Data Driven Strategies in Intelligent Transportation System in Chile

📍 Webinar Series under Mobilise your City Program in India

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What are the trends and current context in smart mobility?

**Modal Split of Santiago**

- Total trips: 17,543,901
- 2012
- 23.7% Public
- 34.6% Walk
- 11.7% Other
- 26.1% Car
- 3.9% Cycle

**Greenhouse gas emissions by economic sector (Chile)**

- Land transportation: 87.7%
- Other: 12.3%

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

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

DIFERENT REQUIREMENTS FOR INFORMATION SYSTEM TO USERS

It is necessary an inclusive system, focus on children, the elderly and people with disabilities.
What are the innovations and current situation of Smart Mobility in Chile?

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.

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

[Image of electronic payment system and fleet monitoring]
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.
Encouraging an Advanced Traffic Control System

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

- 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
Priorities need to be set

• 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.
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 support 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 TRANSFORMATION 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?

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

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

- Public transport trip planners
- Integrated information center
What are the innovations and current situation of Smart Mobility in Chile?

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

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

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
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

Google maps

Colaboration

Google maps
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
CREATING SYNS
PUBLIC-PRIVATE FOR ELECTROMOBILITY

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)
Evaluación tecnológica (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

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

- Pilot Project
- Innovation Hub
- Standards and normative
- Mobility of the Future Sustainable, safety, To The People Service
- Timely planning/technical update
- Technological Adoption Training
APPLYING INNOVATION METHODOLOGIES (THERE ARE MANY)

Recommendation 1: Design Thinking

Recommendation 2: Job To Be Done
Even though customers buy this...

...they really want this.

Recommendation 3: Lean Startup
Recommendation

JTBD

Empathize
Define
Ideate
Prototype

with the people you are designing for.
insights and opportunities.
with ideation techniques.
the idea to make it tangible and to allow user testing.

PROBLEM SPACE

SOLUTION SPACE
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 modernizing standards.
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.
Breakthrough that will change the way people and cargo move

¿Why a pilot in autonomous vehicle?

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.

1. **PILOT IN SANTIAGO**
   - An autonomous vehicle was first brought to South America
   - Regulatory analysis
   - Technology transfer
   - User survey

2. **Technological HUB**
   - Raise a hub of knowledge about autonomous mobility in Chile
   - Innovation ecosystem activation
   - Technological challenge contest
   - Testing local entrepreneurship

3. **Innovation PILOT**
   - Expansion of pilots to regions and transfer of knowledge

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**FUTURE**
VA technology, safety comes first

TECHNOLOGIES

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

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
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**

* CIRCULATION SPEED: Coexistence with pedestrians [8km / h], Roadway [up to 15 km / h], without counting interruptions
First Autonomous Vehicle Pilot in Latin America

- 9% de personas transportadas con movilidad reducida
- 6500 pasajeros transportados
- 200 pasajeros promedio diario
- 54% de los transportados fueron mujeres
- 71% de viajes utilitarios (tienda a la pausa, restaurante, parque, etc.)
- 54 km diarios de recorrido
- 94% manifiesta una muy alta satisfacción por el viaje
- 98% manifiesta sentirse seguro durante el viaje
- 78% se sentiría seguro viajando sin operador dentro
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

- Autonomous Electric Vehicles
- Regulatory framework for AV
- Timely planning and new approaches to transportation management
- High-speed telecommunications infrastructure
- 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?

**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 !!