Horizon Europe Master Slide Deck

Louise Mothersole
Horizon Europe UK National Contact Point for Mobility
Louise.Mothersole@IUK.UKRI.org
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HORIZON EUROPE

THE NEXT EU RESEARCH & INNOVATION
PROGRAMME (2021 – 2027)

Horizon Europe National Contact Points (NCPs)

Team of national advisors, appointed by the Government to support UK organisations to successfully participate in Horizon Europe by:

- Raising Awareness of the programme
- Helping you find the right Topic
- Identifying the best ways to find partners
- Navigating the EU funding & tender opportunities portal
- Developing the proposal
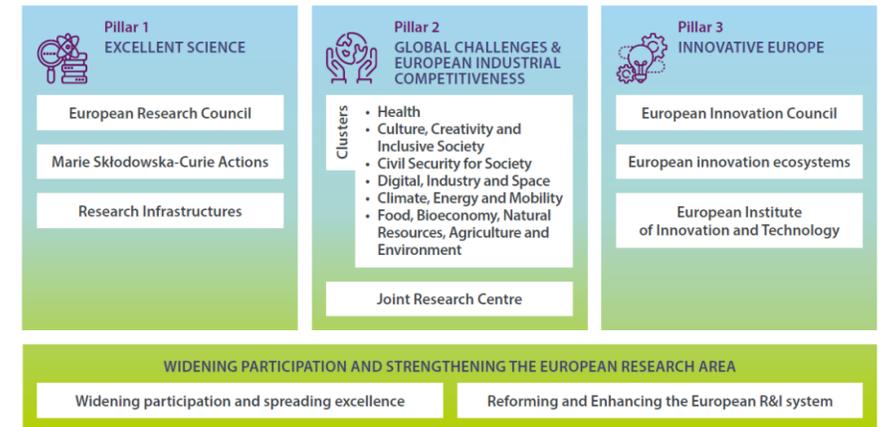- Answering any other Horizon Europe related questions

https://www.gov.uk/business-finance-support/horizon-europe-funding

HORIZON EUROPE'S
NATIONAL CONTACT POINTS
CAN HELP YOU

#HorizonEU — European Commission

Find National Contact Points from all participating countries

What is Horizon Europe?

- Horizon Europe is the current EU's Framework Research and Innovation funding programme.

- It is the largest R&I funding programme in the world, with an EU budget of over €95.5Bn for 2021-2027.

- The programme is divided into three main parts:

  - Pillar 1 supports excellence in science
  - Pillar 2 focuses on solving global challenges through collaborative research & innovation
  - Pillar 3 supports business growth and competitiveness

- Other parts of Horizon also include support for research infrastructure and widening participation.

- Key priority areas include food, bioeconomy, climate change, health, digital, transport and mobility, space, energy, industry, civil security and humanities. The programme is open to all types of organisations of all sizes.

Horizon Europe

€95.5bn funding agreed for **2021-2027**

€53.8bn

€24.9bn

Pillar 1
EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie Actions

Research Infrastructures

Pillar 2
GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters
1 Health
2 Culture, Creativity and Inclusive Society
3 Civil Security for Society
4 Digital, Industry and Space
5 Climate, Energy and Mobility
6 Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

Pillar 3
INNOVATIVE EUROPE

€13.4bn

European Innovation Council

European innovation ecosystems

European Institute of Innovation and Technology

WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation and spreading excellence

Reforming and Enhancing the European R&I system

UKRI Innovate UK

Budget figures exclude UK and other Associate Country contributions

What are Associated Countries?

- Countries that have 'joined the Horizon Europe club' – their governments have agreed to contribute financially to the overall budget of Horizon Europe

- Associated Countries **CAN**:
  - Coordinate (lead) proposals and projects
  - Receive funding from EU as Beneficiaries in Horizon Europe projects

- Associated Countries **DO**:
  - Count as one of the minimum three different countries required for Horizon Europe collaborative projects
  - Have official government representation on the direction setting bodies of the programme (e.g. Programme Committees, States Representative Groups, etc)

- UK has associated for the 2024 Work Programme onwards, i.e. any Topic or Call with 2024, 2025, 2026 or 2027 in the Topic/Call Identifier

UKRI Innovate UK

Why International collaboration is important

- Solve global grand challenges through collaborative R&I
- Collaborate with world leading organisations to learn from the best
- Access cutting edge technologies, infrastructure, talent & markets
- Contribute to the dialogue on standards, regulations and research policies
- Ensure that technology development aligns with global market place
- Collaborative relationships frequently become transactional ones – developing system solutions in supply chain partnerships
- **Creating jobs, growth and stronger supply chains**

UK Research and Innovation

UK Research and Innovation

Thank you

~~Twitter~~ X: **@UK_Mobility_NCP**

Email: **NCP-Mobility@iuk.ukri.org**

Newsletter Subscription: **https://eufunding.ukri.org/subscribe**

Innovate UK

Innovation

LivingLAPT delivered **sustainable/transferrable autonomous shuttle/logistics services** among various European cites **as a last mile solution and for on kerb side management.**

This was achieved **through a robust transnational safety framework** (e.g., considering different built environments, national policies) as well as **addressing user acceptance and trust** throughout our **4 phases:**

- **Phase 1**: Operation in a controlled urban environment without passengers.
- **Phase 2**: Operation in a controlled urban environment with on-board passengers and on-board safety driver/operator.
- **Phase 3**: Operation in a controlled urban environment with on-board passengers and without an on-board safety operator.
- **Phase 4**: Unrestricted operation fully autonomously in a real-life setting.

Outcome and impact

1) Economic impact through delivering a sustainable, European-wide safety framework for autonomous shuttle/logistics services:

- Reducing investment costs as services can operate without safety drivers. Operators can monitor a number of shuttles simultaneously.
- Increasing confidence in value proposition of autonomous services due to ensuring smooth integration into cities.
- Opening up market size for businesses to sell autonomous vehicles for providing transport/logistic services.
- Cost-efficient integration with public transport as shuttles are small, flexible, connected vehicles.
- Promoting usage of autonomous public shuttles due to, e.g., flexibility, increases revenue for cities. Also, viruses will not be easily transmitted during pandemics as small number of people travel per shuttle.

2) Social impact through deploying a significant number of autonomous shuttles based on a European-wide safety framework addressing user acceptance/trust:

- Improving quality of life due to more flexibility/independence of vulnerable citizens.
- Re-designing space, that has been dedicated to private cars in city centers, will provide quality social space improving physical/mental health of citizens.
- Decreasing congestion & overcrowding in existing mobility services will contribute to better urban growth management.
- These shared mobility services can be seamlessly integrated with other public transport services (MaaS).

3) Environmental impact by increasing number of citizens being incentivised to use public autonomous shuttles:

- Reinforcing air quality limits & emission targets as autonomous, electrical shuttles replace cars. This will be achieved through delivering on economic & social impact.

Partners in 2022 & 2023

eit Urban Mobility — Funded by the European Union

Industries

Universities / Education

APPLIED AUTONOMY

auvetech

BRING AUTO

Future Mobility Network

PowerHUB — Power for Ventures

AURRIGO

LivingLAPT

UCL

GHENT UNIVERSITY

TU/e

Cities

PRAHA PRAGUE PRAGA PRAG

R — ŘÍČANY

Gemeente Helmond

HASSELT HEEFT HET.

MK — milton keynes council

KONGSBERG KOMMUNE
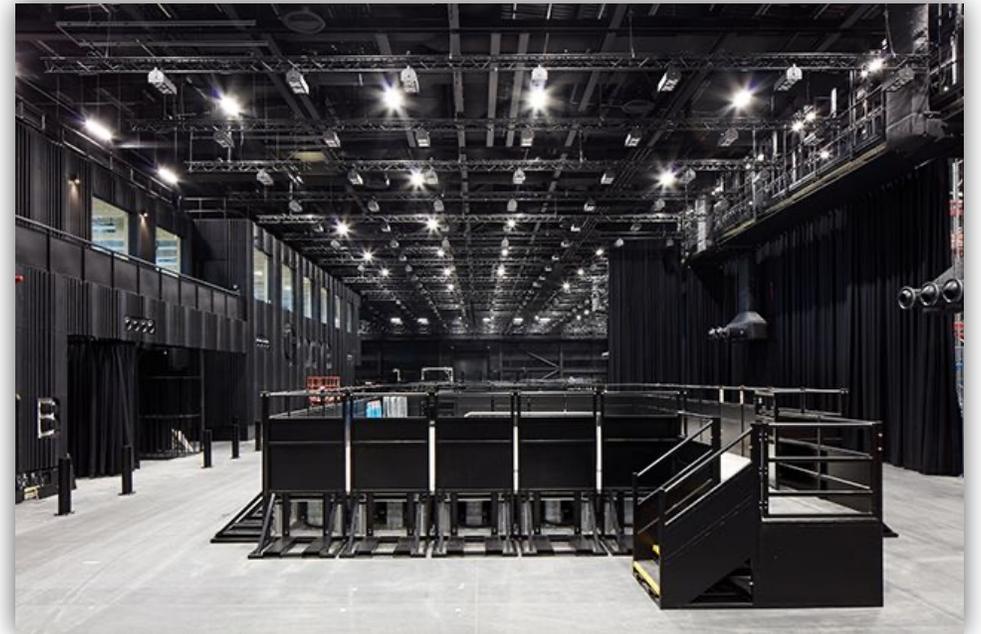
BVV Veletrhy Brno

Knowledge Institutions / RTOs

Staf Cars — DRIVEN BY MOVING PEOPLE

LAB O BOX

Autonomous Shuttle Experiments at UCL PEARL (1/2)

Since December 2022 we have been conducting autonomous shuttle experiments with human experiments at UCL PEARL – a state-of-the-art research facility that can simulate different lighting conditions, sounds, and smells.

The goal was to understand how various means of communication (e.g., **audio, visual, combined**) can be used to promote safe and trustworthy interactions between autonomous shuttles and other (vulnerable) road users: **pedestrians**, **cyclists, and e-scooter riders**.
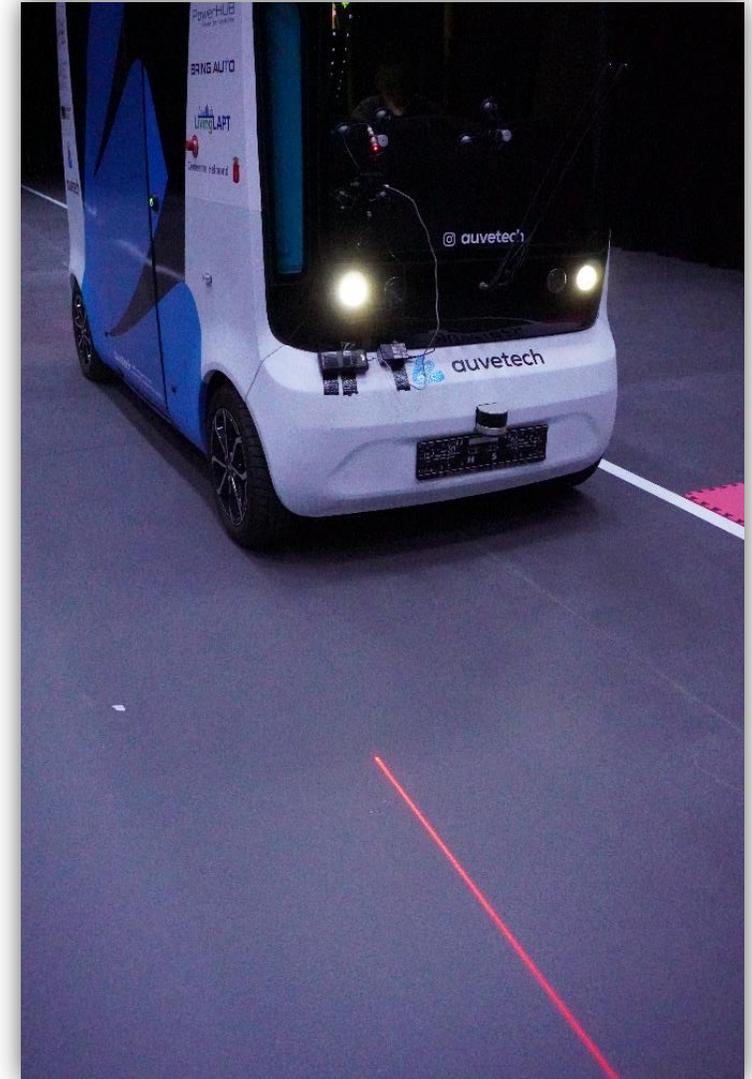
Human-machine interaction inside & outside autonomous shuttles – 2022 & 2023

The goal is to explore communication methods (e.g., audio, visual, combined) for fostering safe interactions between autonomous shuttles and vulnerable road users (pedestrians, cyclists, e-scooter riders).

Scenarios:

1. E-scooter rider overtaking an autonomous shuttle.

2. Cyclist turning on a T-junction in front of an approaching autonomous shuttle.

3. Pedestrian crossing the road with an approaching autonomous shuttle.

Communication Modalities & Environmental Conditions:

	NIGHT & SILENCE	DAY & NOISE
NONE	X	X
VISUAL	X	X
AUDIO	X	X
AUDIO-VISUAL	X	X
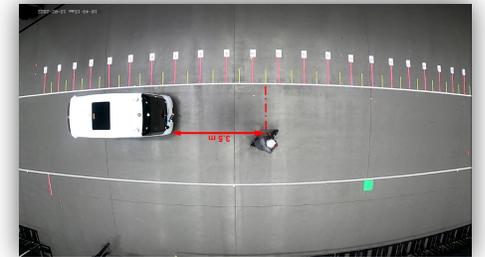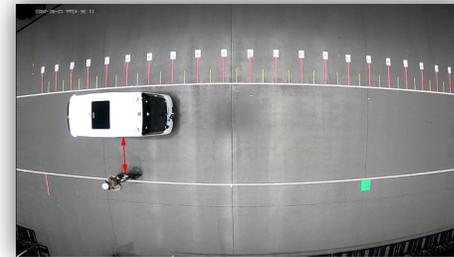
Behavioural metrics:
Gaze behaviour, mental state, speed & acceleration rates

LivingLAPT Pilots in 2023 - Prague

Jizda budoucnosti 15 SEP - 5 OCT 2023

- Aurrigo autonomous bus rides for the public
- special test drives along a route on public roads
- wheelchair testing
- student rides

OPENING EVENT 19 SEP 2023

- ceremonial opening of operations with representatives of the City of Prague and EIT Urban Mobility in the presence of the media

STATIC DEMO IN ŘÍČANY 23 SEP 2023

- display of autonomous shuttle to Říčany inhabitants and visitors of a street food festival, invitation for rides

WORLD ROAD CONGRESS 2 OCT 2023

- delivering gifts to congress guests using BringAuto delivery robots
- static demo of the Aurrigo autonomous bus

LivingLAPT Pilots in numbers – Prague (1/2)

640+ km

6 weeks

3,160+ passengers

134 deliveries

RIDES IN AUTONOMOUS MODE

MEDIA EXPOSURE

- TV NOVA, CNN Prima News, PrahaTV – TV reports
- Newspaper METRO front page
- Featured in multiple online articles, incl. Daily Express, Times, iDNES
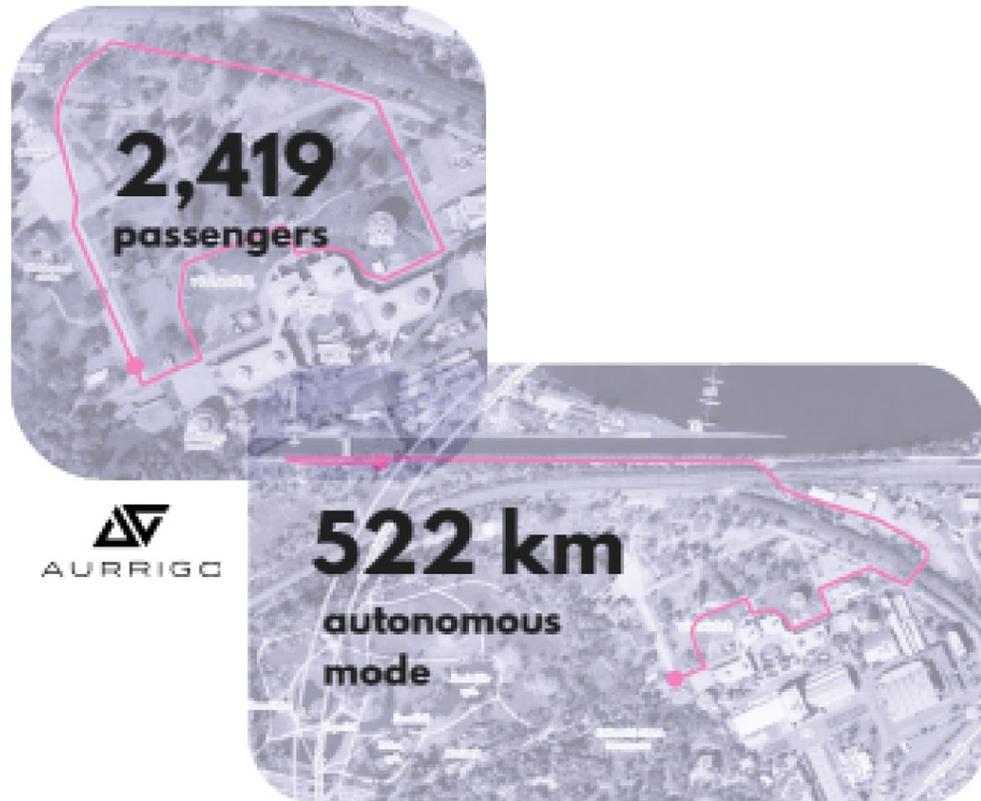
LivingLAPT Pilots – Brno

INTERNATIONAL ENGINEERING FAIR 2023

- demonstration of autonomous technologies to the President of the Senate of the Parliament of the Czech Republic, the Minister of Industry and Trade and other important representatives
- TV and radio inputs

AUTONOMOUS SHUTTLE RIDES

- Aurrigo autonomous shuttle rides for visitors

DELIVERY ROBOT

- delivering gifts to visitors using BringAuto delivery robot
- demonstration of the teleoperation

XFLOW

- presentation of the Applied Autonomy fleet management system

LivingLAPT Pilots in numbers – Brno

745 passengers

4 days

120 km autonomous ride

70 deliveries by robot

17 km autonomous mode
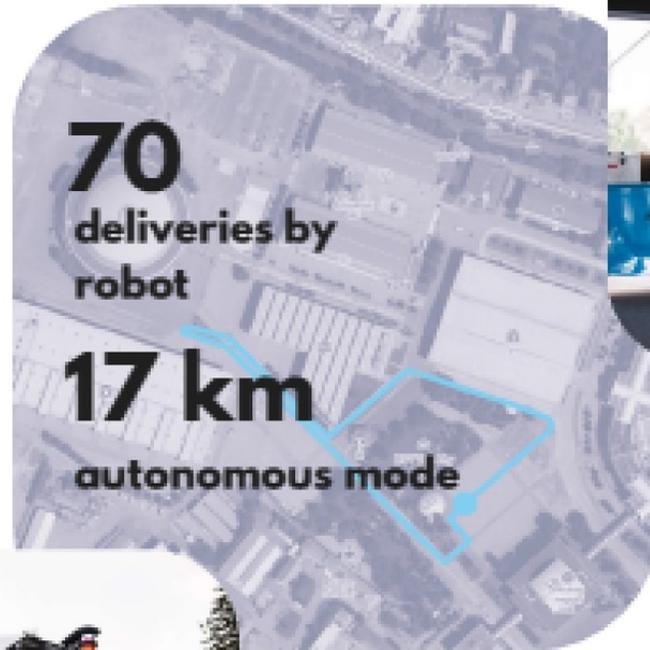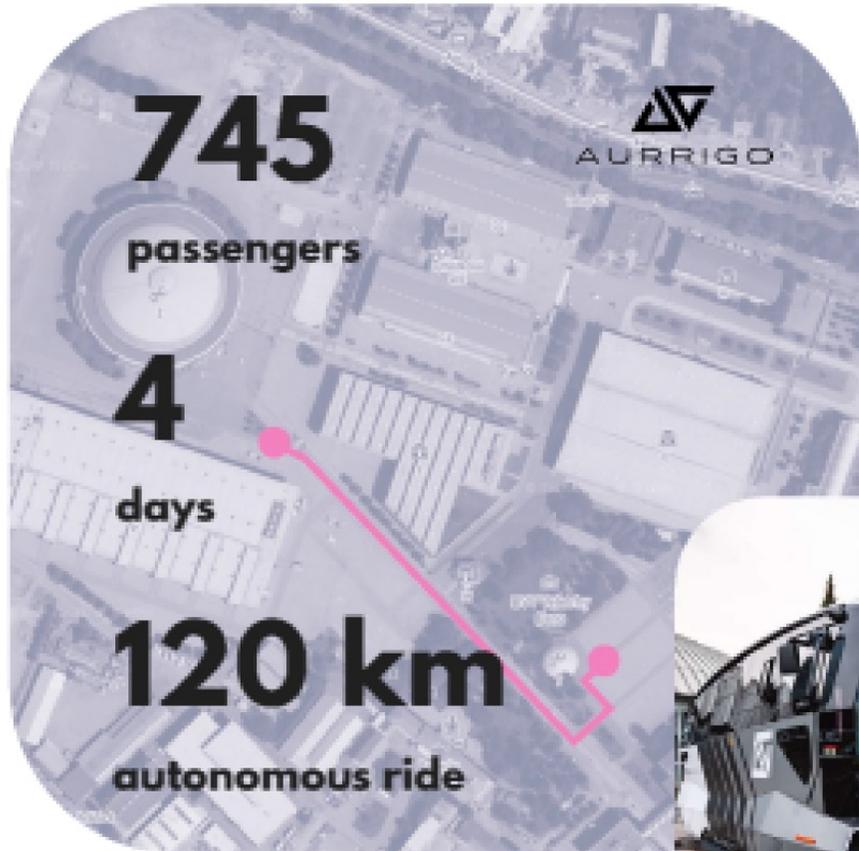
MEDIA EXPOSURE

- ČT24 - live report, ČT1 - news
- Hit Radio Brno - live report
- Digital Stage - live report from the
- International Engineering fair
- Featured in multiple online articles

Overview of the Milton Keynes Pilot:

Duration: The piloting activities took place throughout the entire month of November.

Operation Dates:

- Aurrigo's Auto-Shuttle ran from 10th to 30th November around Central Milton Keynes.
- BringAuto's delivery robot operated from 13th to 30th November around the Milton Keynes stadium.

Routes:

- The Aurrigo shuttle traveled a route including Unity Place by Station Square, Midsummer Place Shopping Centre, and Hotel La Tour.
- The BringAuto robot had a 650m route with 15 programmed stops around the stadium.

Events and Key Dates:

- **Piloting Period:**

10th to 30th November for the Aurrigo Auto-Shuttle
13th to 30th November for the BringAuto delivery robot.

- **Public Involvement:**
- The shuttle operated on a public road in mixed traffic and carried passengers.

- **Media Coverage:** The pilot attracted attention from major media outlets with interviews from key project stakeholders.

- **Special Tests:** Integration of the BringAuto robot with Applied Autonomy's xFlow smart fleet management platform was a focus.

User Acceptance Surveys: Surveys were completed after rides, indicating a high level of safety felt by respondents and a willingness to use and pay for such services.

Operational Data:

- The Aurrigo shuttle traveled 659.60 km autonomously with 130 passengers.
- The BringAuto robot completed 42 orders during the pilot.

Challenges: Big event days at the stadium posed challenges to the programmed routes due to large numbers of visitors and temporary fencing.

Outlook: For commercial operations, human operator involvement needs to be reduced. More extensive operations are required for sufficient data collection and stakeholder involvement.

Key Lesson Learned (1/3)

- **Importance of Safety and Security:** High levels of safety and security are essential for successful operations with autonomous vehicles. This is vital for building trust and user acceptance and for collecting reliable operational data.

- **Significance of Use Cases:** The pilots reinforced the importance of having a strong, relevant use case that is both compelling to attract user interest and realistic in terms of the vehicle's current capabilities.

- **Necessity of Long-Term Operations**: Longer operational periods are necessary to fully realise the potential benefits of autonomous vehicle technology and to achieve meaningful data collection for future development.

- **Impact of Vehicle Maturity:** The level of technological maturity of autonomous vehicles is crucial for determining their potential for upscaling and commercial success. Continuous development is necessary to improve vehicle performance and reliability.

- **Adaptability and Flexibility:** The pilots demonstrated the need for adaptability in operations, especially during large events or unexpected situations. The ability to quickly adjust and reroute based on real-time conditions is crucial for maintaining service and safety.

- **Interplay of Communication Modalities and Environmental Conditions:** Various communication methods (audio, visual, combined) were tested under different environmental conditions (day vs. night and silence vs. traffic noise), showing that the effectiveness of communication modalities is affected by the environment. For example, visual cues like laser projections were less effective during daylight or in traffic noise conditions.

- **Stakeholder Concerns Impact Pilot Design:** Insurance restrictions and other stakeholder concerns can significantly influence the design and execution of pilots. In some experimental setup, we had to revert to a previously used autonomous vehicle due to insurance restrictions, illustrating the importance of aligning pilot studies with stakeholder capabilities and requirements.

- **Public Perception Variances:** The perception of safety and usefulness of communication methods varied significantly between active participants (e.g., e-scooter riders and pedestrians) and passive participants (e.g., shuttle passengers), indicating that experience from different user perspectives is crucial for evaluating autonomous shuttle services.

- **Importance of Data-Driven Insights:** Extensive data analysis, including AI algorithms for object detection and ANOVA for variance analysis, provided objective insights into shuttle and user behavior during interactions. This data-driven approach is vital for developing evidence-based strategies to improve autonomous vehicle services.

- **Adapting Technology to Research Needs:** The YOLO (You Only Look Once) algorithm, designed for horizontal perspective object detection, required adaptation to accurately classify objects viewed from an overhead camera perspective. This demonstrates the need for flexibility and customization of existing technologies to fit the specific requirements of autonomous vehicle research.

These lessons demonstrate the complexity and multi-faceted nature of deploying autonomous vehicles in urban spaces, highlighting the need for careful consideration of communication strategies, stakeholder needs, user experiences, data analysis, and technology adaptation.

Thank you very much.

SAFER SHARED SCOOTER PARKING IN ISTANBUL
APRIL 26, 2024

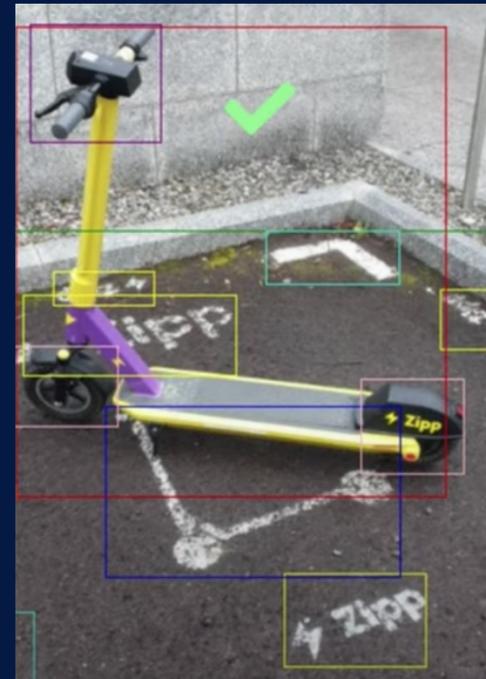**Luna** is the leader in scalable Computer Vision ARAS for the next generation of mobility

OUR FIRST MISSION: IN 2020 WE APPLIED COMPUTER VISION TO SOLVE COMPLIANCE ISSUES OF SHARED MICROMOBILITY

luna

Luna helps operators reduce sidewalk riding using lane detection AI

Luna's AI parking selfie ensures proper parking

Luna helps avoid collisions with pedestrians /objects using object detection AI

luna

Micromobility's seat belt moment.

SHARED MICROMOBILITY

PARTNERS

dott

ryde

Bolt

Hoppy
Don't worry be hoppy

beryl

hop

Segway-Ninebot

CURRENT MARKETS

Commercial status: TRL 9, already in wide deployment with major shared operators

Sept 2023: "Dott and Luna are collaborating since 2022 to pioneer CV to detect and understand hazardous situations and their root causes, from infrastructure to behavioral. **We are extremely impressed by Luna's technological capabilities** and the fast progress their algorithms have made to capture very complex situations in complex urban environments."

dott

Laurent Kennel
Chief Development Officer, Dott,
September 2023

WHY DISORDERLY SCOOTER PARKING IS A PROBLEM
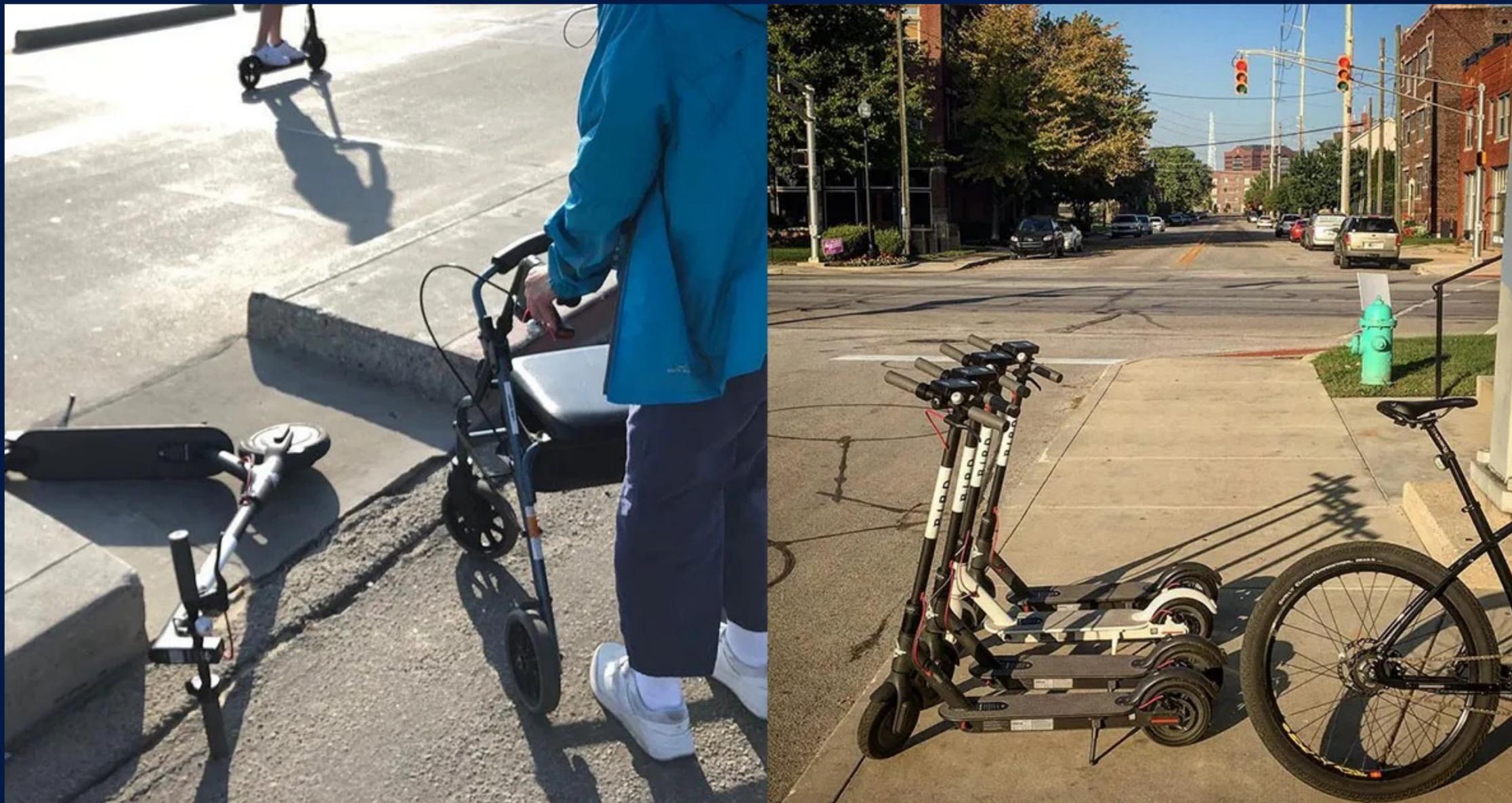
PARKING CASE STUDY: ISTANBUL – HOP

The City of Istanbul is in the process of transitioning from free-floating parking with the phased deployment of dedicated bays.

Local operator, Hop required a **HIGHLY** customised solution that:

1. confirms parking within bays.
2. where bays are not available the **kickstand is engaged and the lock attatched.**
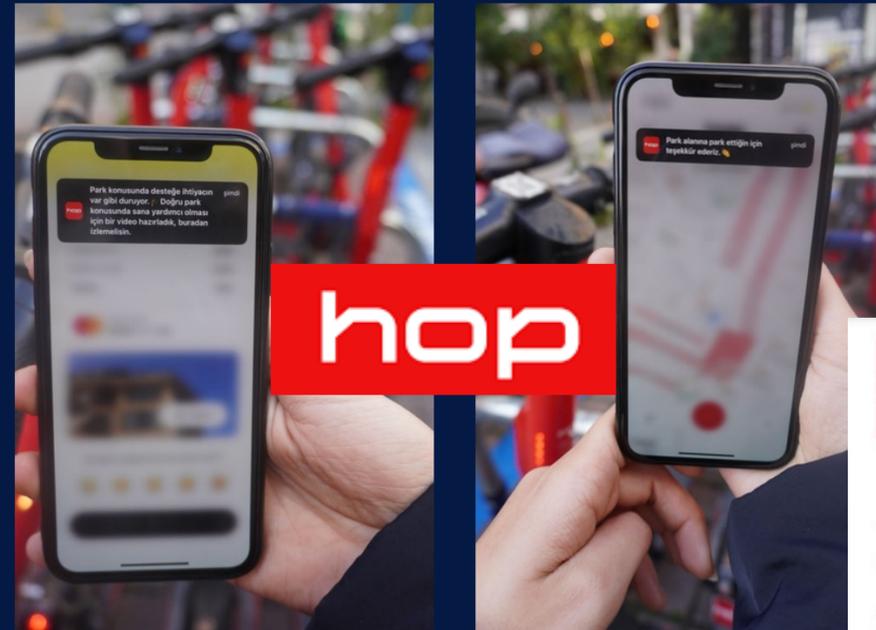
Currently actively deployed and performing at an extremely high level of reliability

hop
4,222 followers
3mo · Edited · 🌐

At hop, we take pride in being a responsible micromobility operator, committed to ensuring that our streets are accessible to everyone. Our dedication to safety is about creating a positive and secure experience for riders and pedestrians alike.

Acknowledging the challenges of scooter misuse and street clutter in Istanbul, we've partnered with Luna Systems and the Istanbul Metropolitan Municipality, leveraging advanced Computer Vision technology to ensure responsible scooter parking in real-time.

Aligned with our 'streets for everyone' commitment, we celebrate riders who responsibly park in parking bays and guide those who did not park in designated areas to do so responsibly, reminding them of the importance of proper parking.

Our goal is to ensure proper parking while contributing to the convenience, accessibility, and sustainability of micromobility. We look forward to making a positive impact on the micromobility landscape in Istanbul and beyond.

SIMPLE SEAMLESS PARKING MANAGEMENT NO HARDWARE REQUIRED

- Some solutions may leverage the existance of an on-vehicle camera. However this does not provide the appropriate field of view for accurate detection or for complete scene context.
- Leveraging a rider's smartphone camera provides much richer context on the parking environment for more holistic management.
- What we deliver that's unique:
  - We work with partners to develop **customised** parking AI logic that reflects each city's specific rules on parking.

luno