NAVISP INDUSTRY DAYS 7-8 NOV 2023

Industrial Perspective in Automotive

www.continental-corporation.com

Vlad F. VINATU

External Affairs / Public Private Partnerships

Continental Group

Leading the Way for Your Mobility

A leading player in **autonomous mobility**

First to market with **software-defined** vehicle architecture

Industry-benchmark operational efficiency in **tires**

190,875 **talented** and **dedicated employees**

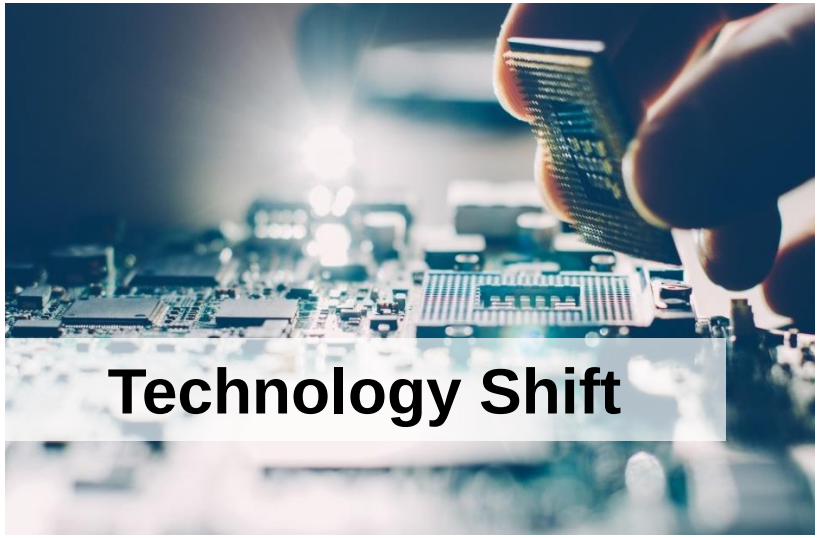





We Are Shaping the Future of Mobility.



Our Challenges and Opportunities



Our Vision

The future is today…

Our Vision:

Your Mobility.
Your Freedom.
Our Signature.

- Highly developed, intelligent technologies for mobility, transport and processing make up our world.
- We want to provide the best solutions for each of our customers in each of our markets.
- This is how we satisfy the demands of our stakeholders and become recognized as a highly reliable and respected partner creating the highest possible value.

Our Mission:

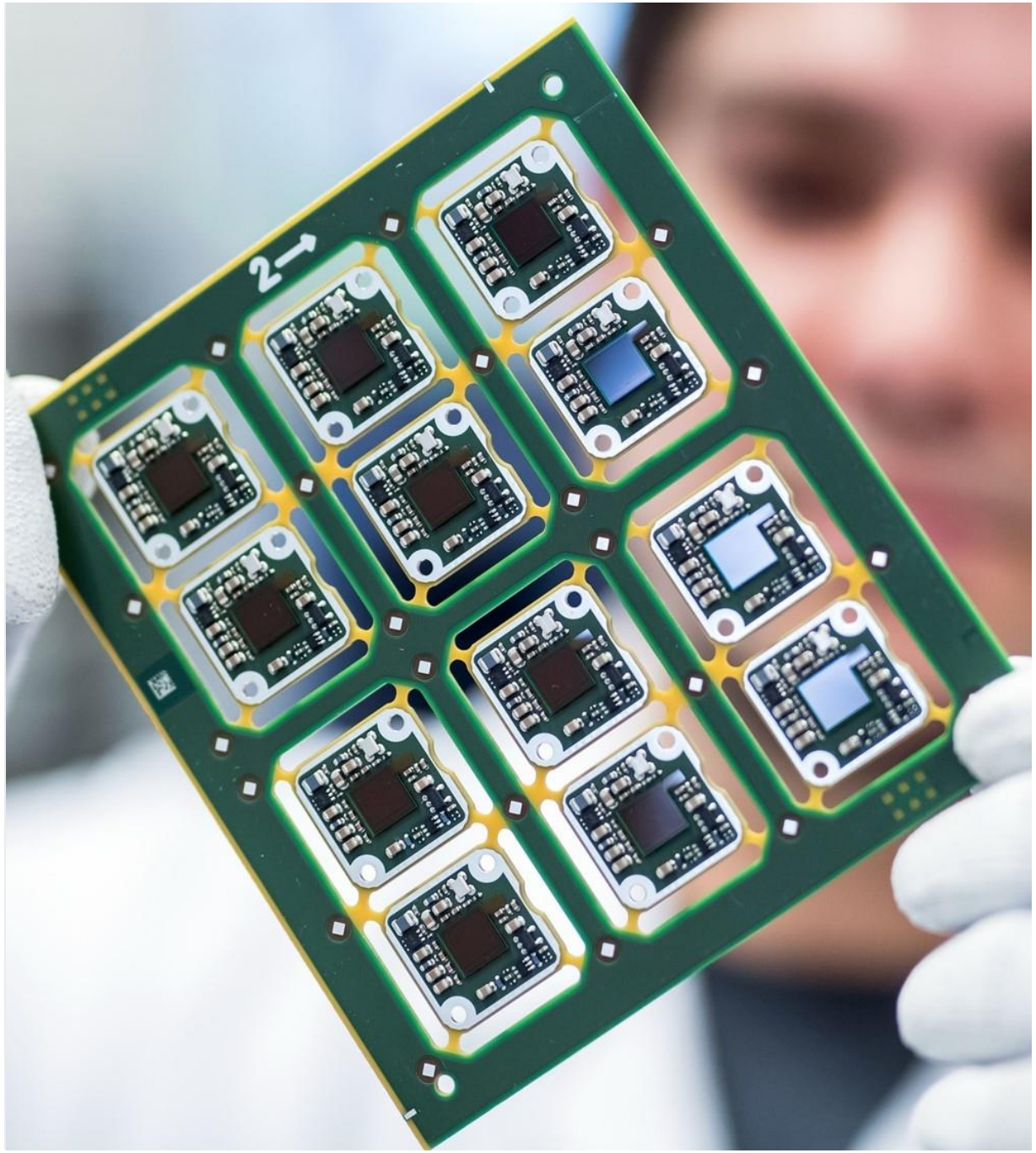
The Future Starts Earlier with Continental.

- **Safety**
  Our aim: zero accidents
  To protect life and conserve resources

- **Information**
  Our aim: save time, increase comfort
  Intelligent mobility through constantly connected driving

- **Environment**
  Our aim: clean air
  Resource-efficient and emission-free driving

- **Affordable mobility**
  Our aim: personal mobility for everyone
  Enabling more freedom and opportunities



The “Revolution” of Automotive Industry

Automotive megatrends

CONNECTED

2030

There will be **700 million connected cars**

AUTONOMOUS

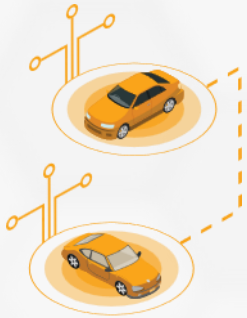
2030

Autonomous miles driven in US: **13%**

SHARED

2040

Shared mobility at **~80%** of miles driven



ELECTRIC

2024

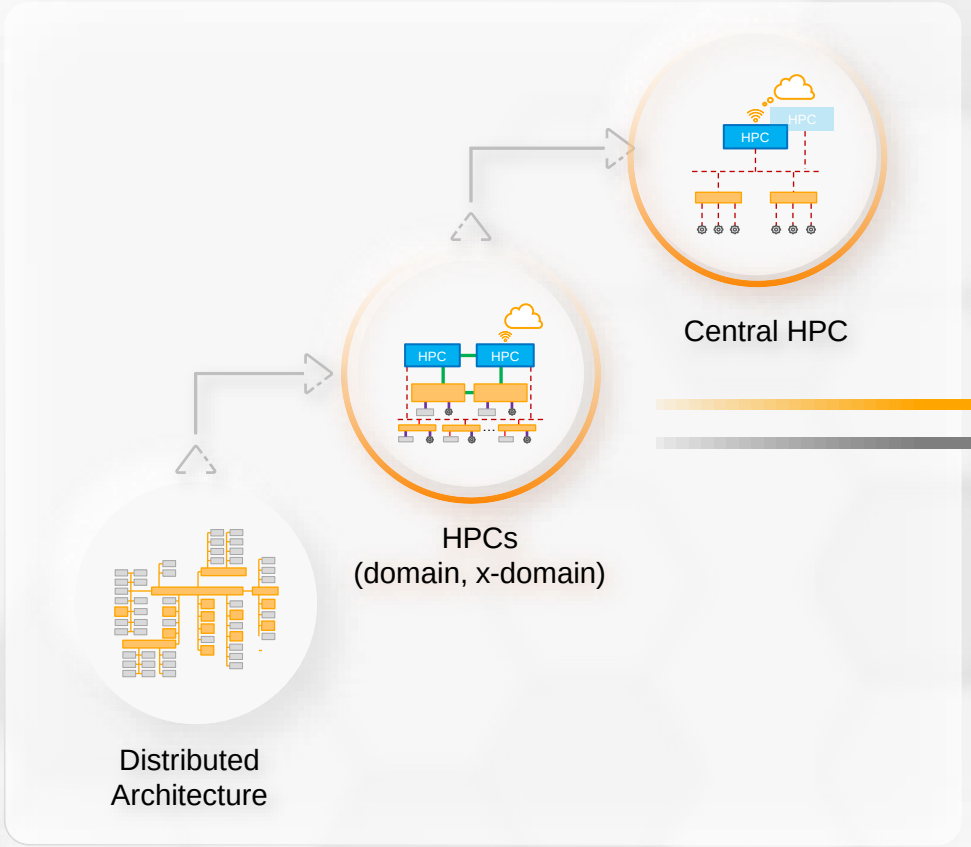
600 new **electric models**

Sources: Forbes, Deloitte


Cloud
Connectivity
SW/ Function as a Product/ Service
SW/HW Separation
Components/ Solutions
Server/Zone Architecture
OS/ Middleware
Virtualization/ Digital Twin
Integration
Continuous Testing, Validation/ Development
Cyber Security
Lifecycle Management
OTA Update/ Upgrade
Actuators
ZCUs
HPCs
Antenna
Display
Sensors
From the road to the cloud
From virtual to real

Architecture Trends

A radical shift in the automotive industry



- Decoupling software from hardware
- Cross-domain functional building-blocks
- Agile development → Improved time-to-market
- Update & upgrade → Digital lifecycle management

Compute centralization

Zonal I/O* approach

- Manage complexity (less ECU*s)
- Enable “plug&play” & re-use
- Optimize power & signal management
- Reduce total vehicle system cost (wiring harness)

*I/O = Input/output, *ECU = Electronic Control Unit

Connecting The Dots

Experience software-driven future Mobility

Address market demands

Consumer Needs

The **Smartphone on wheels**

Safe	Exciting	Autonomous
Pioneer in Vision 0	Drive future life on Board experiences	Relieved driving & Sustainable mobility

Industry Needs

realized by the **SW defined vehicle**

Manage and Scale

Architecture | Integration | Industrialization | Up-to-date*

Connect the dots

From the concrete to the cloud

* Incl. Connected, Cyber Secured, OTA

Collaboration is Key to master the Transformation

integrating A.I. in all areas of activity

Transformation in **BUSINESS**

- SW-defined Vehicle
- Value shift

Transformation in **PRODUCTS**

- Complexity
- Interface
- Horizontal / Vertical

Transformation in **PROCESSES**

- Speed, agility and efficiency are key

Transformation in **CULTURE**

- Value creation as driver!

AI empowered company

Artificial Intelligence @ Continental

Some examples

AI Camera
Ranging, motion detection and 3D object recognition

AI Knowledge
Combine rules and AI methods for better automated driving

Human-centered AI in the Industry
AI for parameterization and calibration task

Situation Interpretation
Multitask Learning & Infrastructure

Multi-Source Component Management
Mitigation of quality and supply Risks; Reduce complexity of material handling

AI for Requirements Engineering
Automation of requirements analysis, classification and comparison of customer specifications

Driver Assistance
E.g. by virtual camera view

Ethical Usage of AI
Continental guidelines released

Data Portal
portal.datalab.conti.de

AI for SW Engineering
Improve SW Engineering with support of AI technology

Safety of ML-based Systems
Continental recommendations released

Continental Transformation Journey

Key takeaways

Holistic Problem-Solving

There is no problem which will come alone in SDV Transformation.
We have to **approach them holistically and globally** as well.

Simplify Solutions, Not Problems

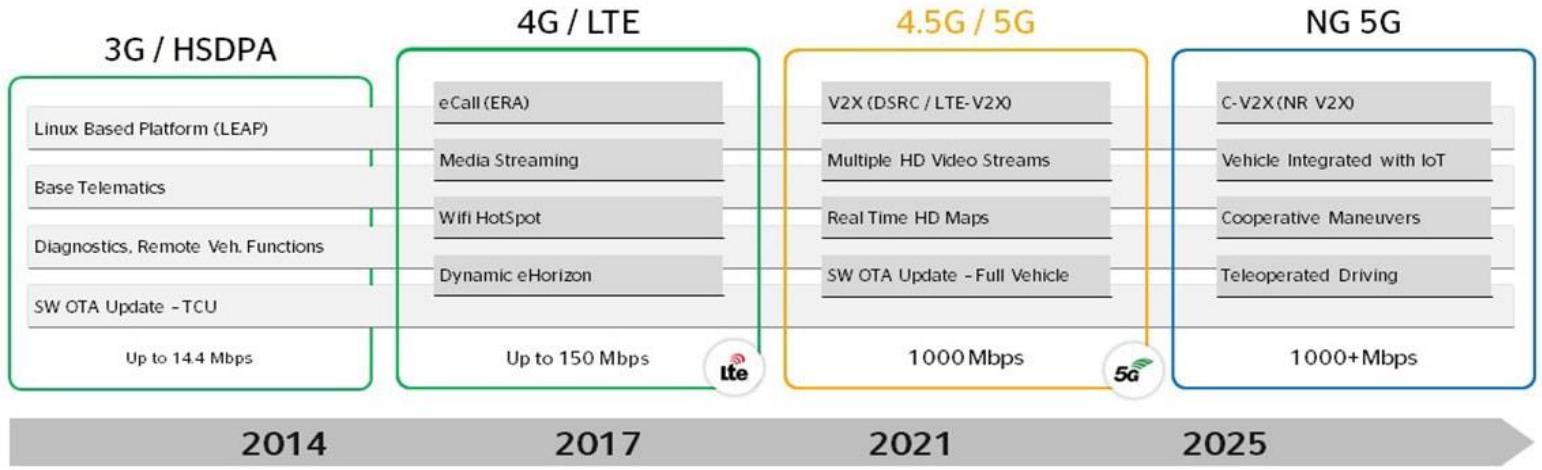
We cannot reduce the complexity of the problem.
But we can **reduce the complexity of engineering its solution**.

Shifting Strengths: Ecosystems & AI

Automotive Industry's strength was the extremely efficient supply chain & process.
Now, it is **all about ecosystems and AI empowered people, processes and products.**

Connected now, more connected in the future…

Roadmap on Telematics



- Latest 4G, 4.5G, and 5G standards offering a wide range of attractive features to keep vehicles up-to-date and the driver connected.

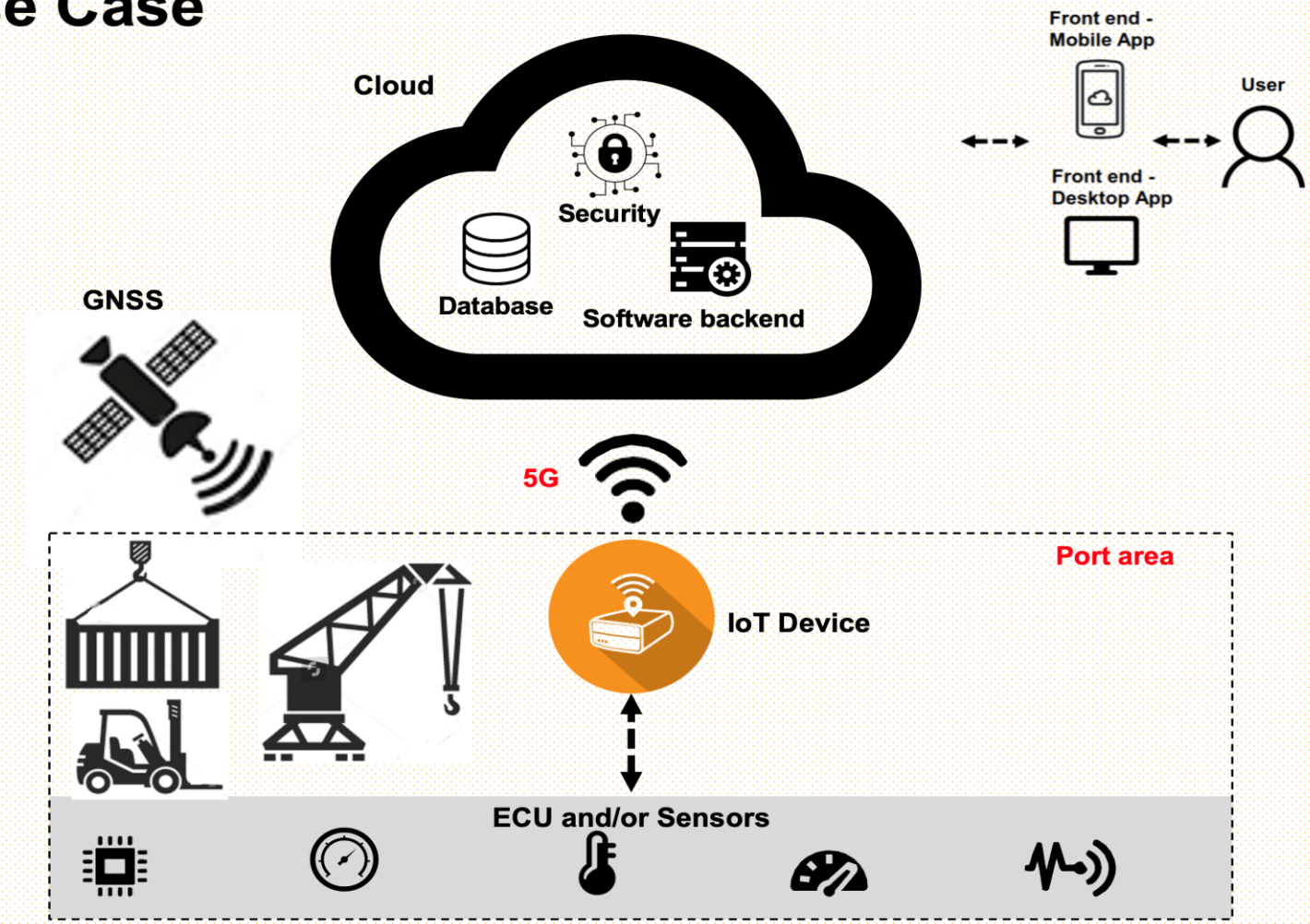
- In-house developed network access devices (NADs) and Telematics software framework, our Telematics Control Units (TCUs) are highly customizable and ready-to-use in different regions.

IoT Gateway

- The Continental Internet of Things (IoT) Gateway is vital for connecting sensors, devices, and other components to the internet. With updates Over-the-Air (OTA), you can easily enhance your functionality by updating the software on your devices and sensor firmware.
- Our Continental IoT Gateway enhances the future scope of your product with features such as predictive maintenance, performance tuning, and condition monitoring, remote setup, geofencing, and much more.
- Our IoT platform is based on an automotive standard operating system that is compatible with most development strategies.
- Our IoT solution also comes with a robust library of software functions that enables rapid implementation

5G LOGINNOV – H2020

Main Use Case



Using an IoT Device you can monitor, track and control the health of the "in port" cars:

- Battery Level
- Fuel Level
- Temperature
- Working hours
- Power status
- Positioning & Tracking

Real-time vehicle monitoring

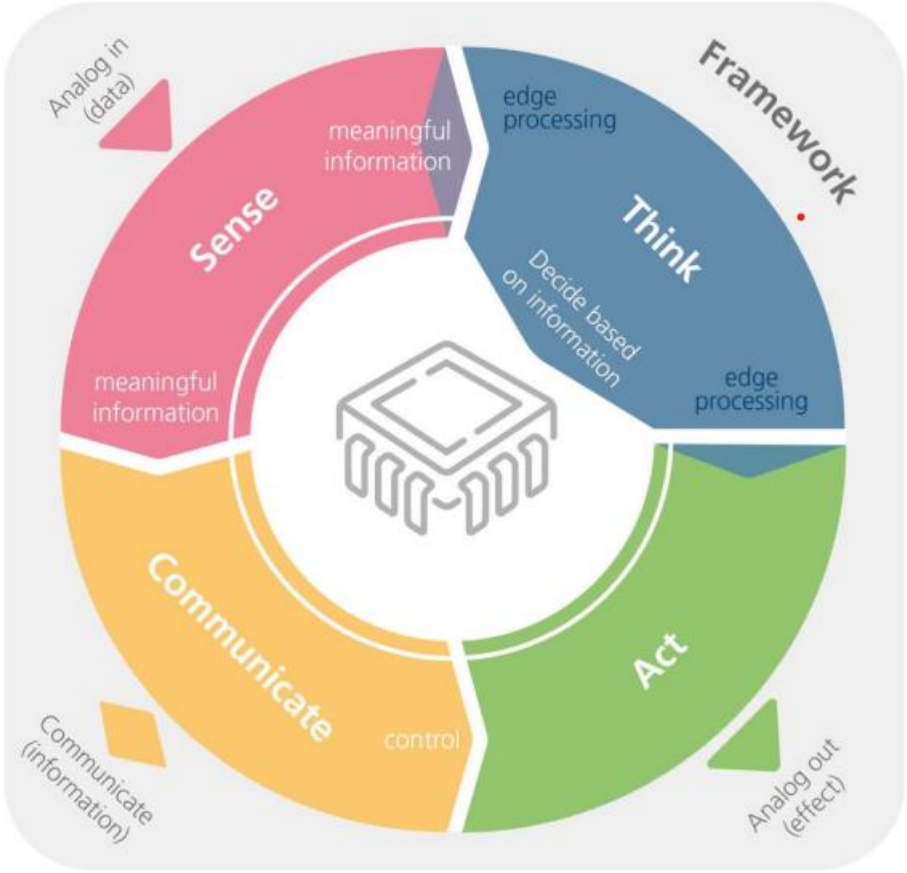
Device ID	Date	Vehicle speed (km/h)	Latitude	Longitude	Total fuel used (L)	Fuel rate (L/h)	Gear	RPM
293413030395926	Sat, 25 Mar 2023 19:08:49 GMT	22	45.553508810	13.743847980	81156	4.54	6	940.625
351940280065592	Thu, 19 Oct 2023 10:07:20 GMT	14	45.554098480	13.729042710	90153.5	3.56	4	959.500
351940280066236	Thu, 19 Oct 2023 03:19:58 GMT	0	45.552877080	13.740266990	96053	1.57	null	594.375
351940280066434	Thu, 19 Oct 2023 03:16:08 GMT	0	45.553771600	13.740195210	83506.5	2.1	null	529.125

Real-time collected from vehicles in Koper

Vehicles with IoT devices installed in them

IPCEI ME/CT

Securing the European Value Chain



Four work-streams corresponding to the **complementary** technical objectives along the microelectronics value chain.

- **THINK** addresses processors and memory as the *brain* of a computer.
- **SENSE** addresses the *organs of perceptions* which generate the data to be processed.
- **ACT** addresses the *body and muscles* of an electronic system.
- **COMMUNICATE** addresses the *strong nerve pathways* which network with the brain.

Each workstream is further structured into four workpackages corresponding to the **(common)** microelectronic value chain .

Thank you!