MASA
Modena automotive smart area
The World is a Small City

MASERATI UNIMORE Università degli studi di Modena e Reggio Emilia Comune di Modena

Partners
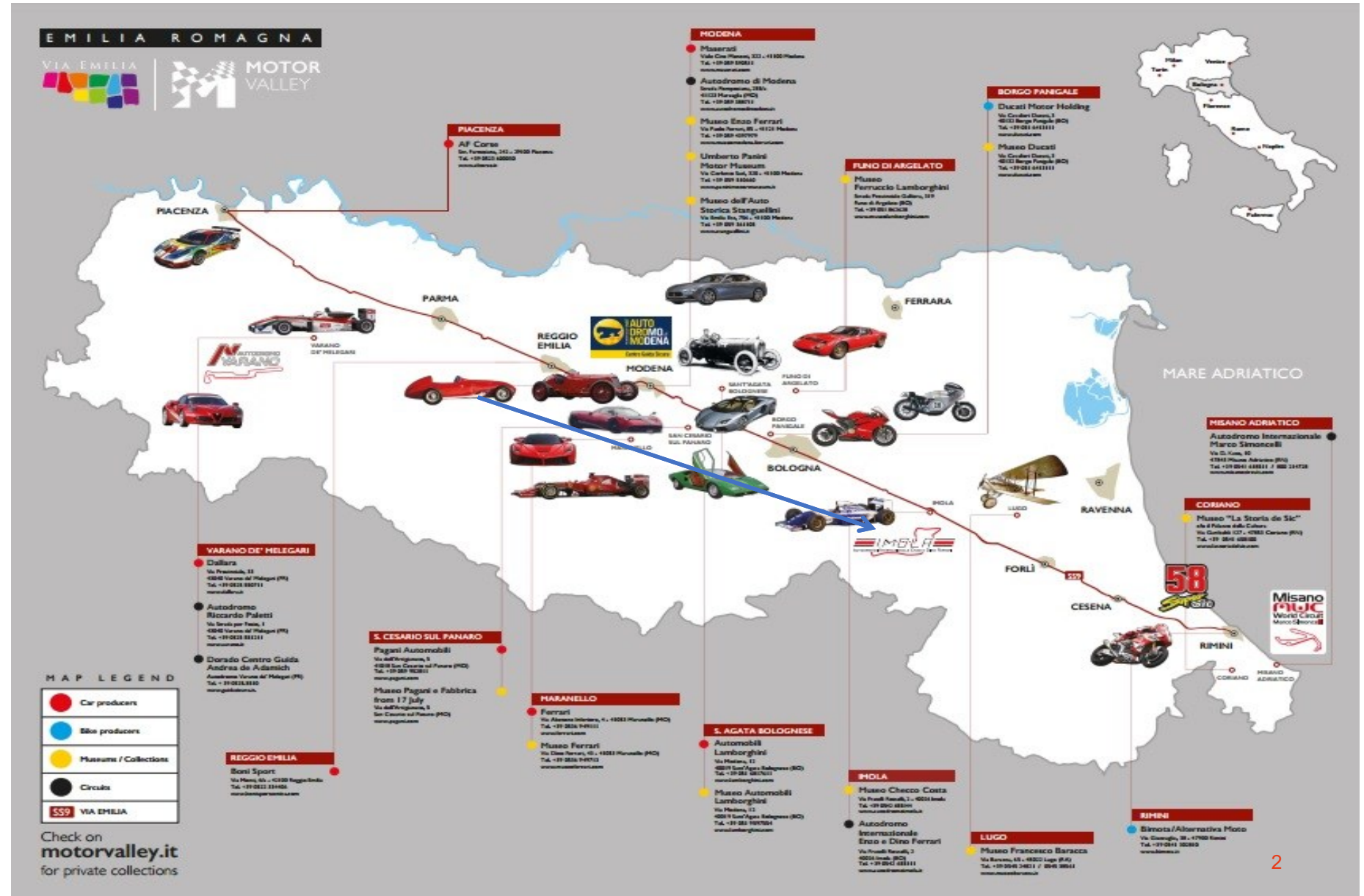
AD CONSULTING DANISI ENGINEERING Addfor+ ALTRAN AVL AXIS COMMUNICATIONS eNERGICA GENERALI AUTOMOBILE CLUB MODENA

here Hewlett Packard Enterprise LIFETOUCH MSC Software nebbiolo technologies fog computing pioneers

AUTODROMO di MODENA Centro Guida Sicura NEXT2U MACHINE SENSING EMOTIONS OCTO OMOOVE RE:Lab WIND WORLD ROAD ASSOCIATION MONDIALE DE LA ROUTE AIPCR PIARC DEMOCENTER

Modena – The Motor Valley

UNIMORE - HiPeRT

- Embedded Real-Time Intelligence
- Next-gen Mobility and Smart City
- Autonomous Systems
  - Ground, (Under-)Water, Air, Race
  - Autonomous racing:
    Indy Autonomous Challenge, A2RL, F1/10, F SAE, AD F3
- ~70+ researchers/developers, 15+M€ funding

✓ EU projects:

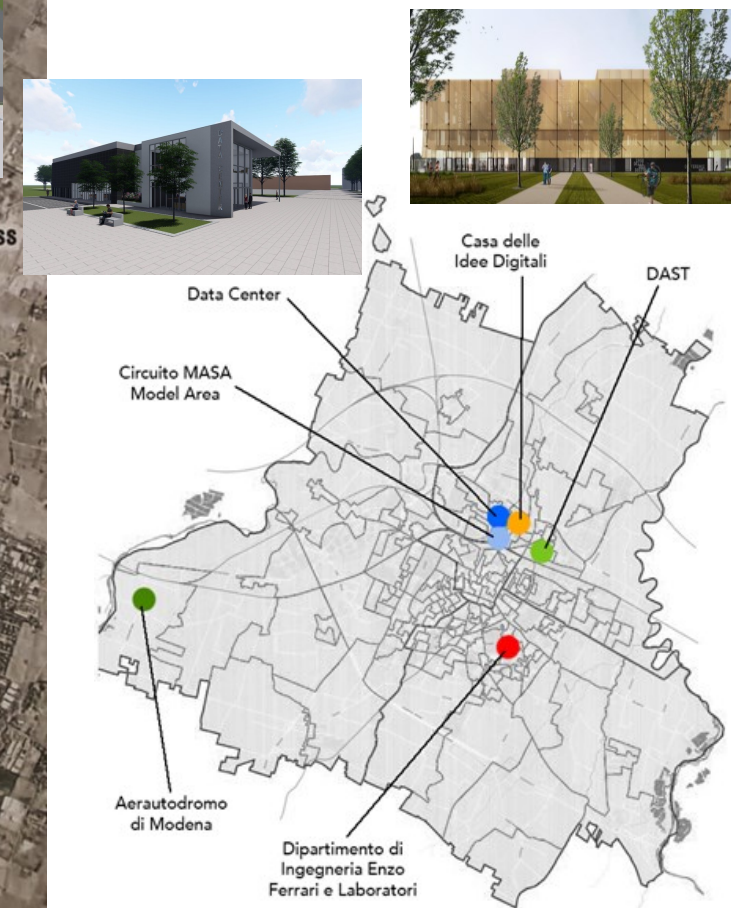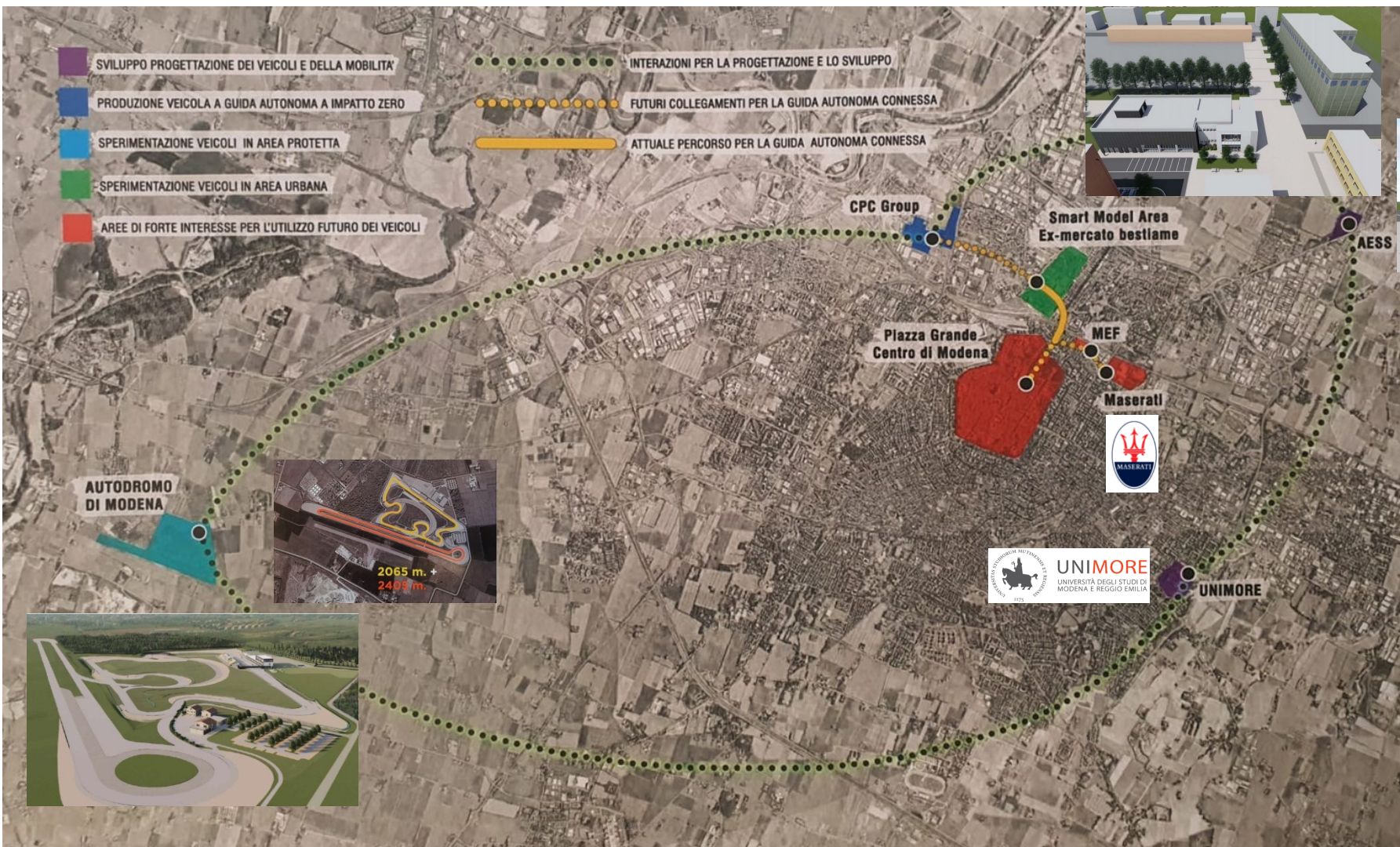

✓ Industrial collaborations:

Pushing the limits of Autonomy

Indianapolis 2021 – Fastest Lap

Modena Smart Mobility Ecosystem

MASA: Modena Automotive Smart Area

Urban Living Lab with next-gen roadside equipment

- Smart RSU, distributed sensors, fog nodes
- Low latency V2X (5G, C-V2X, DSRC, etc.)

Control/Data Center enabling next-gen applications:

- Connected, Remote and Autonomous Driving
- Vulnerable Road Users Protection, Smart Parking, Green Routing, etc.
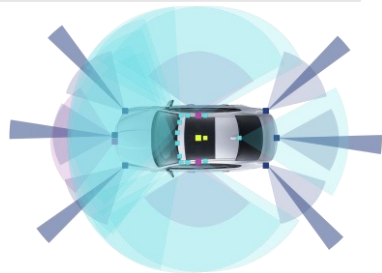- High-detail Traffic Flow Analysis

Real-time Urban Awareness

Infrastructure sensors

In-vehicle sensors

Real-time detection

Low-latency V2X communication

Data analytics

Public authorities

Traffic enforcement

Autonomous vehicles

Distributed Smart Sensing

- Distributed Object Detection
- Real-time V2X (<100ms)
- Support for ADAS and AD
- Secure and GDPR compliant
- Evolving Open Ecosystem

Car as a Sensor

Moderns cars feature plenty of sensors (cameras, radars, lidars, etc.)

- Today for ADAS/L2+
- Tomorrow for AD/L3-4

… and they will ever be more connected!

[1] Verucchi, Micaela, et al. "Real-Time clustering and LiDAR-camera fusion on embedded platforms for self-driving cars." IRC 2020

HAura

Enabling Real Smart Cities

Hardware

- Camera | Camera
- Computing module
- Custom Carrier
- GPS + 5G
- C-V2X + DSRC
- Passive Cooling

Software
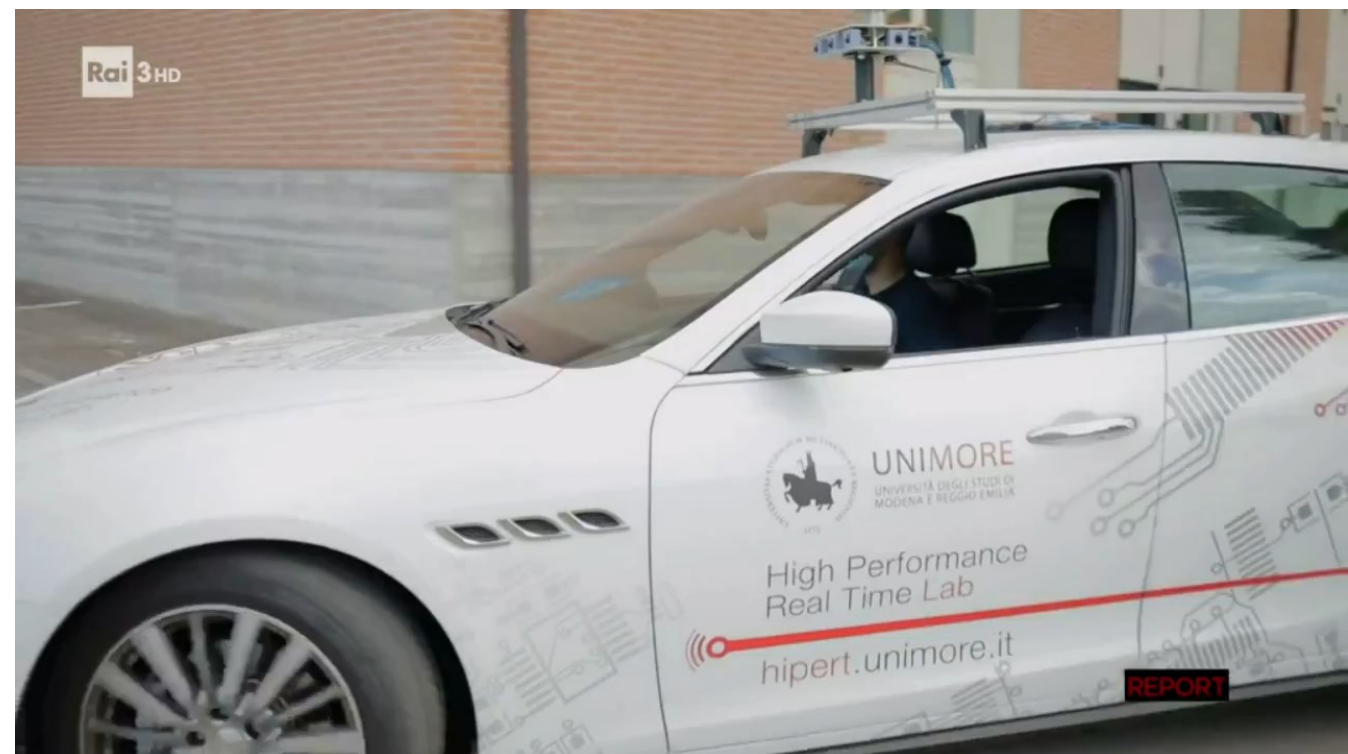
- Vehicle detection
- Tracking
- Geolocalization
- Communication

Privacy

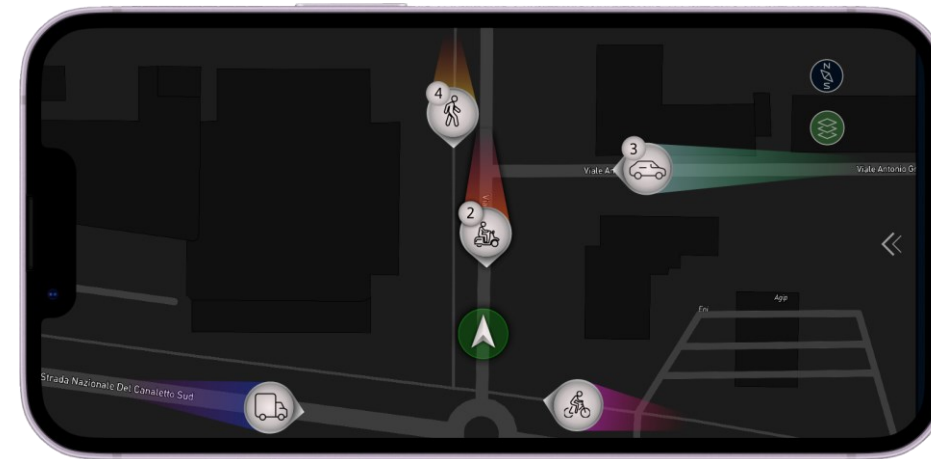- time
- latitude
- longitude
- orientation
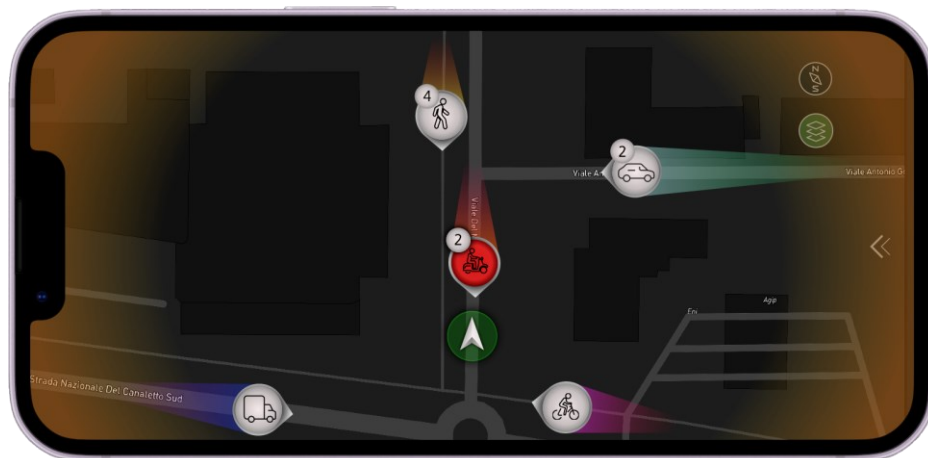- speed

Smart City dashboard

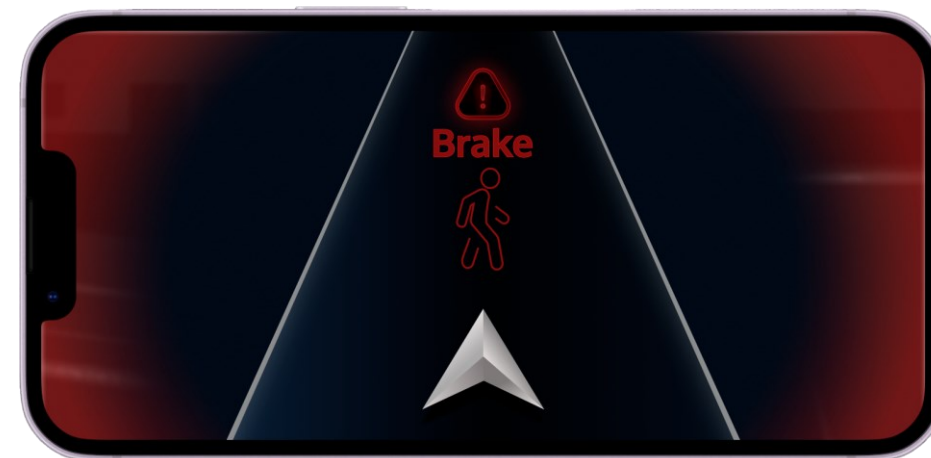Road user classification/counting, heatmap, traffic info, events monitoring

MASA app: VRU protection

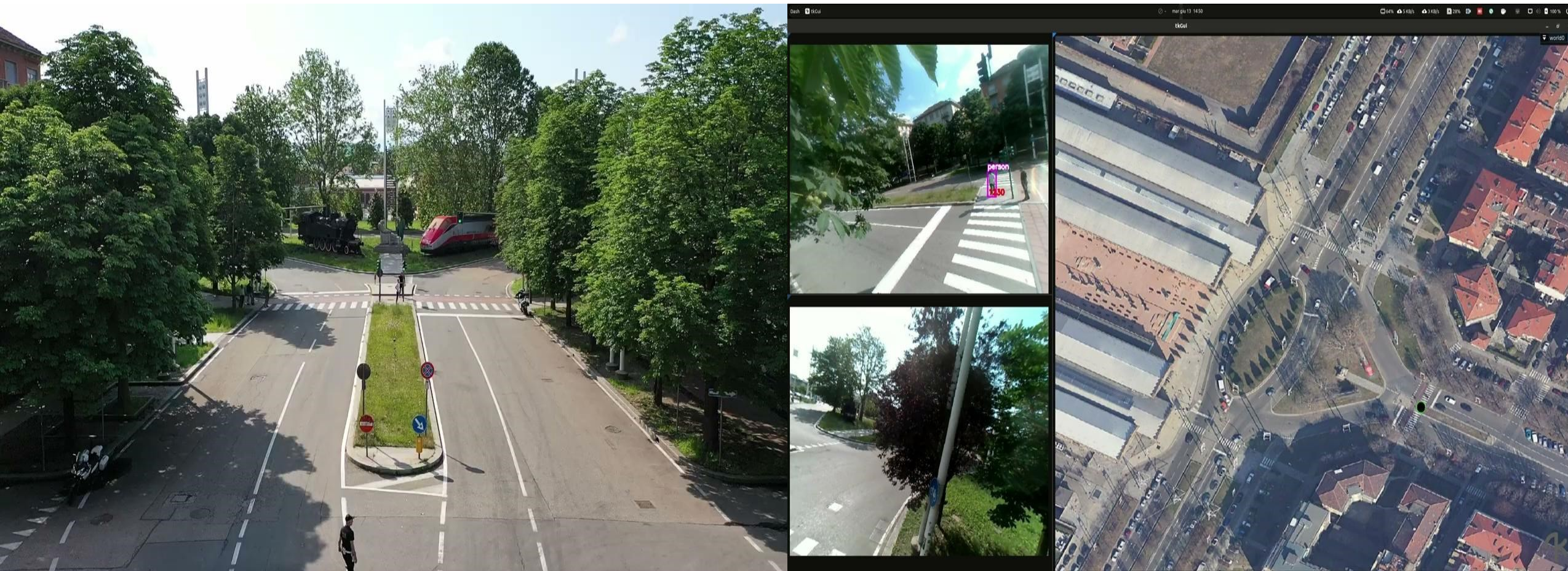Dynamic real-time detection and visualization of different classes of objects, including speed and direction.

Classification of dangers and severity thresholds

Real-time warning of imminent dangers

Exporting the model to other cities

Turin, June 2023

Installing in Rome, Naples, Reggio, Autostrade, Brenner, etc.

THANK YOU!

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