Ministerio de Transportes y Telecomunicaciones

Gobierno de Chile

Chile en marcha

Data Driven Strategies in Intelligent Transportation System in Chile

Webinar Series under Mobilise your City Program in India

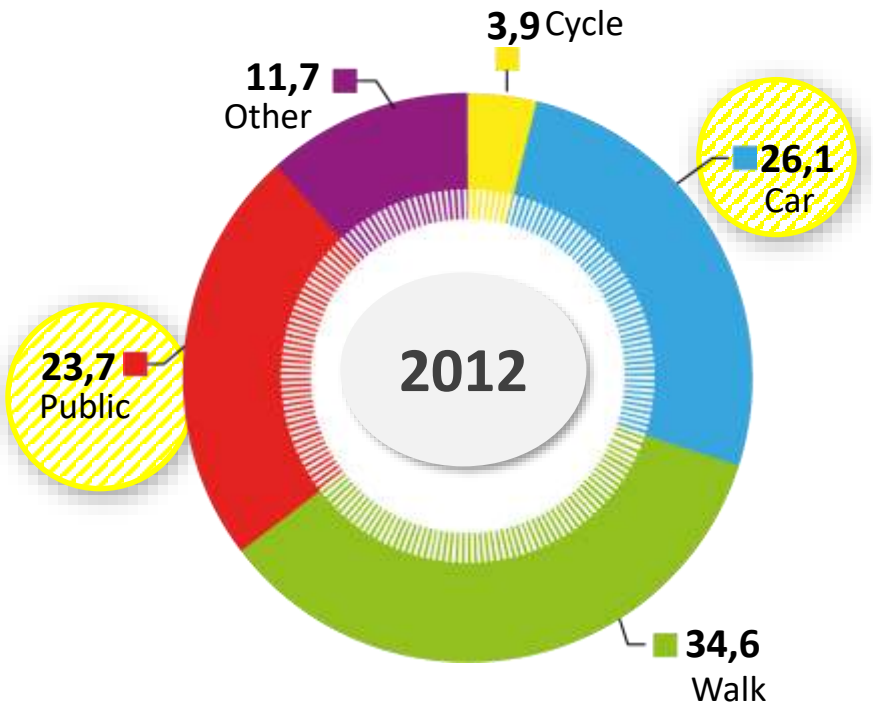
@ Richard Mora Ortega
Innovation and Digital Transformation Project Manager
Ministry of Transport and Telecommunications

16th June 2020

What are the trends and current context in smart mobility?

Modal Split of Santiago

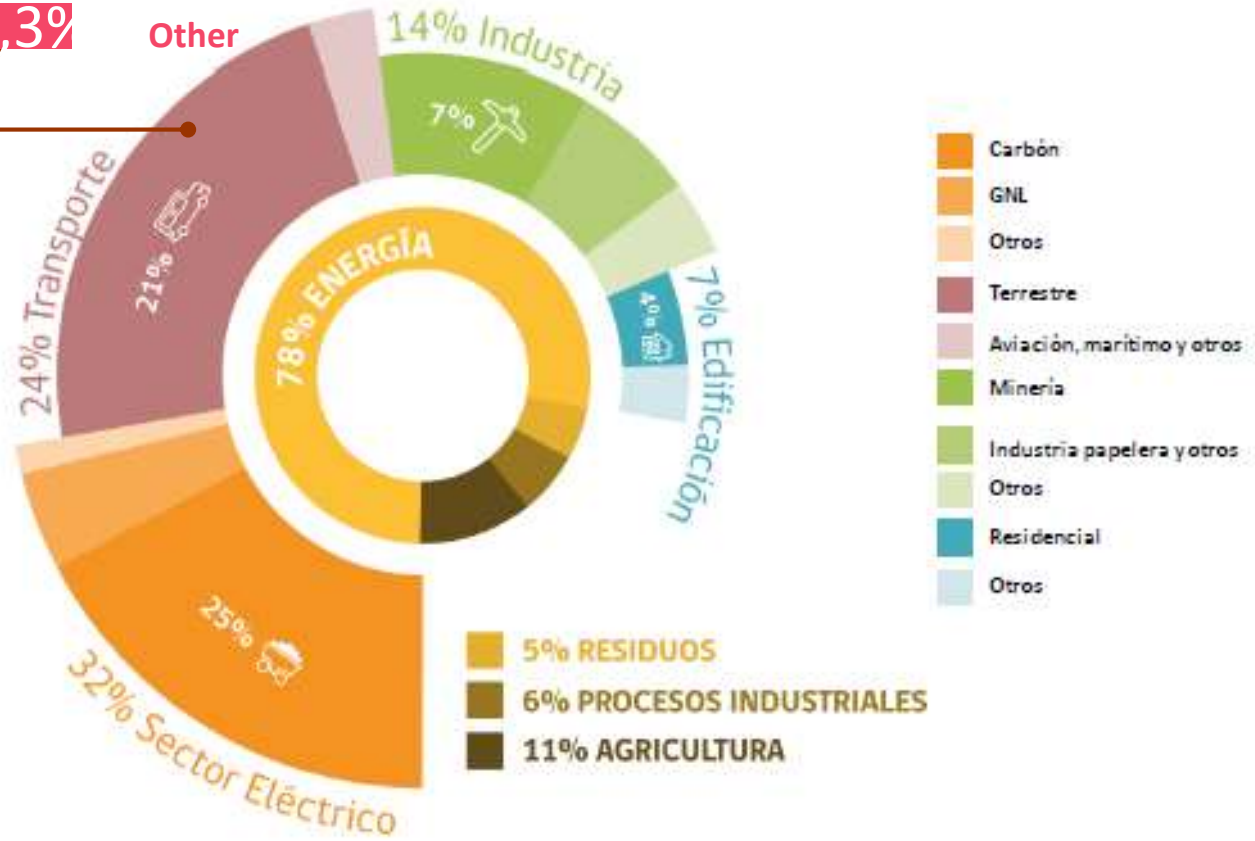
Total trips: 17.543.901



Greenhouse gas emissions by economic sector (Chile)

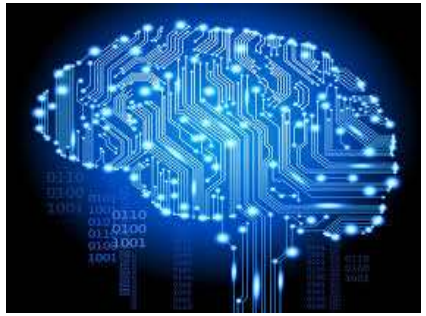
87,7 % Land transportation

12,3% Other



Source: National Inventory of Greenhouse Gases (INGEI), 2016

What are the trends and current context in smart mobility?



- Massive scale and speed in Applications
- Mobility as a Service
- New technologies in digital connectivity
- The assumption of the electric and shared model
- Micro mobility creates challenges in the way of implementing public policies
- Artificial Intelligence applied to transport

Ref: The 2019 Deloitte City Mobility Index(https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/deloitte-urban-mobility-index-for-cities.html)

What are the innovations and current situation of Smart Mobility in Chile?

DIFERENT REQUIREMENTS FOR INFORMATION SYSTEM TO USERS

It is neccesary an inclusive system, focus on children, the elderly and people with disabilities.

LAZARILLO

What are the innovations and current situation of Smart Mobility in Chile?

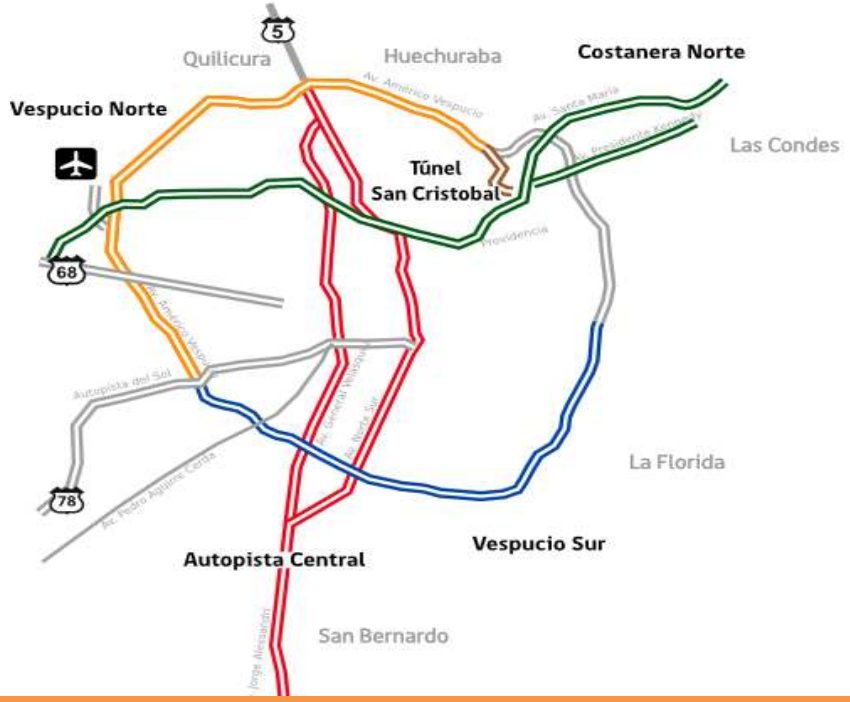
CHALLENGE TO THE FUTURE: HOW TO MANAGE MULTIMODAL TRANSPORT

The system must involve all kind of transport and technologies

What are the innovations and current situation of Smart Mobility in Chile?

FREE-FLOW SYSTEM ON URBAN HIGHWAYS IS NOT ENOUGH

7 concessioned urban highways in Santiago have an integrated free-flow tolling since 2006



Pioneering system in Latin America

In **2018** has begun the initiative **#Chilesinbarreras** in order to expand the free-flow tolling to all Chile

What are the innovations and current situation of Smart Mobility in Chile?

THE CONCEPT OF ITS IN THE PUBLIC TRANSPORTATION SYSTEM IS NOT ENOUGH

- **Integrated Electronic Payment System**
- **Fleet monitoring and management**
- **Passenger Counting**

305 cameras to monitor routes only bus

Red bip!
Operado por Metro de Santiago

What are the innovations and current situation of Smart Mobility in Chile?

Coordination of Intelligent Transport Systems (SIT), has begun a renewal process aimed at incorporating new practices and technologies

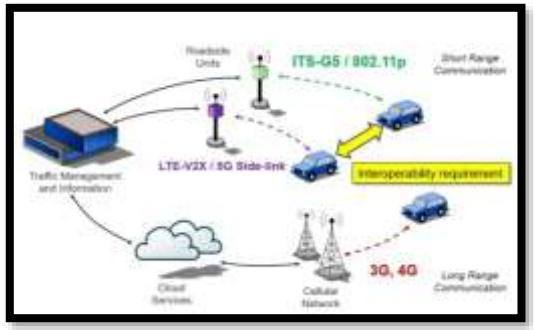
It is based initially and essentially on taking advantage of opportunities and enhancing the capabilities of SIT and its ecosystem

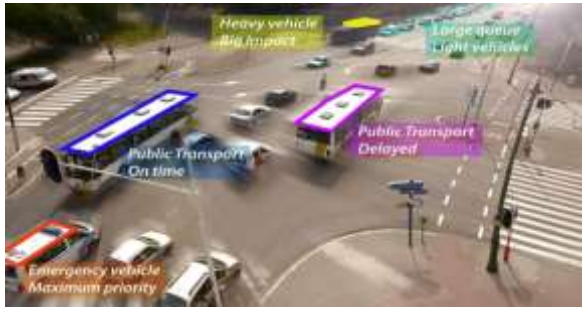
a. Improvements to SCATs projects,
b. Adoption of a new work culture,
c. Strengthen territorial coordination and
d. Carry out technological and process transformations at low cost and high impact.

What are the innovations and current situation of Smart Mobility in Chile?

Encouraging an Advanced Traffic Control System

- Reduce sCAT implementation deadlines and costs (efficiency)
- Drive a paradigm shift in the development of STIs in traffic management, incorporating an approach to traffic management and mobility of the future.
- Driving to a new development standard to address congestion





What are the innovations and current situation of Smart Mobility in Chile?

- Priority to mass, underground and surface public transport.
- Strengthen bike infrastructure.
- Plenty of space for walks.
- Development and adoption of new technologies.
- Modernization of regulations.

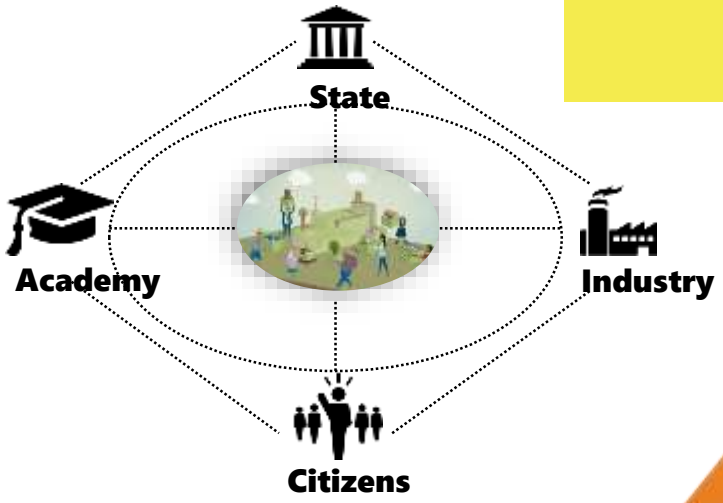
Priorities need to be set

What are the innovations and current situation of Smart Mobility in Chile?

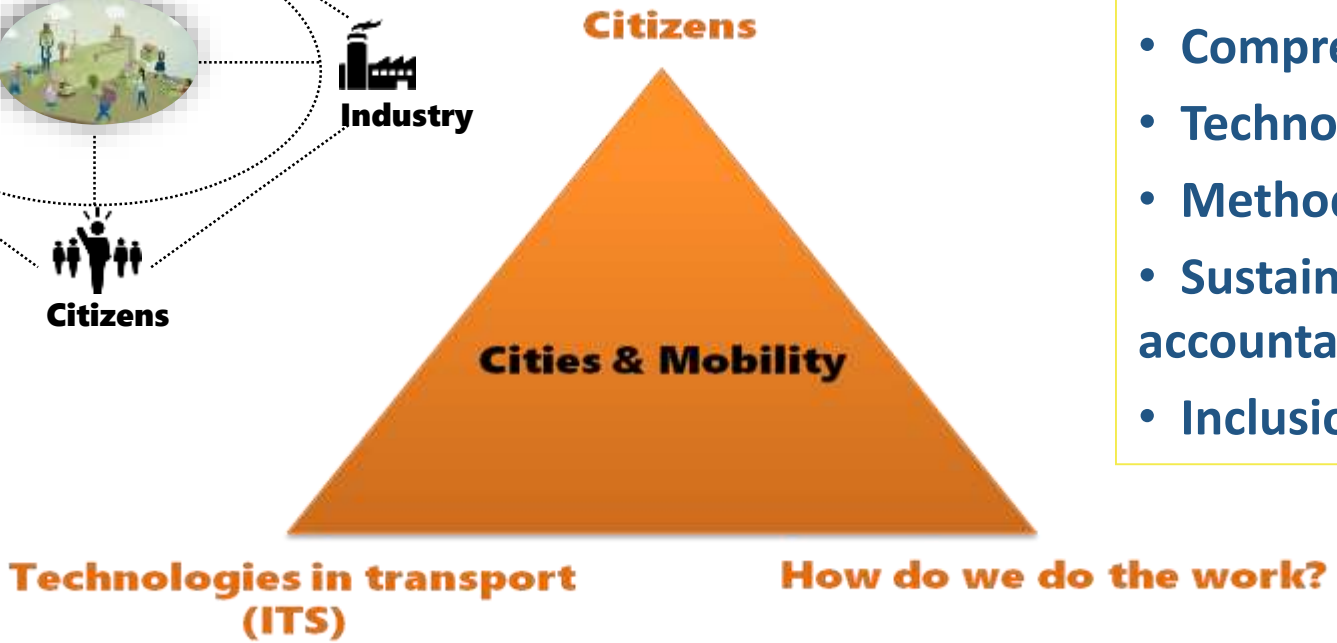
Establish a focus on digital transformation in smart mobility

- Transform mobility planning and management through the intensive use of data & analytics and its digital technologies (intelligent transport systems)
- By suppot in the ecosystem (platforms, apps, and entrepreneurs), to improve the travel experience of people, with a focus on public transport and sustainable modes.
- Take into account comprehensive traffic management (vehicle, cycles and pedestrians), information to users, and data availability for travel planning platforms.
- Transforming into data driven institutions, with an open data strategy

What are the innovations and current situation of Smart Mobility in Chile?



AN APPROACH OF DIGITAL TRANFORMATION IN SMART CITY: COORDINATED AND INNOVATIVE

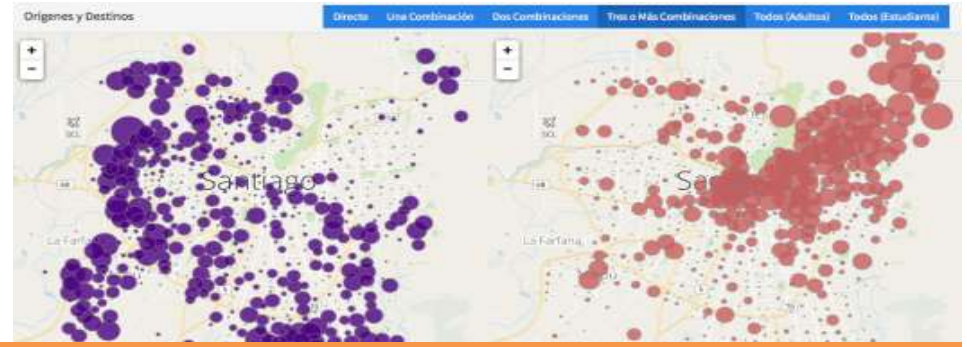


- Collaborative work model
- Comprehensive vision of mobility
- Technology and innovation
- Methodology prototype
- Sustainability of projects (governance, accountability, citizen demand)
- Inclusion of new problems

Working collaboratively with all the actors of society in the adoption of technologies and new ways of working to improve citizen services.

What are the innovations and current situation of Smart Mobility in Chile?

USING THE BIG DATA TO IMPROVE INFORMATION AND MAKE DECISIONS OF PLANNING AND MANAGEMENT OF THE TRANSPORTATION



Sensors to measure travel times and using data from the telecommunications network to obtain travel patterns of users.

What are the innovations and current situation of Smart Mobility in Chile?

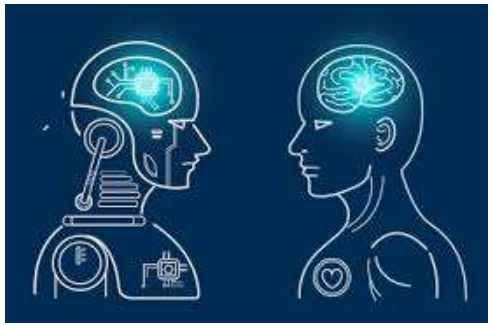
Reviewing artificial intelligence applied to transportation

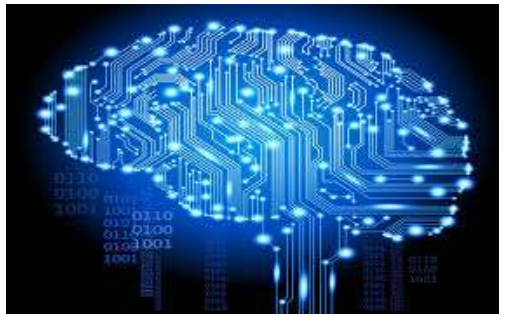
Evaluate the application/applicability of artificial intelligence in public transport systems (buses)

Identifying implementation scopes in data-high problems

Developing data analytics solutions

Create an AI study environment in transport entities



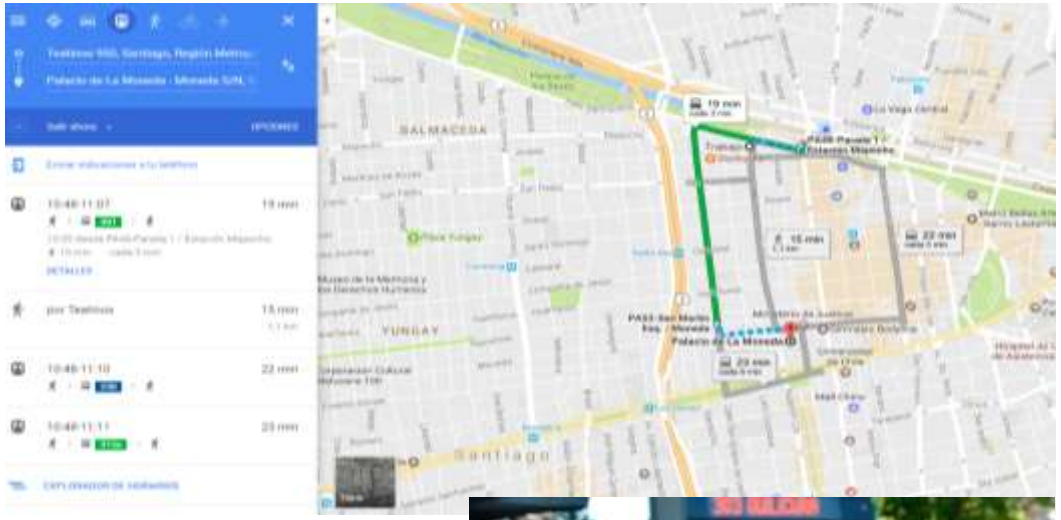


IA aplicada.

What are the innovations and current situation of Smart Mobility in Chile?

PROMOTING MOBILITY INFORMATION SERVICES

- **Public transport trip planners**
- **Integrated information center**



What are the innovations and current situation of Smart Mobility in Chile?

PROMOTING A CULTURE OF INNOVATION AND ENTREPRENEURSHIP IN MOBILITY

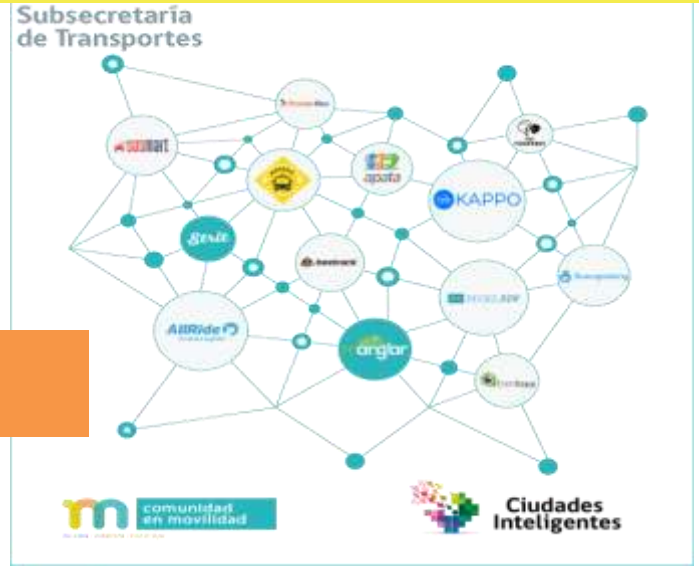
Promote the development of **innovative disruptive solutions that improve the travel experience** of users and improve the efficiency and sustainability of the transportation system.

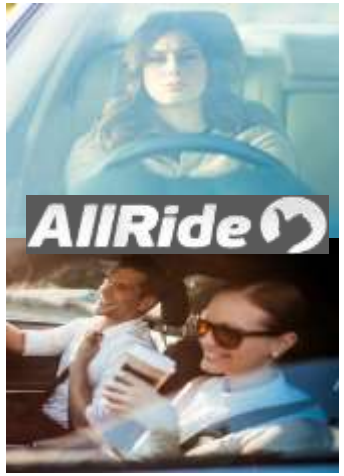
Carpooling App

Online ticketing system for bus

Promoting the bicycling to go to work

Creation of a Community of Entrepreneurs





What are the innovations and current situation of Smart Mobility in Chile?

PROMOTING A MOBILITY CULTURE

Promoting a culture of mobility from an early age, impacting on the relationship between children and young people with the public space, the road environment and mobility.

Ciudades Inteligentes

cecrea

Consejo Nacional de la Cultura y las Artes

Subsecretaría de Transportes

What are the innovations and current situation of Smart Mobility in Chile?

Creating a new standard for the country's public transportation system

Red Metropolitana de Movilidad

Characteristics of electric buses:

- 12 meters long, 2 doors
- Accessible for people with disabilities
- Air conditioning
- Wi-Fi connectivity
- USB chargers
- Autonomy: 250 km
- Slow charge (3-4 hours)
- Low operational costs

CREATING MORE INFRASTRUCTURES AND COMPLEMENTARY SERVICES

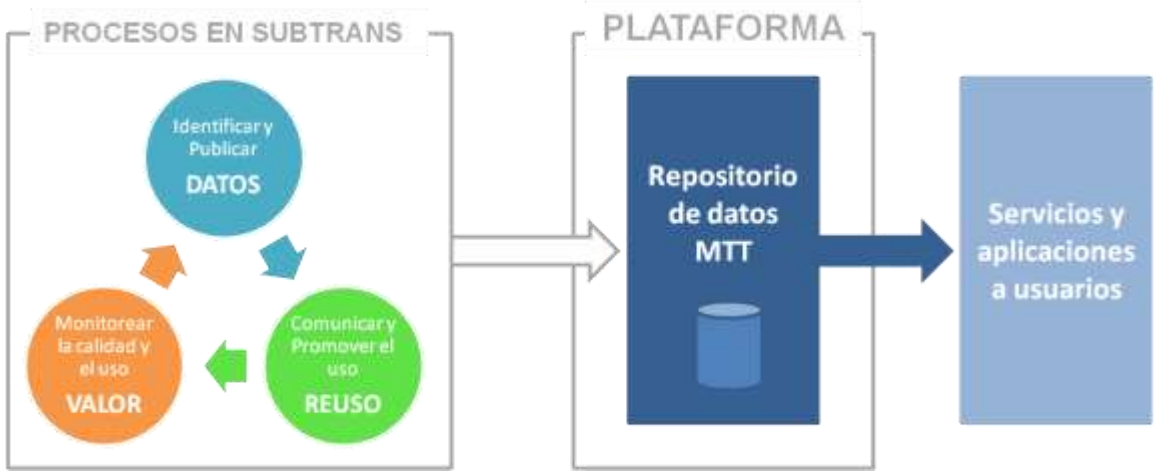
- Implementation of Electroterminals
  - Quick chargers
  - Parking with solar panels.
- New Smart Whereplaces (Pilots)
  - Screens with variable information.
  - Safety LED lighting.
  - Wifi.
- Exclusive bus-only routes
  - With control camera systems.
  - Policy implemented in Santiago and regions of Chile.
- Incorporation of fleets of electric taxis

DEVELOPING OPEN MOBILITY DATA PLATFORM

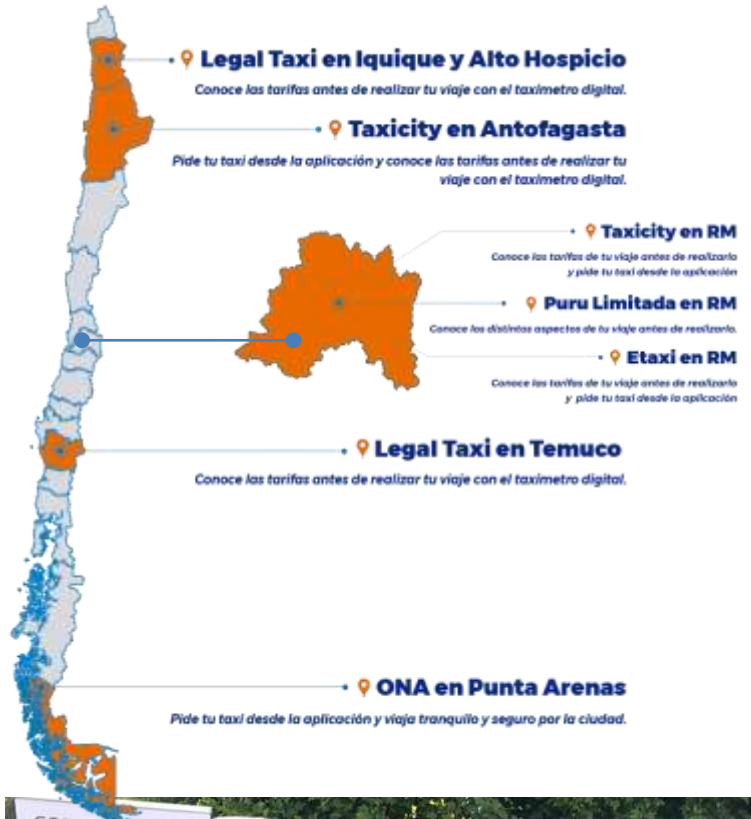
Description

Implementation of centralized transport open data platforms with the aim of:

- Promote value generation through innovation and the creation of research and new services for transport users.
- Promote efficient and open management of ecosystem-generated data
- Encourage citizen participation through the use of data.
- Strengthen the transparency of public data.



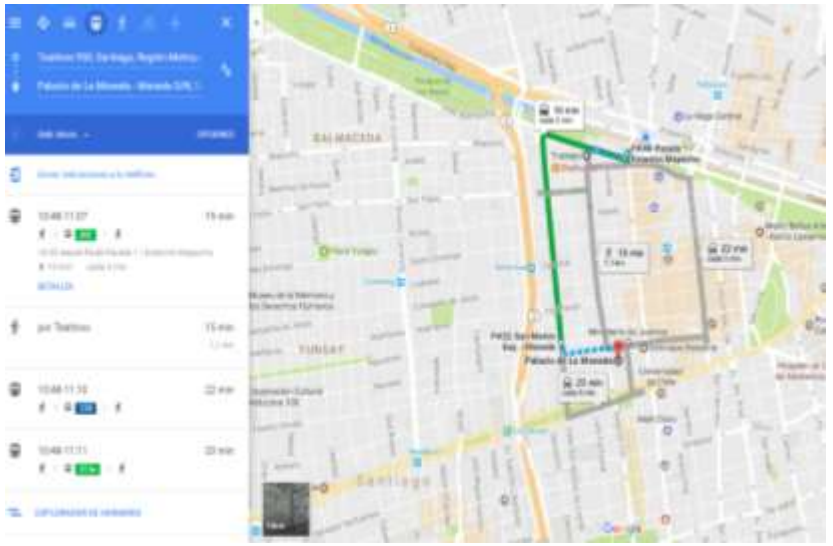
PROMOTING DIGITAL TRANSFORMATION ON PUBLIC TRANSPORT



Colaboration

moovit

Google maps



CREATING COLLABORATIVE NEWS CENTRES

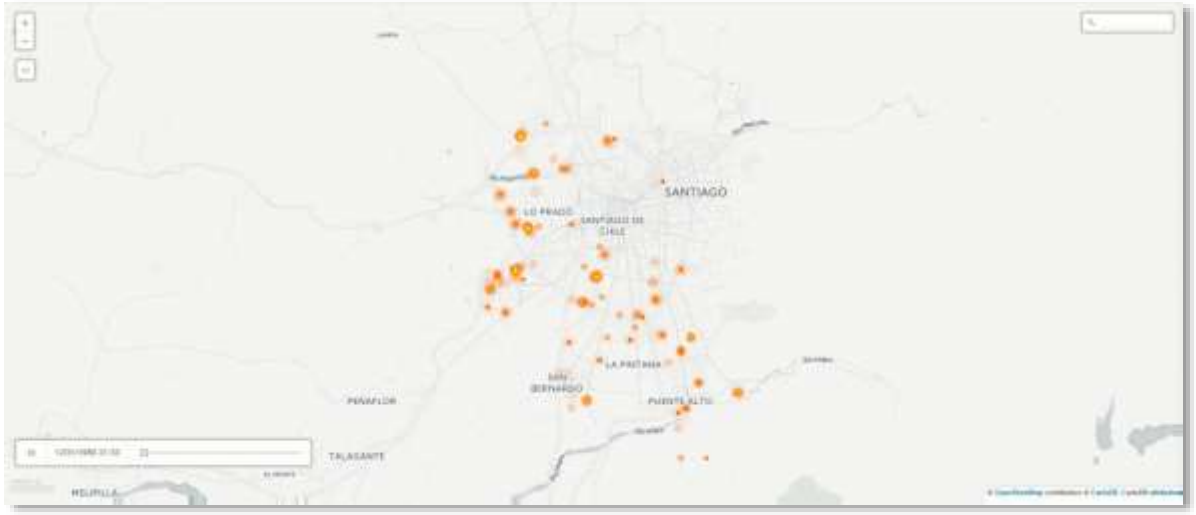
Description

Integrated transport information services, collaborative and online, focused on warning of incidents that affect the normal displacement of people in the different modes of transport, thus supporting the decision-making of mobility of people.

Scope

- The delivery of information is done through traditional web channels and RRSS, live offices disseminated in the media.
- Informational coverage of incidents in maritime, air and land transport.

ANALYZING URBAN CARGO TRANSPORT THROUGH TECHNOLOGICAL OBSERVATORIES



26 de Marzo de 2018

E-commerce obliga al mercado logístico y de bodegaje en Chile a mejorar sus sistemas

La inmediatez en entregas sugiere instalación de centros de acopio en zonas más céntricas

Enviar a un Colega Enviar un Mensaje al Editor

Imprimir

Compartir en redes sociales

Colaboration

UNIVERSIDAD ANDRES BELLO

CORFO

CAMARA DE COMERCIO DE SANTIAGO

stgo GOBIERNO REGIONAL METROPOLITANO DE SANTIAGO

CREATING SYNS
PUBLIC-PRIVATE FOR ELECTROMOBILITY

CONSORCIO MOVILIDAD ELÉCTRICA

Es una iniciativa público/privada que busca generar las condiciones que permitan a Chile ser un país líder en la movilidad eléctrica.

Esto implica aprovechar las ventajas de esta tecnología, tanto en beneficio de un desplazamiento más limpio y eficiente de las personas y los bienes, así como también una oportunidad para la innovación y el emprendimiento tecnológico en el país.

- Identificar modos a electrificar (buses y/o colectivos, otros)
- Evaluar tecnología (vehículos y sistemas de carga)
- Identificar/diseñar recorridos con mayor potencial
- Evaluar costo total de operación
- Desarrollar estrategia de financiamiento
- Desarrollar estrategia de electrificación y escalamiento

Ministerio de Transportes y Telecomunicaciones
Gobierno de Chile

Colaboración:

CORFO

Ministerio de Energía
Gobierno de Chile

Establecer las ***regulaciones*** y requerimientos necesarios de ***estandarización*** de componentes que favorezcan un desarrollo eficiente de la electromovilidad desde los puntos de vista energético, ambiental y de movilidad.

Impulsar decididamente la penetración de los vehículos eléctricos en el ***transporte público*** mayor y menor en las distintas ciudades del país.

Apoyar la **investigación y desarrollo** de la electromovilidad y potenciar la formación del ***capital humano*** en sus distintos niveles que permita su avance.

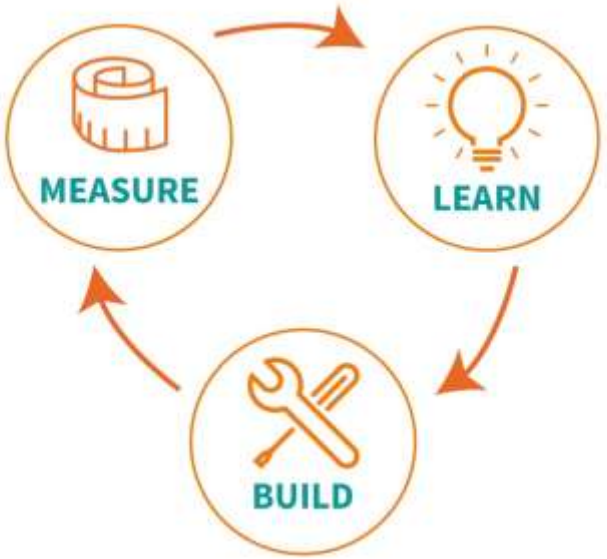
Impulsar el desarrollo de la electromovilidad, generando nuevos equilibrios que permitan que el mercado se sustente a sí mismo.

Generar espacios de ***transferencia de conocimiento*** y difusión de la ***información*** necesaria para que los distintos actores puedan tomar decisiones óptimas respecto de la electromovilidad.

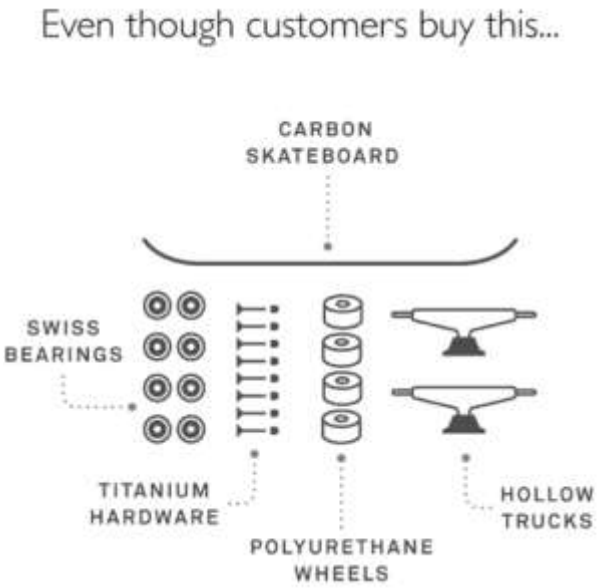
GENERATING PUBLIC-PRIVATE INITIATIVES TO ADDRESS THE NEW TIME MOBILITY

APPLYING INNOVATION METHODOLOGIES (THERE ARE MANY)

Recommendation 1: Design Thinking

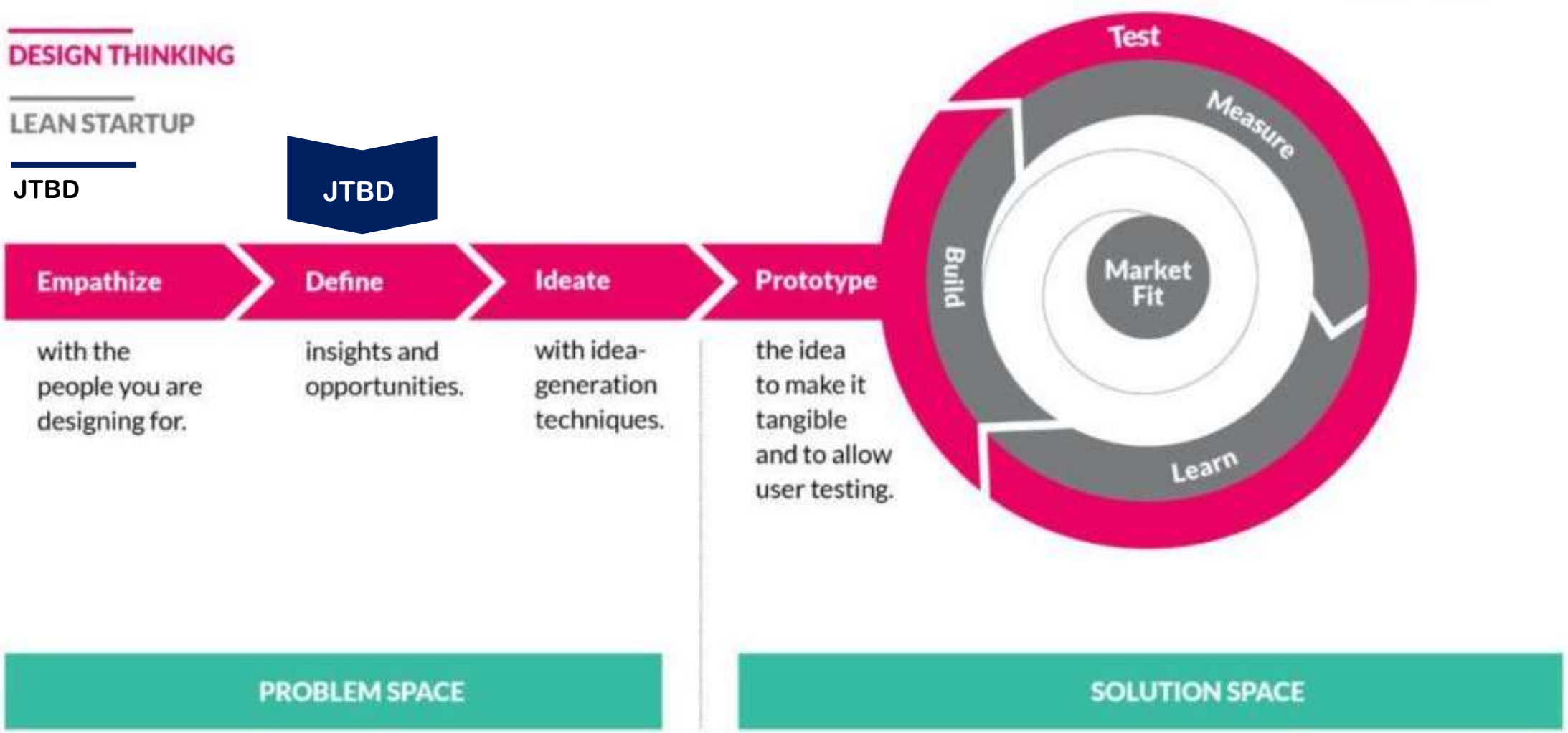


Recommendation 2: Job To Be Done



Recommendation 3: Lean Startup

Recommendation



Learning

- Technological advances are leading us to new paradigms.
- We must strengthen and build the sustainable future from coordinated and collaborative public-private work.
- We need to create permanent spaces for dialogue and knowledge exchange at the local and regional levels.
- New transformations require innovating incentive models and



Understanding the challenges of autonomous vehicles

Autos autónomos llegan a Chile: Hutt confirma plan para utilizar vehículos sin chofer en el transporte

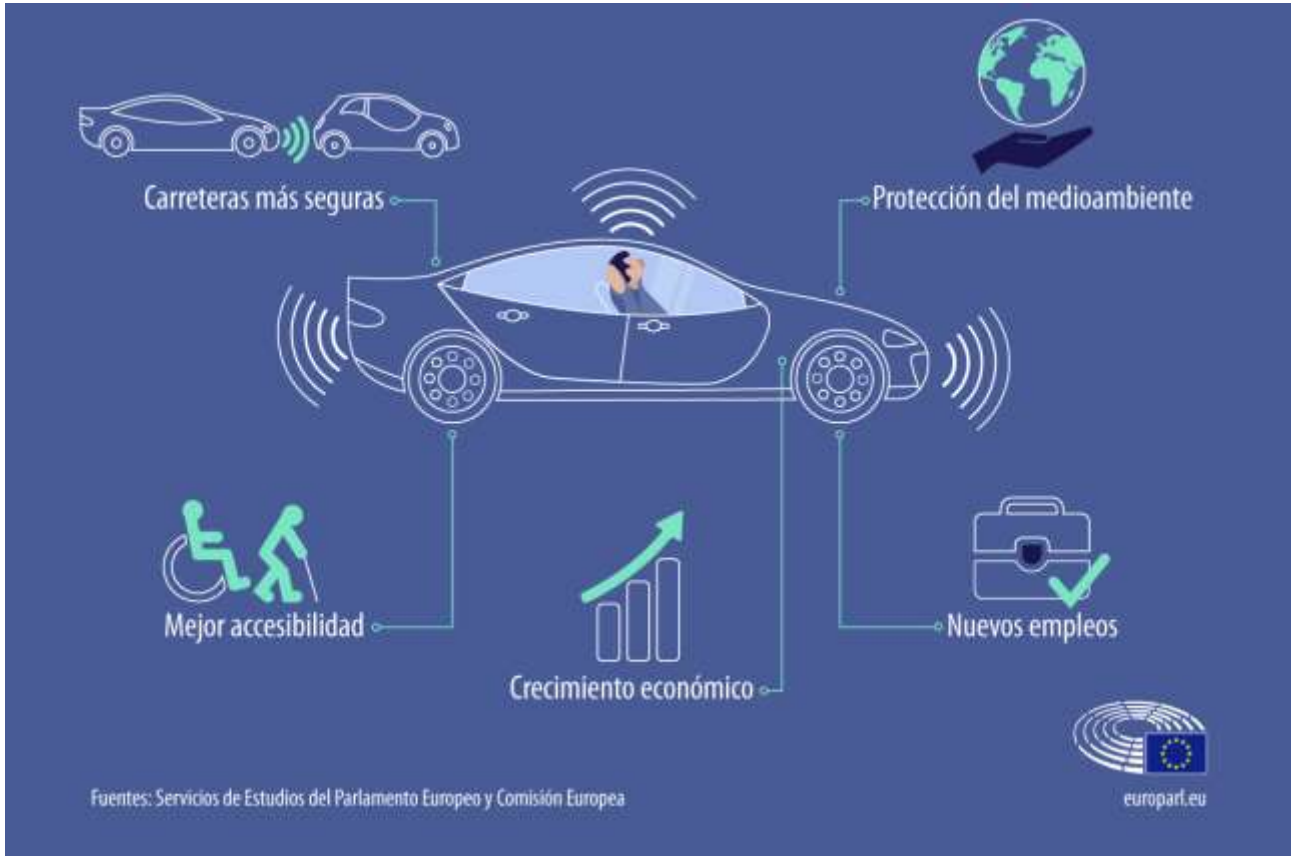
Según detalló la autoridad, la idea es que los vehículos estén en operación en septiembre y en un área urbana acotada de Santiago.

Cooperation BID - MTT

Date 01 de julio 2019

¿Why a pilot in autonomous vehicle?

Breakthrough that will change the way people and cargo move

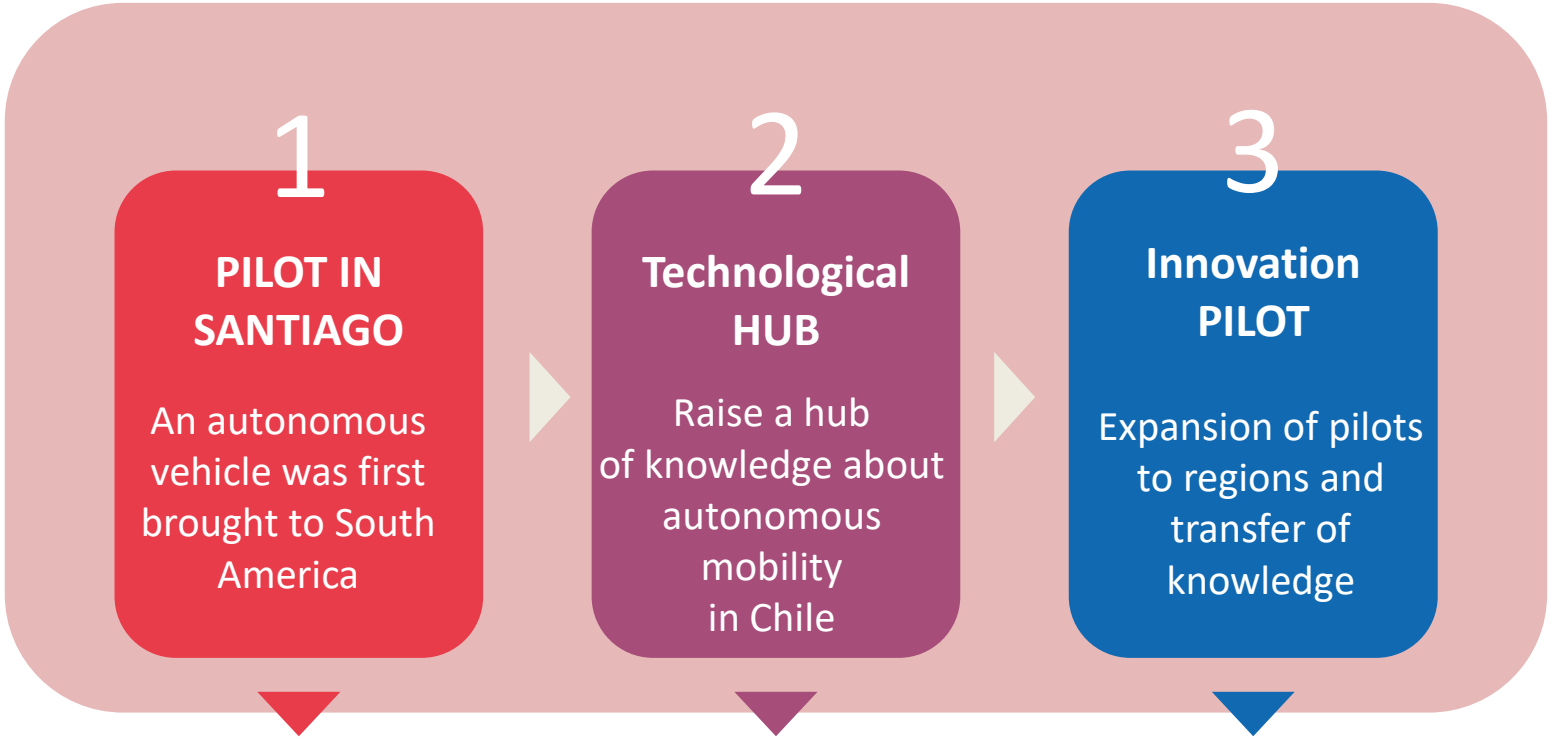


Applications are anticipated in mining, logistics, ports, airports and later in urban environments

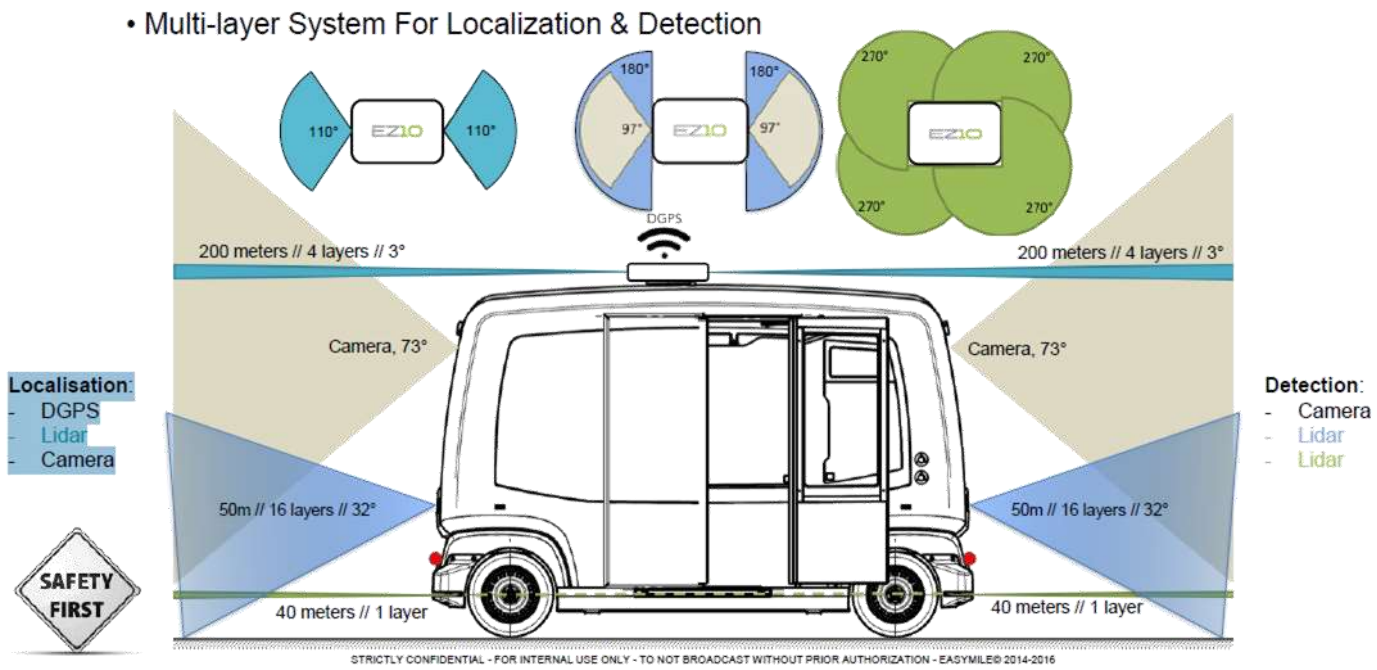
Autonomous vehicle pilot in Santiago

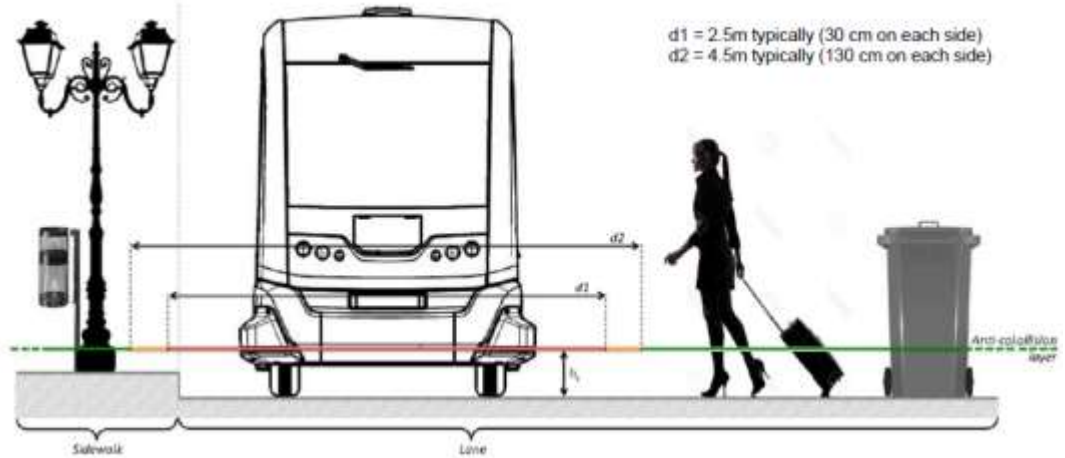
Goals

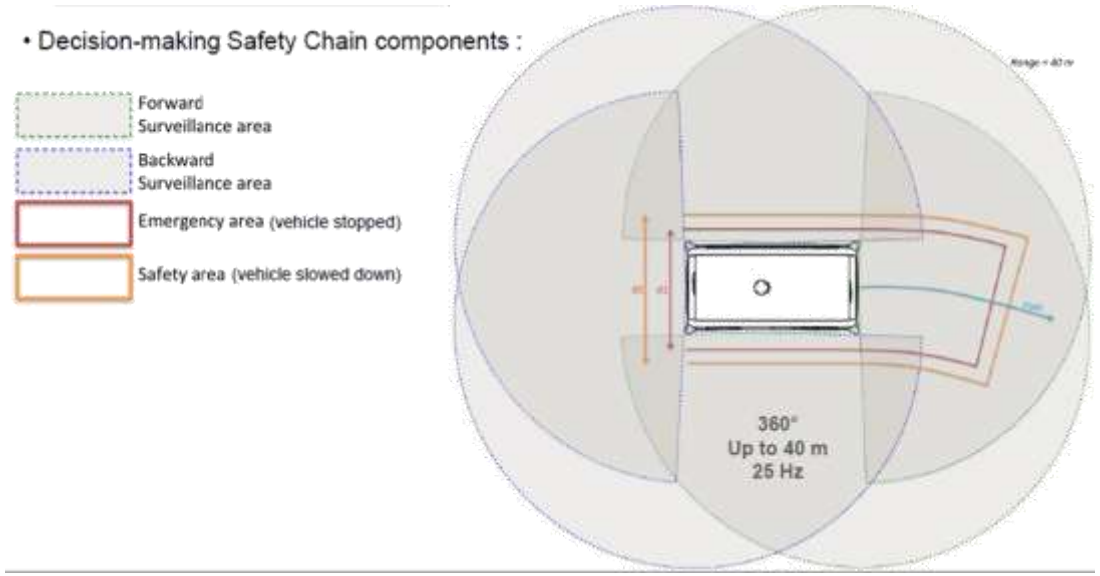
Understand the technology to improve regulatory, management and planning instruments, to facilitate the introduction of autonomous vehicles and position Chile as a HUB for innovation in transport technologies



VA technology, safety comes first







TECHNOLOGIES

GEOLOCATION SYSTEM
3G-4G / SATELLITE CONNECTION
TIDAR SENSORS
CAMERAS

Vehicle characteristics

- DGPS
- 4G connectivity
- Lidar / Cameras
- Emergency stop button

Shuttle EZ10 Electric

- Manufacturer: EasyMile
- Autonomy level: Level 4 (*)
- Capacity: 12 passengers
- Battery life: 10 hr approx (**)
- Air conditioning

Safety first

- User information system
- Facilities for people with disabilities

* De acuerdo a SAE J3016
** Según condiciones de entorno y PO

Autonomous vehicle pilot in Santiago

0.8 km route, 3 stops, 8 min for the entire loop including stops *

- Duration 3 months + 2 weeks of set-up
- Consider 5 days a week operation with 6 hours of average daily operation
- Pilot to be carried out on private use road, not public road
- Operation in an environment with controlled conditions, non-motorized flows and a potential limited and controlled vehicle flow

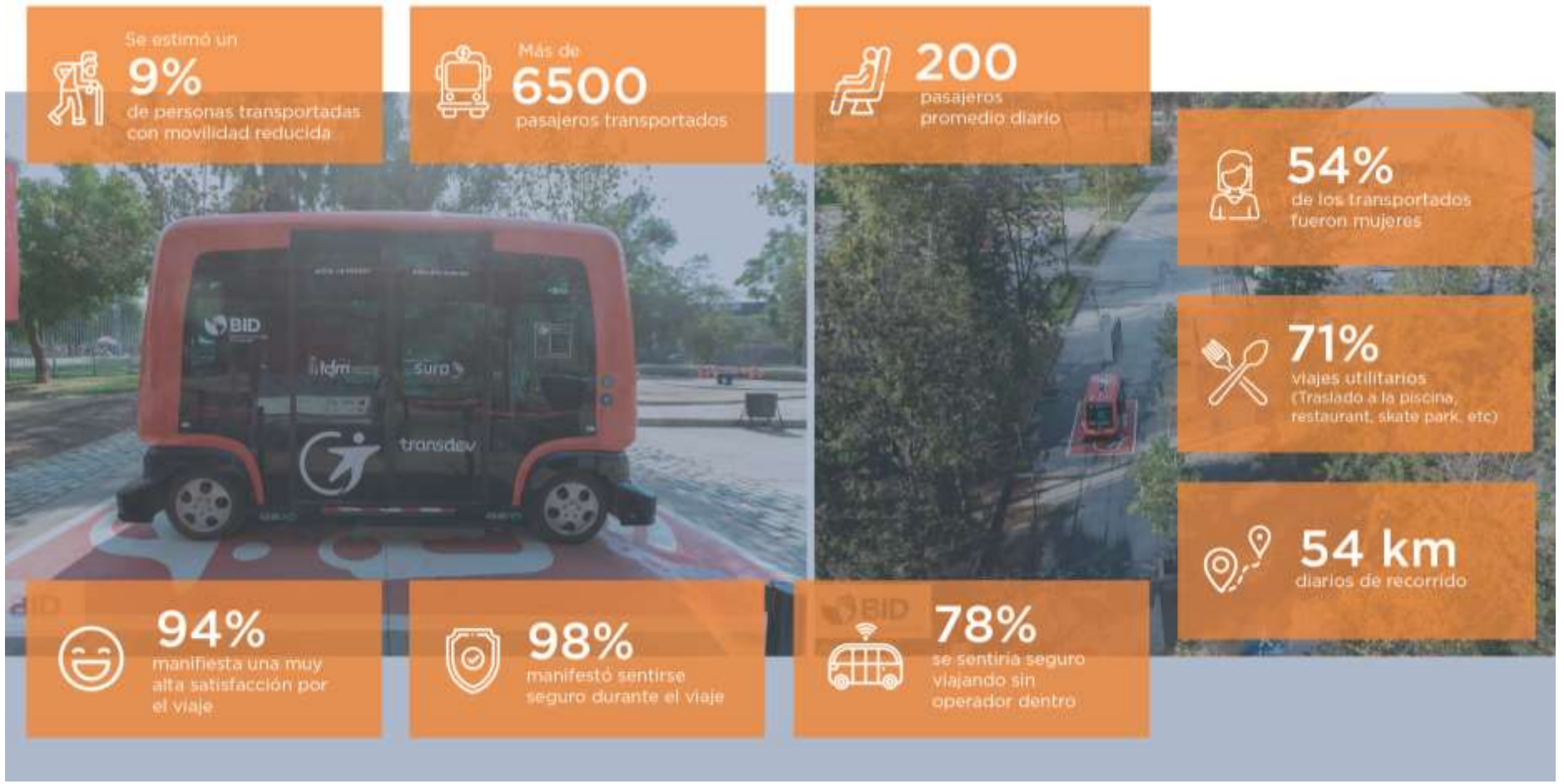
Partners

transdev

fcfm FACULTAD DE CIENCIAS FÍSICAS Y MATEMÁTICAS UNIVERSIDAD DE CHILE

**** CIRCULATION SPEED: Coexistence with pedestrians [8km / h], Roadway [up to 15 km / h], without counting interruptions***

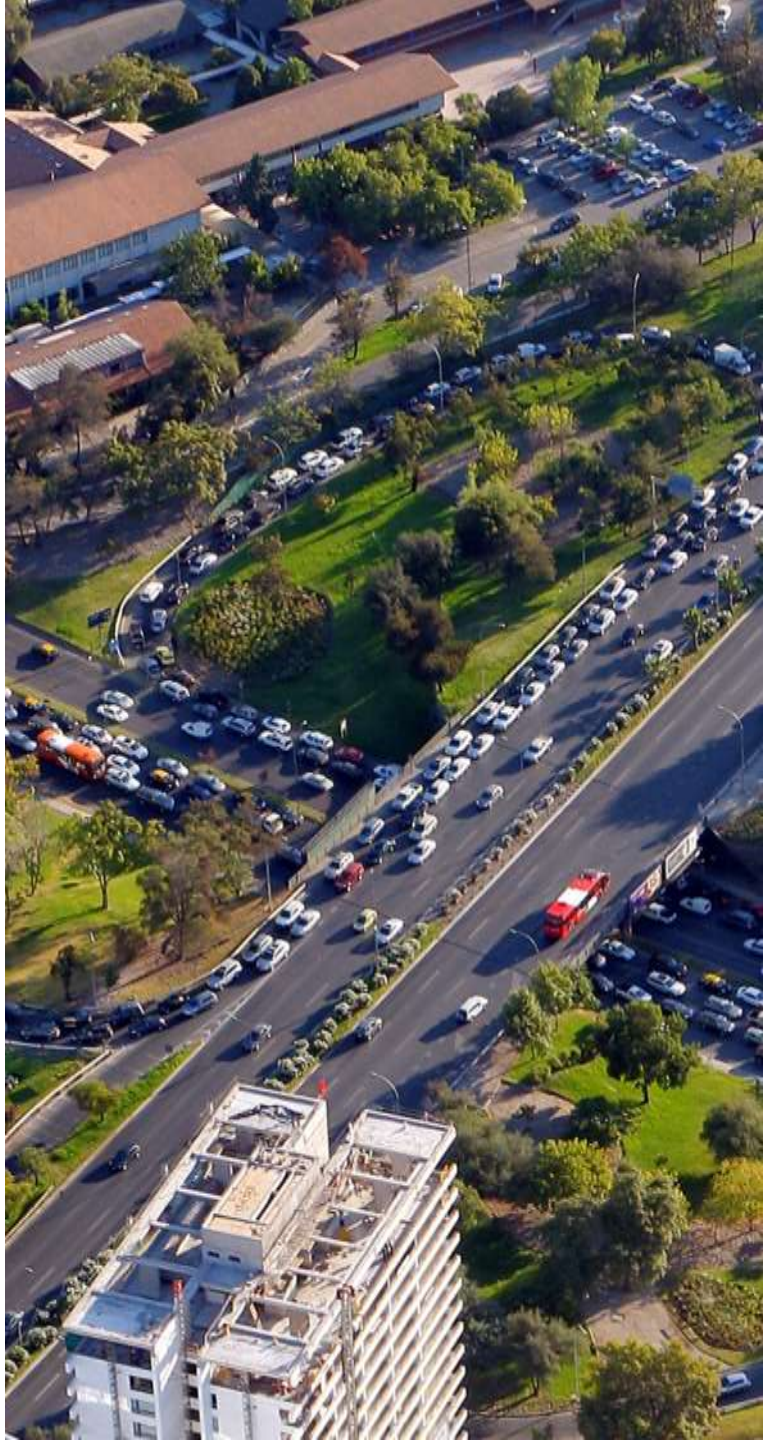
First Autonomous Vehicle Pilot in Latin America



What are the lines of work and needs in the field of Smart Mobility in Chile?

Lines of work and opportunities for future development

- Territorial focus: with greater importance in the regions
- Incorporate more technology: by taking advantage of new tenders for conservation projects (SCAT)
- Promote mass transportation and sustainable modes
- Operational continuity and resilience to incidents, catastrophes and emergencies.



What are the lines of work and needs in the field of Smart Mobility in Chile?

Lines of work and opportunities for future development(in detail)

- Preparation of television camera tests for traffic monitoring based on 5G wireless communications
- Market consultations will be developed to collect solutions for the modernization of CCTVs and technologies for data collection and traffic monitoring.
- A plan will be developed for the integration of traffic lights from peripheral areas using 4G wireless communications.

What are the lines of work and needs in the field of Smart Mobility in Chile?

Lines of work and opportunities for future development(in detail)

- ITS technologies will be introduced for traffic light prioritization for public transport and emergency services
- The technical-economic feasibility of the implementation of a Cloud Traffic Control System will be evaluated.
- The technological framework for the development of mobility as a service will be established
- Generation of the technological modernization project of the Household Origin-Destination Survey (EOD-H)

What are the lines of work and needs in the field of Smart Mobility in Chile?

Needs

Public / private initiatives to take the new mobility on time

Investments in digital and energy networks

Pilot testing

Protocol development / adaptation

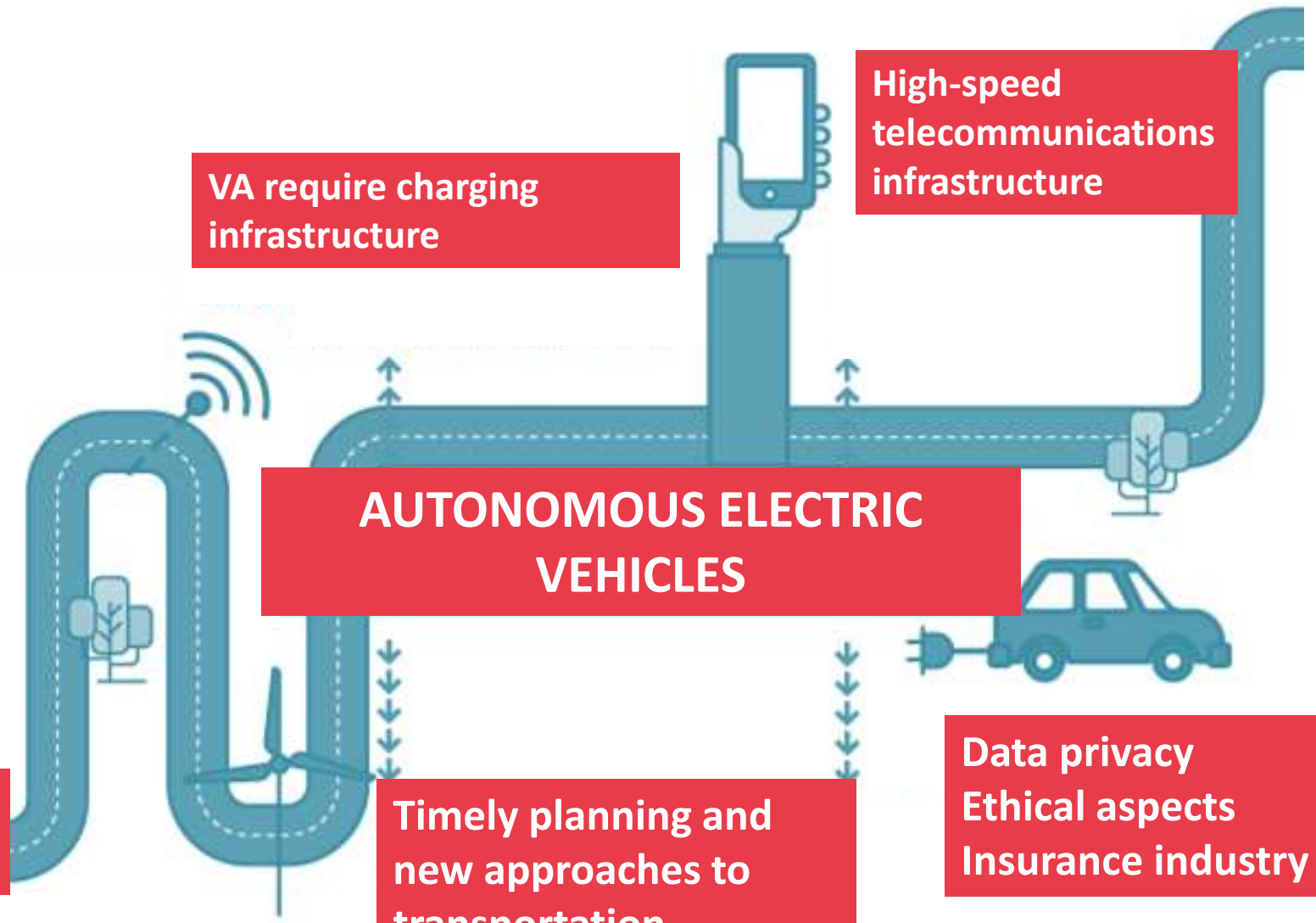
Promotion of innovation and development

Subscription of agreements and training

Institutional technical / regulatory / planning timely update

Challenges for future mobility

FUTURE OF MOBILITY



VA require charging infrastructure

High-speed telecommunications infrastructure

AUTONOMOUS ELECTRIC VEHICLES

Regulatory framework for AV

Timely planning and new approaches to transportation management

Data privacy
Ethical aspects
Insurance industry

What are the lines of work and needs in the field of Smart Mobility in Chile?

AN INNOVATIVE STRATEGY REQUIRES AN INNOVATIVE CULTURE

To **adopt** new **technologies faster**

To **work collaboratively** and multidisciplinary

To **include citizens in the design**, implementation and evaluation of solutions

What are the lines of work and needs in the field of Smart Mobility in Chile?

RESUME: ADVANCING IN A MORE HOLISTIC VISION OF MOBILITY AND THE CITY

Technologies

- Introduce electric mobility in public transport.
- Advance in taxi technology platforms.
- Advance in open data platform and information systems to users.
- Implement Integrated Mobility Control Centers.
- Advance in open standards for interoperability of technological systems.
- Move towards creating the conditions for connected and autonomous vehicles.

Citizens

- Strengthen a culture of mobility and road coexistence.
- Promote collaborative work aimed at generating better mobility.

New ways of working in transportation planning and management

- Adopting Big Data tools for planning and management.
- Understanding the emerging transport technologies as carsharing or autonomous vehicles and their impacts on the car ownership model.

Thank You !!