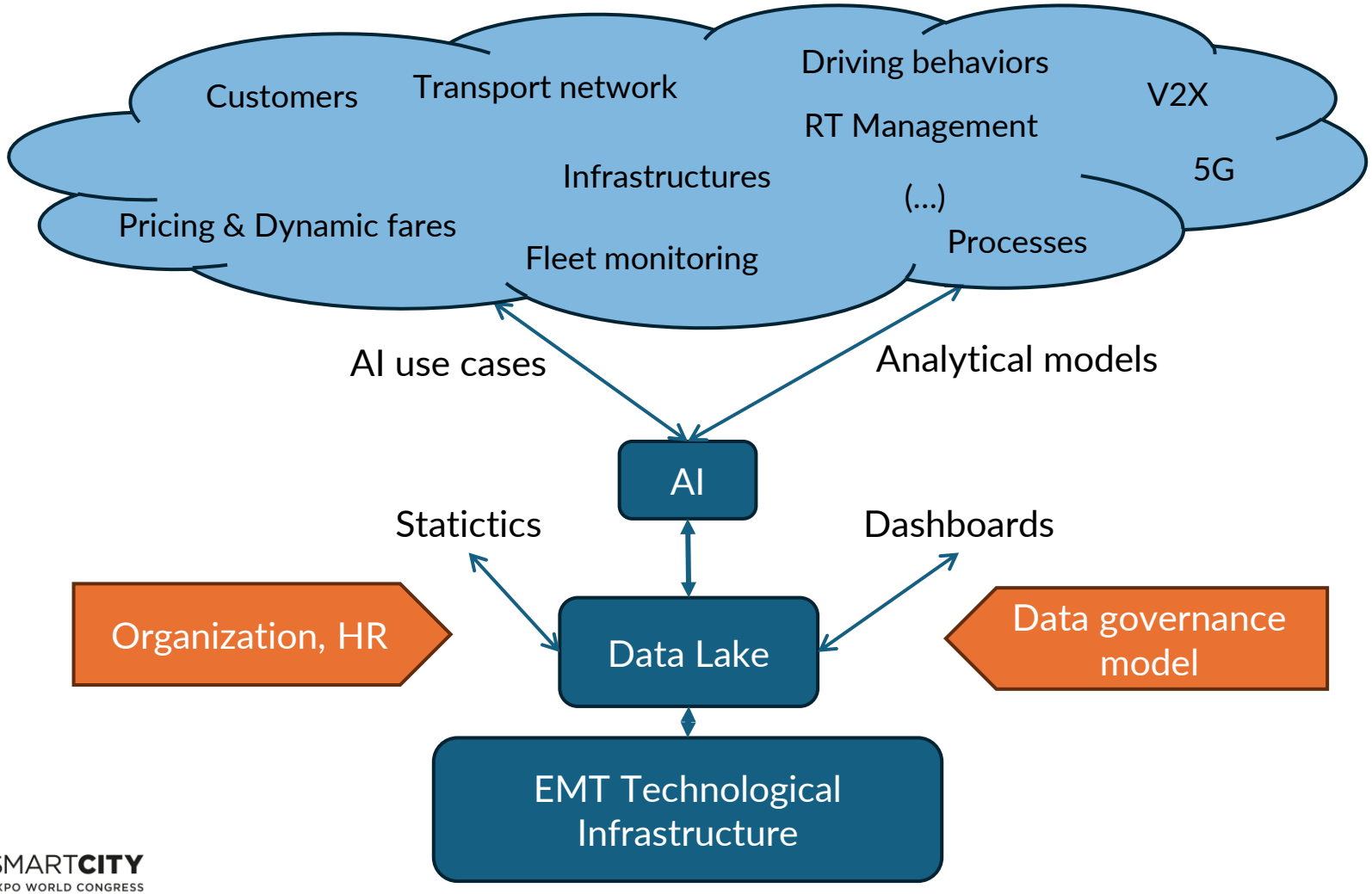
Adapt EMT to new contexts

Data & Analytics

Operational Excellence ⟷ Data driven company ⟷ Customer centric model

AI – AN EXECUTIVE APPROACH

EMT Roadmap to AI



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AI – AN EXECUTIVE APPROACH

Computer Vision

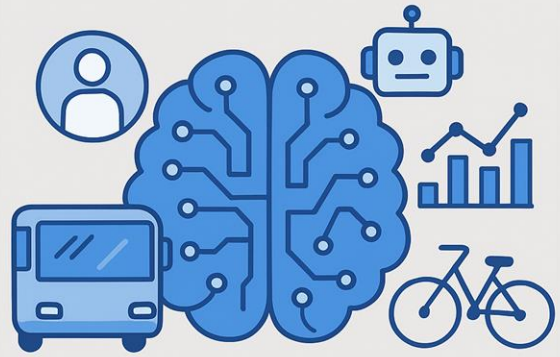
USE CASE	BRIEF DESCRIPTION
Aggression or Fight Detection	Identify violence/aggression between passengers to alert driver/security, minimizing false positives
Fall Detection	Immediately immediately a passenger's fall to alert driver and activate assistance
Sudden Brake Detection	Analyze sudden movements o determine harsh braking and assess driving conditions
Abandoned Objects	Evaluate proper placement of strollers and wheelchairs and detect blockage of aisles for emergency risk
Insecure Stroller/Wheelchair Plesement	Detect e-scooters (prohibited by EMT), distinguishing other objects to prevent false positives
Presence of E-Scooters Inside Buses	Identify patterns of passenger congestion for specific areas (e.g., near doors) to alert driver or take regulatory action
Crowd Detection in Specfic Vehicle Areas	Automatically monitor onboard cameras' functional state (no signal, lens covered, defocus) to generate maintenance alerts
Onboard Camera Fault Detection	
Video Stream Fusion for Efficient Transmission	Automatically monitor onboard cameras' into a composite flow for real-time efficient transmission with limited connectivity

EDGE Computing GPU - NVIDIA

AI – AN EXECUTIVE APPROACH

Use cases

Project	Focus	AI Objective / Benefit
1. Absenteeism Analytics (*)	Internal management (HR)	Predict absenteeism patterns, identify key factors, and support data-driven HR decisions.
2. BiciMad Assistant (*)	BiciMad maintenance	AI chatbot assists mechanics with diagnostics, learns from past repairs, and detects recurring or unusual failures.
3. Transport Simulator (*)	Bus operations	Simulate route and schedule scenarios to improve planning, detect inefficiencies, and minimize user impact.
4. Incidents management in CS	Customer experiencie	Automatically classify and manage citizen inquiries. Tasks and analysis are automated in real time. Incident resolution time is optimized and more consistent and integrated service is ensured for all citizens.



Unified AI strategy improving efficiency across people, assets, and public transport services.

(*) Projects in collaboration with the UC3M chair

AI CHAIR EMT MADRID – UC3M

Main Goal: Apply Artificial Intelligence to improve **efficiency, sustainability, and safety in urban mobility.**

What is the chair?

Partnership between EMT Madrid and UC3M
Initial duration: 3 years (with possible extension)
Leading center for AI in smart cities

Mission

Drive applied research, talent development, and the use of disruptive technologies.
Transform the user experience and optimize transport operations

Key Objectives

Innovative AI solutions for efficient and sustainable transportation.
Safer and more accessible mobility.
Data exploitation for AI applications.
Interdisciplinary research and specialized training.

AI DRIVING URBAN MOBILITY FORWARD

AV Shuttle Pilot

- **Strategic Collaboration**
  - The pilot is a partnership between CTAG and EMTMadrid to integrate AI in public transportation systems.
- **AI Enhancing Urban Mobility**
  - AI technologies aim to make urban transport safer, smarter, and more sustainable through advanced innovations.
- **Real-Time Decision Making**
  - Advanced sensor fusion and predictive algorithms monitor critical parameters for optimal shuttle performance and safety.

CONCLUSSIONS

The future of AI in EMT Madrid

AI is being the driving force behind EMT Madrid's transformation	shaping the future of urban mobility
EMT is committed to integrating AI across all areas	to deliver smarter, safer, and more sustainable transport solutions.
EMT will anticipate the needs of citizens, optimize resources, and create new business models	by leveraging data and advanced analytics
Every step forward in AI brings us closer to a city that is cleaner, more connected	ready to meet tomorrow's challenges

EMT Madrid's journey towards intelligent mobility is just beginning…

… and the future promises greater efficiency, accessibility, and quality of life for everyone.

Thank you

Carlos Acha Ledesma

Director of Technology and Innovation

Carlos.Acha@emtmadrid.es