



“Initiatives to promote the development of underground spaces in Chile”



Supporters



El **Comité de Obras de Infraestructura Pública, (COIP)**, is part of the *Chilean Chamber of Construction*, whose mission is to improve the quality of life of people committed to the sustainable development of the industry.

<https://www.cchc.cl>



La **Asociación de Oficinas de Arquitectos de Chile, (AOA)**, is a non-profit organization that was born in 1998 and is made up of more than 180 national architect offices, responsible for an important part of the country's architecture projects.

<https://www.aoa.cl>



Secretaría Ejecutiva:
La **Corporación de Desarrollo Tecnológico, (CDT)**.

<https://www.cdt.cl>



CTES

COMITÉ DE TÚNELES Y
ESPACIOS SUBTERRÁNEOS
DE CHILE

Comité de Túneles y Espacios Subterráneos de Chile, (CTES), is the official representative of the *International Tunnel Association (ITA-AITES)* and has set as part of its mission: To promote the development of the tunnels and underground spaces industry in Chile, linking all interest groups.

<https://ctes.cl>



CONSEJO POLÍTICAS
DE INFRAESTRUCTURA

El **Consejo de Políticas de Infraestructura, (CPI)**, was created with the firm intention of reinstating public infrastructure as a key issue on the country's political agenda, which, in addition to diagnosing the situation, formulates proposals, identifies priorities and monitors progress of government policies.

<https://www.infraestructurapublica.cl>



Objective

Chilean Board for underground space



“Promote and encourage the use of underground space, its virtues and potentialities, as an alternative for quality of life and urban development”



■ Initiatives

Board for the underground space

1

Georeferenced survey of underground projects cases

2

Diagnosis of technical and regulatory gaps for the development of underground space

3

Webinar and Congress of the Underground Space

4

Degree work program with the academic world

5

Proposals to public authorities

6

Visits to existing underground spaces ("Technological Mission")

7

Publications and dissemination in mass media

8

Underground Architecture Competition

DEVELOPED IN 2020

BOOST 2021

ACTIVATE IN 2021

2023



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SUBTERRÁNEO.CL

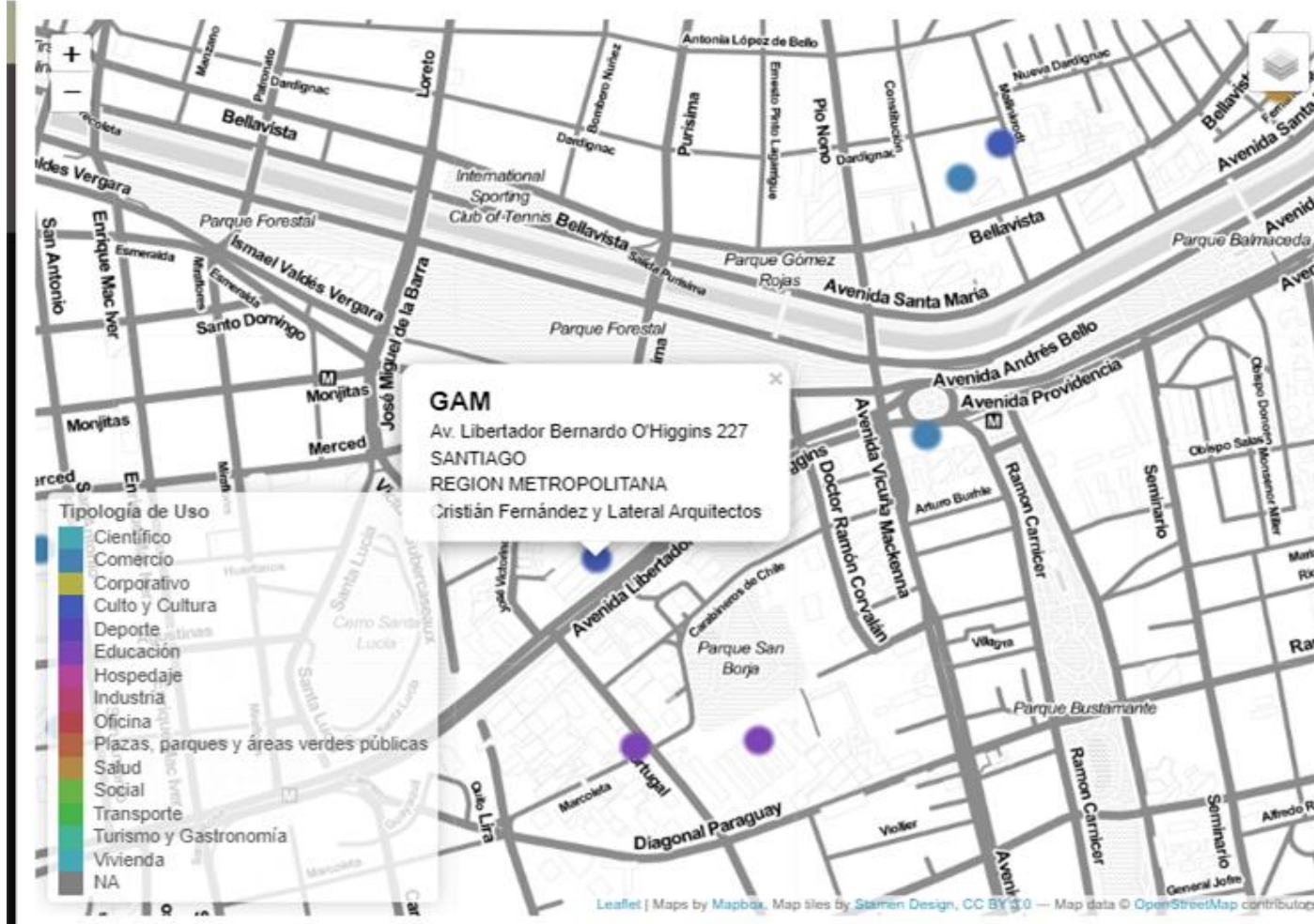


Initiatives developed in 2020

Cadastre of underground spaces in Chile

1

Cadastre of underground spaces in Chile.

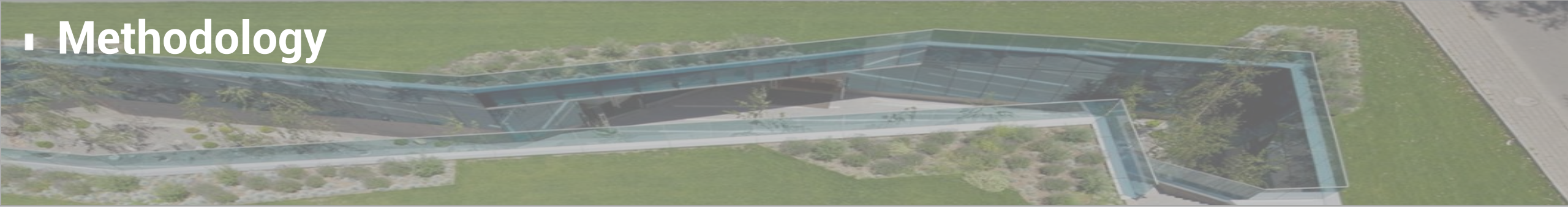


FICHA TÉCNICA

NOMBRE	Gam
REGIÓN	REGION METROPOLITANA
COMUNA	SANTIAGO
DIRECCIÓN	Av. Libertador Bernardo O'Higgins 227
ARQUITECTO	Cristián Fernández y Lateral Arquitectos
CONTRATISTA	Claro Vicuña Valenzuela
DESTINO	Culto y Cultura
SUP. TERRENO	19856 m ²
SUP. CONSTRUIDA	44000 m ²
NIVELES	
Ver Galería	
Ver Planimetría	
Video	
Evalúa este Espacio Subterráneo	



Methodology



BAUDATA PLATFORM

WEB Pilot create tab fields

Design tab and fields

Upload web cases table validation

Piloting the web platform

Team conformation and work proposal

Platform survey and definition of fields to be investigated

Validation of the pilot by the board

Survey of cases and normalize the fields

Identification of actors and population of data from the files

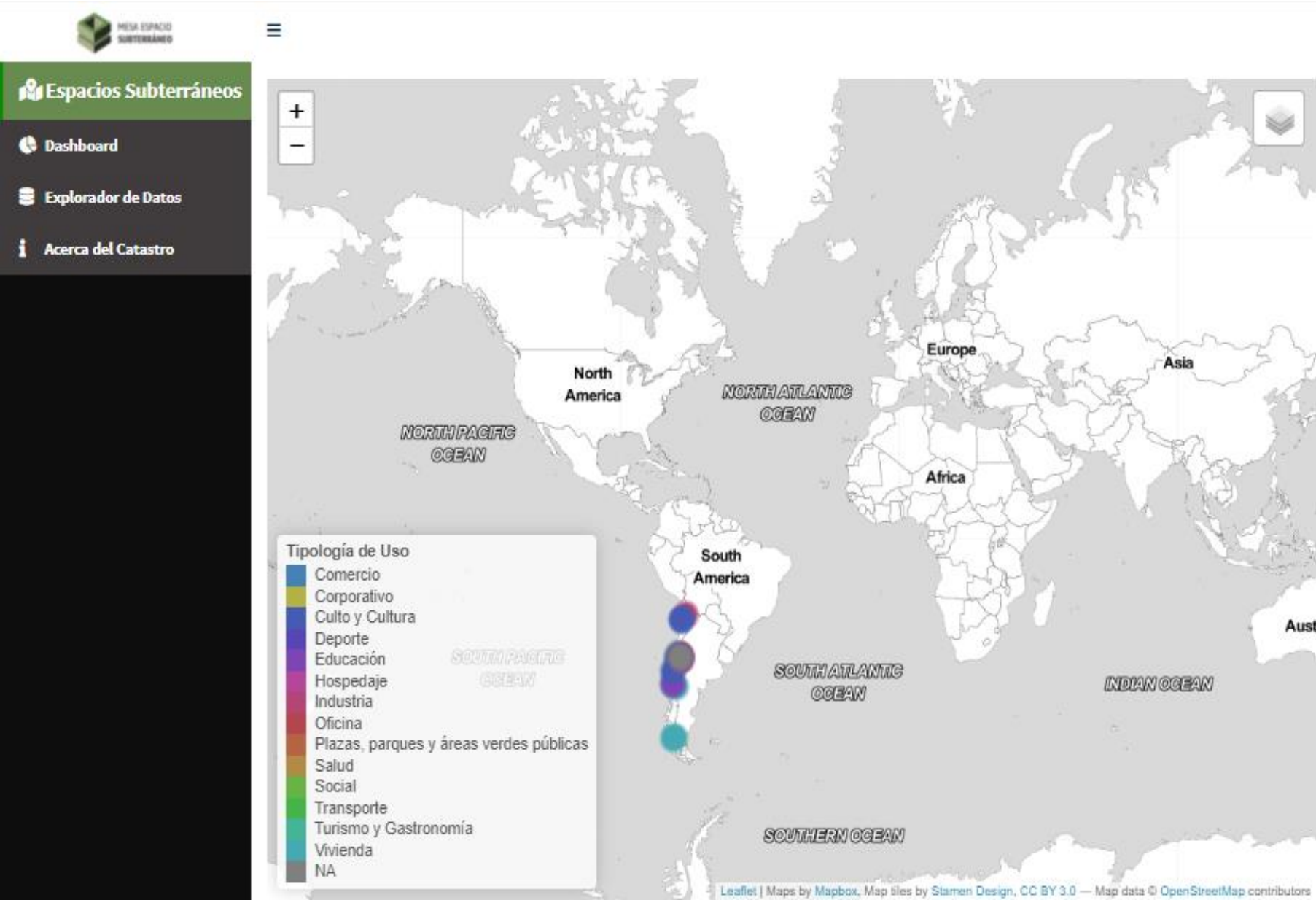


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SUBTERRÁNEO.CL



Initiatives developed in 2020

Cadastre of underground spaces in Chile



AMPLIACIÓN FACULTAD ARQUITECTURA, ARTE Y DISEÑO UDP



FICHA TÉCNICA

NOMBRE	Ampliación Facultad Arquitectura, Arte y Diseño UDP
REGIÓN	REGION METROPOLITANA
COMUNA	SANTIAGO
DIRECCIÓN	Salvador Sanfuentes 2221
ARQUITECTO	Ricardo Abuaud
CONTRATISTA	Constructora INARCO
DESTINO	Educación
SUP. TERRENO	2112.5 m ²
SUP. CONSTRUIDA	571.9 m ²
NIVELES	
Ver Galería	
Evalúa este Espacio Subterráneo	

Initiatives developed in 2020

Cadastre of underground spaces in Chile

Fundamental fields	1	Project name (*)
	2	Georeferenced location (*)
	3	Commune (*)
	4	Region (*)
	5	Ground surface (*)
	6	Built and underground surface (*)
	7	Year of receipt (*)
	8	Construction period (*)
	9	Office Architecture
	10	Principal Architect
	11	Principal or owner (*)
	12	Builder (*)
	13	Main destination (*)
		Secondary destination
	14	Project type (*)
	15	Project use (*)
		Space use classes
	16	Accessibility (*)

Complementary fields	17	Max depth habitable
	18	Financing model
	19	Investment amount
	20	Contribute parking
	21	Remarkable installed technology
	22	Certifications

There are 3 categories of basic information display called:

1. "Fundamental fields".
2. "Complementary fields".
3. "Annexes".

With the information we raise indicators on the development of these spaces.



Preliminary indicators

Cadaastre of underground spaces in Chile

10

International underground spaces

114

Underground spaces in Chile

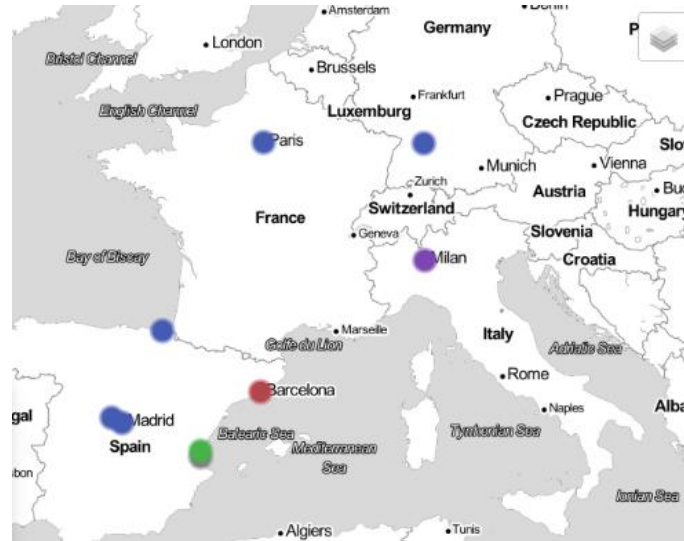
20

Underground spaces in regions

Worship and culture

Typology of predominant use

PROJECT NAME	COUNTRY
Bahnhof data Center	SUECIA
Colon Market	ESPAÑA
Louvre Museum	FRANCIA
Alboraya Palmaret Station	ESPAÑA
Auditorium in San Lorenzo de el Escorial	ESPAÑA
Caixaforum Madrid	ESPAÑA
Agbar Tower	ESPAÑA
Kursaal Auditorium	ESPAÑA
L. Bocconi University	ITALIA
Porsche Museum	ALEMANIA



Logos: Aca, CPI, CCHC, CTES

MUSEO DE LOUVRE

FICHA TÉCNICA

NOMBRE	Museo de Louvre
REGIÓN	NA
COMUNA	
DIRECCIÓN	
ARQUITECTO	leoh Ming Pei
CONTRATISTA	
DESTINO	Culto y Cultura
SUP. TERRENO	
SUP. CONSTRUIDA	210000 m2
NIVELES	

[Ver Galería](#)
[Evalúa este Espacio Subterráneo](#)



Preliminary indicators

Cadastral of underground spaces in Chile

Underground spaces by region

N° cases: 104



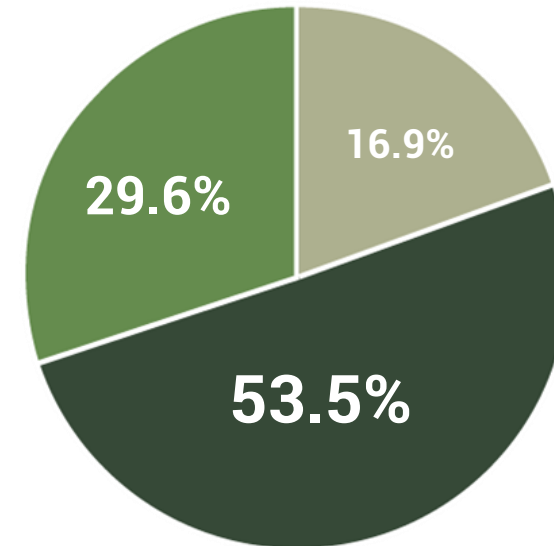
REGION OF ANTOFAGASTA (3)
REGION OF LOS RIOS (3)
REGION OF MAGALLANES (2)
REGION OF VALPARAISO (6)
REGION OF BIO BIO (1)
REGION LIBERTADOR BERNARDO O'HIGGINS (5)

20

Underground spaces in regions

Projects according to use

N° cases: 71



- Private
- Public
- Mixed

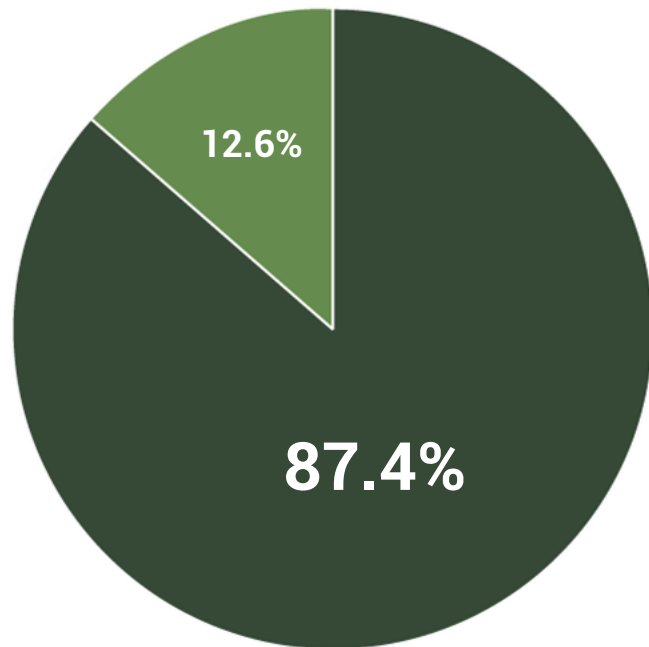


Preliminary indicators

Cadastre of underground spaces in Chile

According to type of project

N° cases: 87

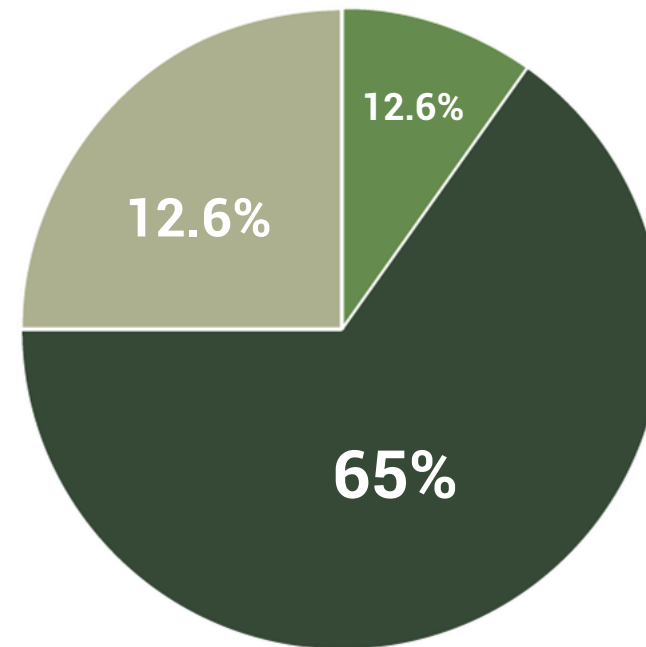


● new

● rehabilitated

Financing type

N° cases: 20



● private

● Public

● Consent



Just a few examples of emblematic cases

Cadastral of underground spaces in Chile



Cultural Center Palacio La Moneda

- **REGION:** Metropolitana
- **COMMUNE:** Santiago
- **ARCHITECT:** Cristián Undurraga
- **DESTINATION:** Worship and culture



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Just a few examples of emblematic cases

Cadastral of underground spaces in Chile



BOULEVARD PLAZA ÑUÑOA

- **REGION:** Metropolitana
- **COMMUNE:** Ñuñoa
- **DESTINATION:** Comercial
- **LEVELS:** 4



Just a few examples of emblematic cases

Cadastral of underground spaces in Chile



PROJECT CorpArtes

- REGION: Metropolitana
- COMMUNE: Las condes
- ARCHITECT: Renzo Zecchetto Architects
- DESTINATION: Worship and culture

Just a few examples of emblematic cases

Cadastral of underground spaces in Chile



MINING CENTER ANDRÓNICO LUKSIC

- REGION: Metropolitana
- COMMUNE: Macul
- DESTINATION: Education
- LEVELS: 2



Working plan 2020

Board for the underground space

2

Diagnosis of technical and regulatory gaps for the development of underground space.

The table for the Underground Space, defines that it is important to be able to raise impressions of the different actors related to the planning, design and construction of these underground spaces, with the final purpose of having a multidisciplinary perspective. The key user focuses:



Client/ Contractor
financing



Architect
Design



Engineer
Structure



Builder
Technology



Academic
Culture



Initiatives developed in 2020

Diagnosis of technical and regulatory gaps for the development of underground space

● conception

● planning ● design

building

Academic	Contractors	architects	engineers	builders
Cultural and diffusion	Cultural and diffusion	Cultural and diffusion	Cultural and diffusion	
	financial			
Human capital management and specialization	Management Subsoil property	Administrative management and financing	Management Subsoil property	Administrative management and planning
	Normative	regulations and incentives for development	Normative	Normative
			Geotechnical conditions	
		Sustainable development impact	Sustainable development impact	Sustainable development impact
Integration of multidisciplinary views				Service providers and machinery
Difficulty of access to systematized information				

"There are no minimum standards as part of the regulations, each **designer bears full responsibility.**"

-Engineer-

"As for the regulations, a lot has been done but in a very fragmented way, **what is missing here is an overview from the authorities.**"

-Architect-

"**The success of the underground spaces depends on the demand of the users, I consider it necessary to establish a synergy** between the subway stations and the commercial spaces."

-Engineer-



Relationship between national gaps with challenges mentioned by the ita-itacus

"The real challenge is in developing countries, where **resources are scarce and where there are cities growing faster**. We need really brilliant planning to solve those problems. "

Harvey Parker,
*Ex presidente de ITA
de los Estados Unidos.*



The problem lies in the need to be **efficient and effective during the development of the life cycle of a project**, where the role played by each professional must be based on cooperation and collaboration between the different actors involved, as well as the professionals who participate in the planning of cities in the future

Han Admiraal
Presidente de ITACUS



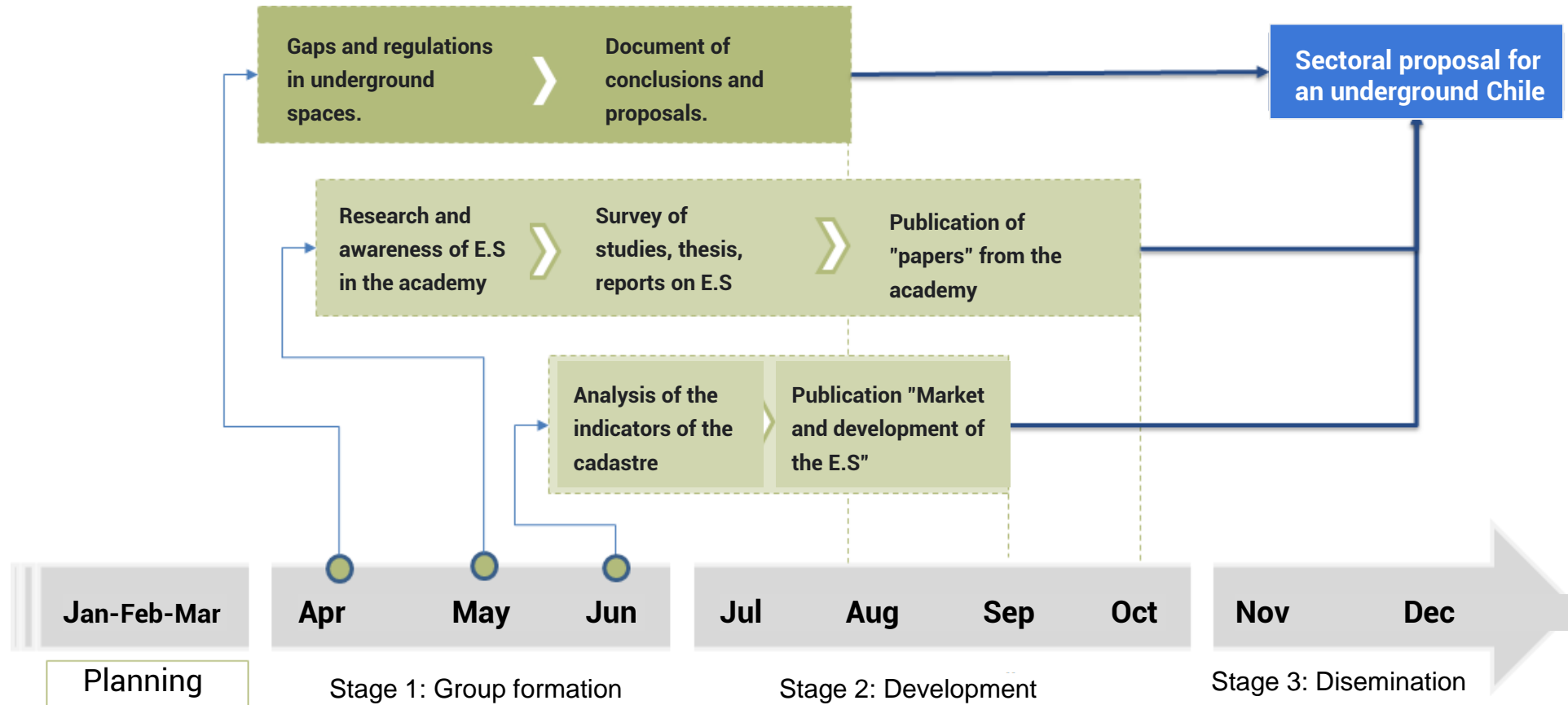
"Engineers come up with robust and technologically feasible solutions, while planners are good at summarizing the overall concept, as well as analyzing and showing the broader benefits."

Antonia Cornaro –
Expert Underground Space at
Amberg Engineering & ITACUS Co-chair.



■ Initiatives developed in 2020

Diagnosis of technical and regulatory gaps for the development of underground space



Working plan 2021

Board for the underground space

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2022



Working plan 2021

Cadastral of underground spaces in Chile.

1

Cadastral of underground spaces in Chile.

- Launch and disseminate the "Cadastral of Underground Spaces".
- Generate publication linked to the main consolidated indicators (KPIs) that arise from the cadastral.
- Present the Cadastral to relevant stakeholders: public authorities, trade associations and academic entities
- Have a team that specializes in searching for information.

Incorporate LATAM cases and international cases from other continents

Mining Center
Andrónico
Luksic.



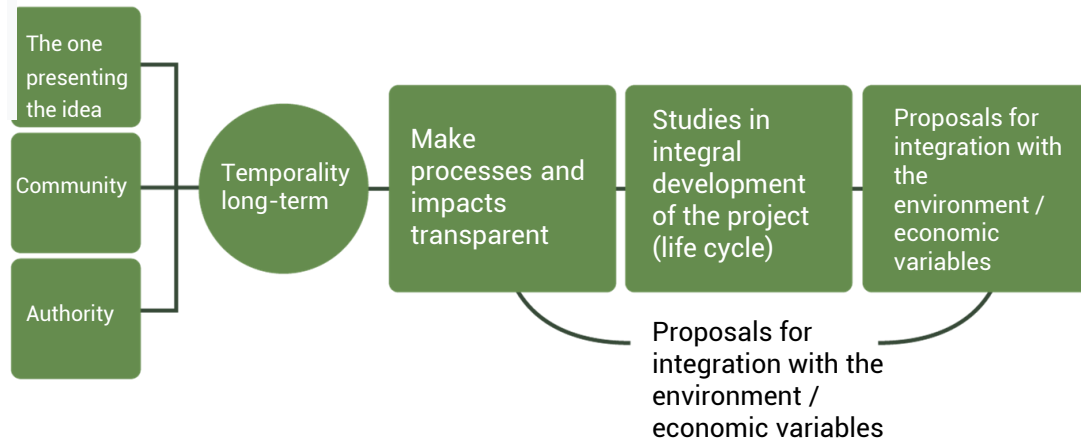
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Diagnosis of technical and regulatory gaps for the development of underground space

strategic vision

"We seek to promote development in the subsoil, promoting good practices and collaborative processes among those who plan, develop, build and inhabit these spaces, with an integrating perspective towards the community, its environment and the authorities."

who should be involved?



How do we visualize this underground development?

- Integrate, communicate and sensitize communities. Relationship with the community, the impact of the constructive method.
- Promote urban connectivity and connection to public spaces.
- Optimize the release and efficient use of urban land, together with a resource distribution network and access to facilities.
- Align with the political pillars of development.
- Legal bodies that promote new propositional regulations that include certain economic incentives.
- Promote the rehabilitation and rescue of spaces. Integration of underground spaces to existing ones.
- They are spaces for economic and social development that generate a better quality of life for citizens.



Working plan 2021

Board for the underground space

3

Webinar and Congress of the Underground Space

- **First semester 2021:** 2 new similar activities.
- **Second semester 2021:** Hold the "Underground Space Congress", as an international activity, with the participation of important national and international speakers, from the public and private spheres.



Working plan 2021

Board for the underground space

7

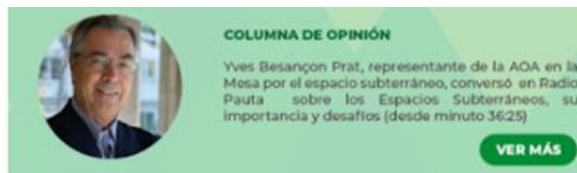
Publications
and
dissemination
in mass media

Newsletter

Publications and dissemination in
mass media



INTEGRAN



Los resultados obtenidos en la primera actividad pública de Mesa de Espacio Subterráneo, en el webinar "Oportunidades y Desafíos del Espacio Subterráneo", organizada por la Mesa por el Espacio Subterráneo.

El proyecto subterráneo "Zocalo", ubicado en Vitacura, emplazado en las inmediaciones de las calles Alonso de Córdova con Nueva Costanera. Una obra que incluye estacionamientos subterráneos y servicios complementario.

VER MÁS

VER MÁS

VER MÁS

VER MÁS



PROXIMAMENTE SUBSUELONLINE, un espacio con actores relevantes de la industria. Donde se busca poder compartir visibilizar casos emblemáticos, conversar sobre brechas del espacio subterráneo, difundir buenas prácticas y muchas temas más.

VISÍTANOS PRÓXIMAMENTE EN:
WWW.ESPACIOSUBTERRANEO.CL
(LANZAMIENTO 28 DE ABRIL)



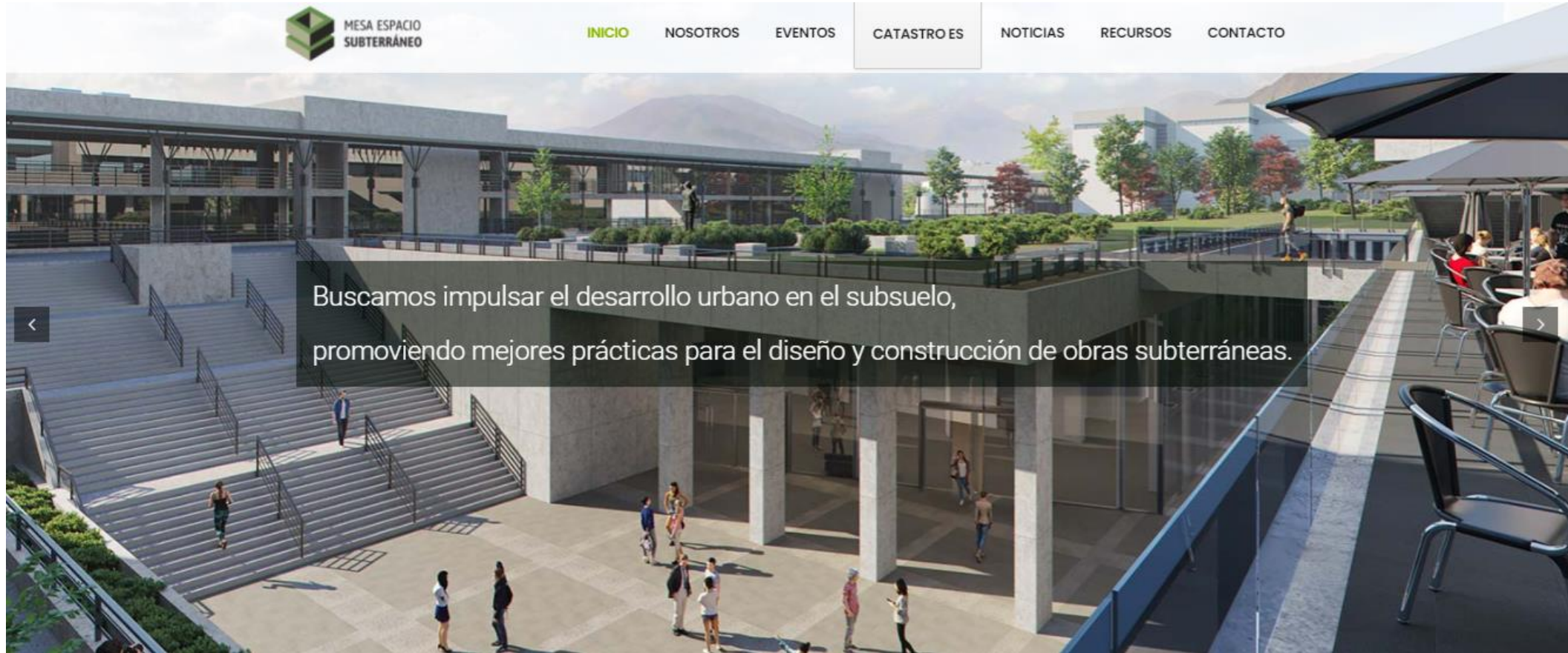
Working plan 2021

Board for the underground space

7

Publications
and
dissemination
in mass media

WEB Site



www.espaciosubterraneo.cl



How Cities are going to fight ...

...overcrowding
and land scarcity

...climate change
and be resilient

...urban planning
and adaptation

Why not be partners?

- Work together to identify international cases and raise global indicators.

>> **USEFUL TOOL TO UNDERSTAND**
>> **HOW THE UNDERGROUND HAS BEEN DEVELOPED.**

- Invites you to participate in our webinars and working groups.



“Initiatives to promote the development of underground spaces in Chile”

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Project Coordinator
Project and Services Management
Corporación de Desarrollo Tecnológico, CDT
Cámara Chilena de la Construcción

