1ST CORAI SUMMIT ON THE FUTURE OF AUTONOMOUS MOBILITY

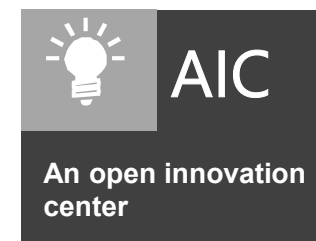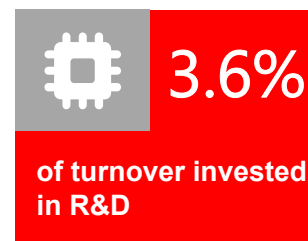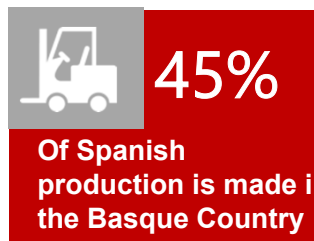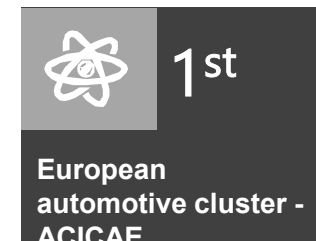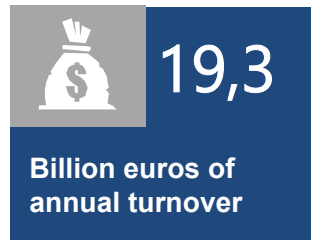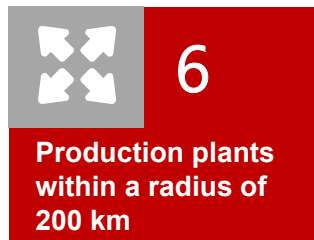European Committee of the Regions

BRUSSELS, 9/10/2019

AIC-Automotive Intelligence Center Accelerating Innovation

Raquel Piñan

BASQUE COUNTRY
LAND OF AUTOMOTIVE INDUSTRY

OEM | **1**
Vehicle production plant

300
Companies based in the Basque Country

320
Production plants out of Spain

2
Bus manufacturers

6
Production plants within a radius of 200 km

19,3
Billion euros of annual turnover

48
Multinational companies in the Basque Country

1st
European automotive cluster - ACICAE

45%
Of Spanish production is made in the Basque Country

100k
Employees

3.6%
of turnover invested in R&D

AIC
An open innovation center

INTEGRAL INDUSTRY
LARGE – BROAD EXPERTISE

Structural parts and body
Chassis-Bodywork
Self-supporting access
elements
Subchassis
Dissipation zones

Drivetrain
Suspension
Brakes
Transmission
Steering

Powertrain
Internal combustion engine
Exhaust system
Air supply
Fuel supply
Advanced powertrain
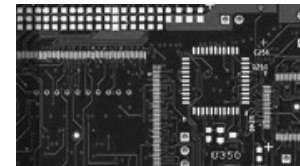systems

Tires and Wheel rims
Tires
Wheel rims

Internal elements
Seats
Passive Security System
Dashboard
Internal coating

External elements
Opening/closing elements
Rear vision elements
Aesthetic elements
Bodywork

Electricity, Electronics and Communication
Lighting and Signalling
Control Devices
Electronic
Wiring and connectors
Communication and Multimedia
systems
Auxiliar electric elements

AIC – AUTOMOTIVE INTELLIGENCE CENTER
A UNIQUE VALUE GENERATING CENTER

AIC – AUTOMOTIVE INTELLIGENCE CENTER UNIQUE MODEL

AIC, a model supported by the European Union

"Innovation through cooperation"

Focused on Automotive sector	AIC focuses on providing value to the automotive sector
In a high-level environment	Prime location including modern first-class facilities
Open to the world	International vocation, clustering companies from 6 different nationalities
Integrating both its own and third parties' capabilities	Creating talent by bringing together its own capabilities with the capabilities of both member companies and the network it works with
Market-oriented	Through the development of market-oriented projects
Based on cooperation and open innovation	Working under a cooperation and open innovation philosophy that contributes to the development of joint projects

European Committee of the Regions

ADDED VALUE SERVICES
WHOLE INNOVATION CYCLE

Knowledge / Competitive Intelligence
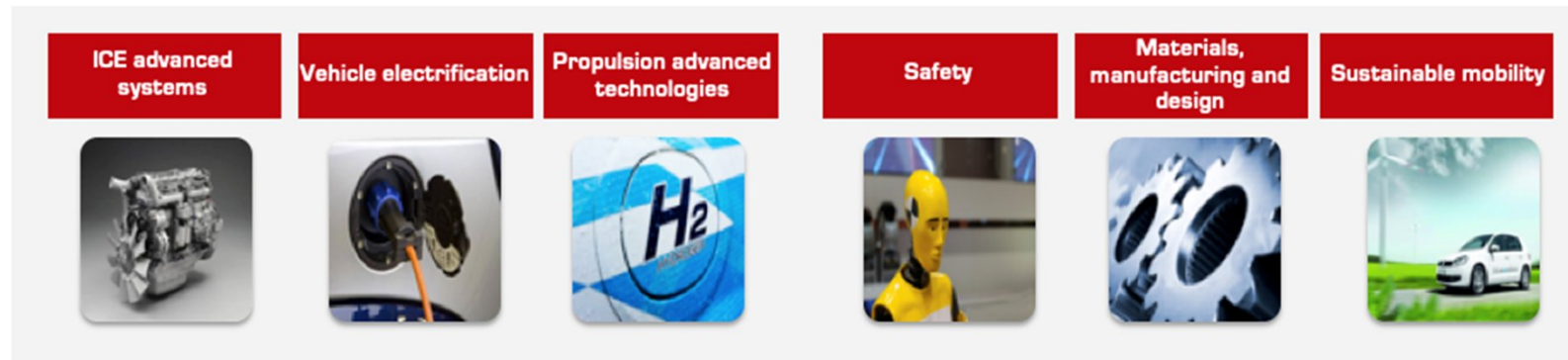
New companies

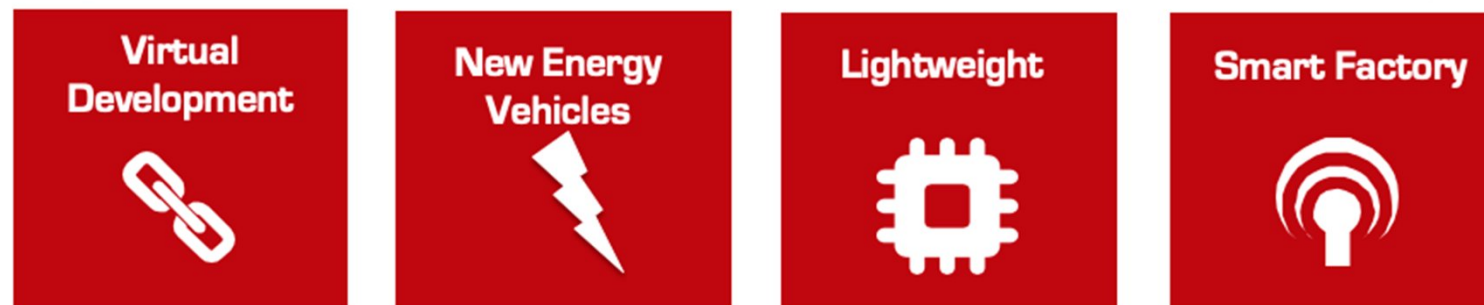Innovation & Technology

Facilities

Positioning with key stakeholders

Talent

AIC TECHNICAL UNIT

Strategic areas for Technological Development

ICE advanced systems	Vehicle electrification	Propulsion advanced technologies		Safety	Materials, manufacturing and design	Sustainable mobility

Competence Centers

Virtual Development

New Energy Vehicles

Lightweight

Smart Factory

VIRTUAL DEVELOPMENT CENTER
AUTONOMOUS DRIVING & USER ACCEPTANCE

Levels of autonomous driving

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
No Active Assistance System	Longitudinal or Transverse Guide / Longitudinal or Transverse Guide	Traffic Control / Longitudinal and Transverse Guide	Awareness for Take Over / Take Over Request	No Driver Intervention / No Take Over Request	No Driver
Hands On Eyes On	Hands On Eyes On	Hands Temp Off Eyes Temp Off	Hands Off Eyes Off	Hands Off Mind Off	Hands Off Driver Off
			Autobahn (SA)	*City (Ride Sharing)*	

Main drivers

| Safety | + | Comfort |

Main agents

| OEM | + | Tier 1 | + | Universities |

VIRTUAL DEVELOPMENT CENTER OBJECTIVES – DOMAIN AREAS

Objectives

- **Promote and stimulate research, development and innovation activities** through the use of virtual tools.
- To be a **catalyst of added value generation** for the components manufacturing companies and vehicle systems.
- **Increase the research, development and innovation capacity** of the value chain, attracting and generating large-scale projects to address new technologies and solutions.
- **Generate and acquire knowledge** in virtual design, development and validation tools.
- **Empower and expand the skills of the companies** by improving the training available.

Domain areas

Component, system and vehicle modelling

Validation of the dynamic behaviour of different vehicle models.

+

Ride comfort

Driver isolation from the road irregularities to control vibrations for comfort and motion sickness.

+

Handling and performance

Alternative driving situations can be recreated without putting the driver at risk.
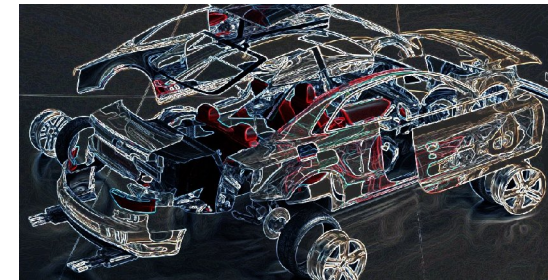
The Center is able to assist companies in their development process at various stages

Component, System and Vehicle modelling

DIL Simulation

SiL
MiL
HiL

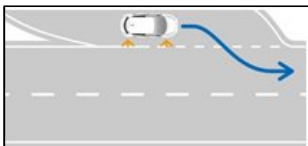Correlation with physical models

VIRTUAL DEVELOPMENT CENTER
ONGOING PROJECTS: AUTONOMOUS DRIVING & USER ACCEPTANCE

The V design process

Implementation and improvement of vehicle control algorithms in autonomous driving scenarios before moving to road tests. All types of **manoeuvres** can be validated, from the point of view of <u>execution</u> and from the point of view of action methodologies in case of <u>emergency</u> :
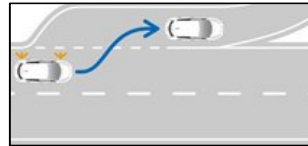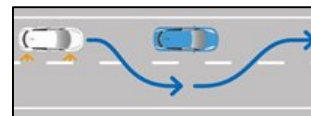
Autonomous lane keeping

Autonomous lane change

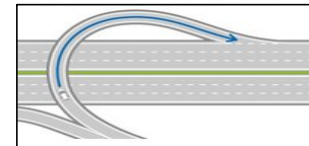**Autonomous overtaking**

Autonomous highway merge

Autonomous highway exit

Autonomous interchange
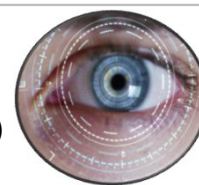

Comfort specialization under autonomous driving

Environments development (Unity)

Development of urban/interurban environments to subject the user to different driving conditions.
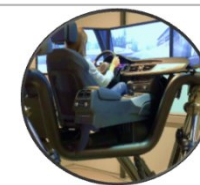
Vibration monitoring (3 axial accelerometers)

Study of the transmissibility of terrain irregularities to the driver due to track conditions.

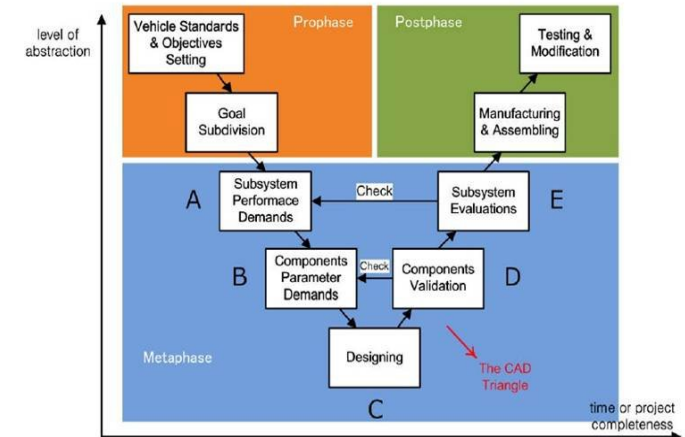**Eye tracking & Brain monitoring**

Monitoring of eye movement and brain activity to determine driver's emotions.

Subjective evaluation

Expert sensitivity assessment to validate the dynamic performance of the developed model.

MAIN ACHIEVEMENTS & AMBITIONS

- Innovation: *Unique Platform of Knowledge*

- Mobility: *Co-existence of multiple agendas - tackling the challenges of Mobility from different perspectives*

- Skills: *Generating TALENT*

- Engagement of the citizens: *Raising awareness within society*

REQUEST & AMBITIONS :

   SMOOTH THE PATH FOR FURTHER COLLABORATION AT REGIONAL, NATIONAL AND EUROPEAN LEVEL AS WELL AS FOR THE ATTRACTION OF INTERNATIONAL PLAYERS TO EUROPE

Thank you!

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