



ASSOCIATION  
INTERNATIONALE DES TUNNELS  
ET DE L'ESPACE SOUTERRAIN

AITES

ITA

INTERNATIONAL TUNNELLING  
AND UNDERGROUND SPACE  
ASSOCIATION

# ACTIVITY REPORT

# 2022



APRIL 2021 - MARCH 2022

An aerial photograph of a large-scale tunnel construction project. The image shows a massive concrete structure with a large circular tunnel opening. Inside the tunnel, there are various pieces of machinery and equipment. The surrounding area is filled with construction materials, scaffolding, and workers. The overall scene is one of intense industrial activity.

## Our mission

ITA is the leading international organization promoting the use of tunnels and underground space through knowledge sharing, technical advance and ethical business practice.

ITA was founded in 1974 by the initiative of nineteen Nations with the aim of encouraging the use of the subsurface for the benefit of public, environment and sustainable development and promoting advances in planning, design, construction, maintenance and safety of tunnels and underground space, by bringing together information thereon and by studying questions related thereto.

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# Message from the President & Executive Director



Jinxiu (Jenny) Yan  
President

Even though 2021 was another challenging year, the ITA was able to move forward steadily and brought about many new things thanks to the strong support from all our members.

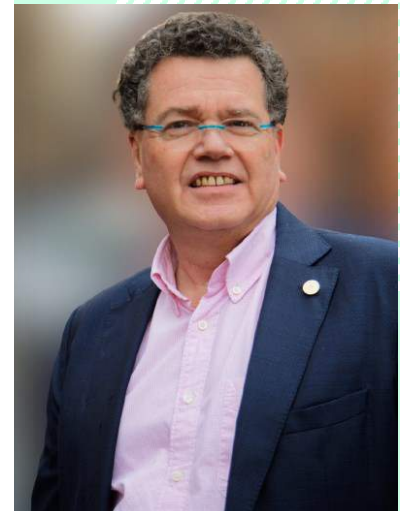
In addition to the routine ITA business, we have managed to successfully organize the online “ITA Tunnelling week” to compensate for the cancelled WTC2021, which featured around 50 presentations from more than 30 countries. We also proposed and organized a side event of the second UN sustainable transport conference in October, titled “Sustainable Urban Underground Transportation”, which received very positive feedback from the audience and the UN. Together with the ITA awards event, ITA YTMG held a 24-hour global meet-up celebrating World Tunnel Day, which proved very creative and gathered many participants worldwide. Moreover, we have worked closely with Asian Infrastructure Investment Bank to share new technologies and to promote better use of tunnelling and underground space for sustainable infrastructure. I would like to take this opportunity to thank you all for your unfailing support for ITA.

After two years of not seeing each other, we will meet again this year at WTC 2022 in Copenhagen. This WTC and the General Assembly have been postponed for 4 months, being held in September instead of our usual general meeting in May. However, this activity report covers the period April 2021–March 2022.

Despite the pandemic, the ITA has organized different events, most of them in digital form. It offered the opportunity for ITA stakeholders and in particular the Member Nations to present their activities and the various tunnel construction works, particularly during the Tunnelling Week.

In the following pages you will see that the Executive Council, the Working Groups, the Committees and all the ITA stakeholders have been very active.

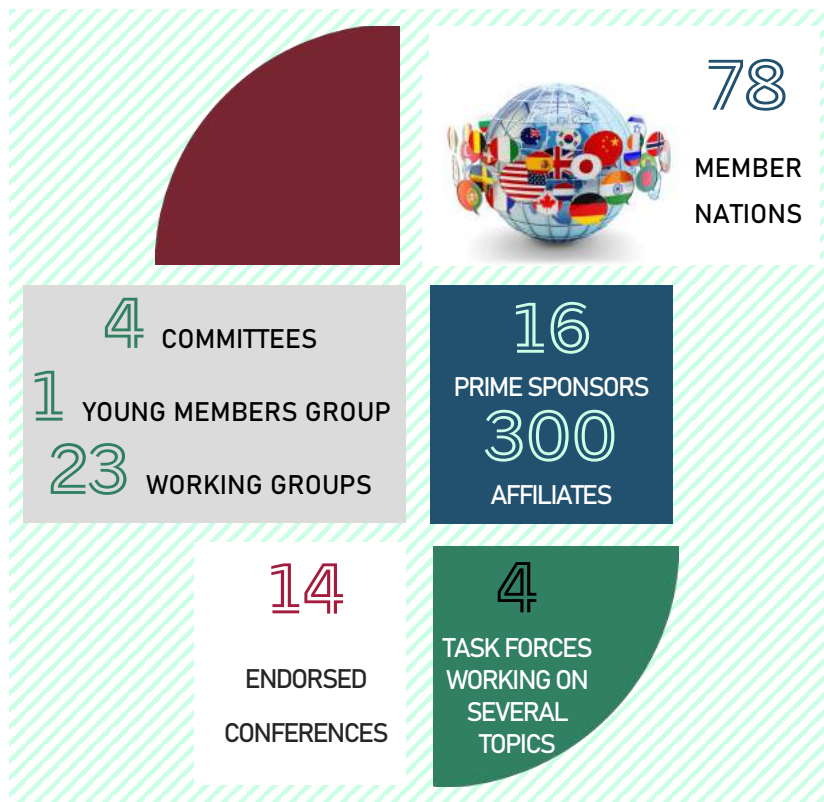
This year and for the first time, the WTC will be a hybrid event offering as many people as possible the opportunity to enjoy and appreciate the more than 150 papers that will be presented. In addition to the major exhibition in Copenhagen (more than 150 exhibitors), some exhibitors will also be present on the digital platform.



Olivier Vion  
Executive Director

# Understanding & Key figures

## ITA IN BRIEF



## STRATEGY

The actions taken by ITA during the year have been in continuity with what was implemented in the updated strategy presented in 2020.

### GOAL 1

**Encourage Member Nations to actively develop and share technology, promote underground space and be active as a Member Nation in ITA.**

Despite the pandemic, ITA encourages the Member Nations while organising conferences and workshops, with ITA Executive Council members participating through digital events. The ITA Tunnelling week has been the opportunity for ITA Member Nations to present and promote the tunnelling activities in their country. The yearly ITA Member Nation report is a good media to share with the world wide tunnelling community the activities of the Member Nations and also the tunnelling activities in the different countries.

### GOAL 2

**Optimize the contribution of Working Groups and Committees through facilitating interaction with MNs & Sponsors, encouraging synergies and deploying modern communication practices.**

The digital WGs/ Committees and ExCo meeting has been the place where all major ITA stakeholders could exchange. A more intensive collaboration has been put in place between the WGs and ITAtech.

### GOAL 3

**Encourage further knowledge sharing through education and training.**

The lunchtime lectures series, through a monthly training, available for all the tunnelling industry, through the active participation of WGs and Committees is a good medium to share on all topics studied by the ITA WGs and committees. The tunnelling week with an attendance of nearly 1000 participants has allowed during a unique event to learn both through tunnelling example on the different aspects of the industry.

### GOAL 4

**Enhance tunnelling and underground space awareness.**

The newly established cooperation with AIB is a way to better share information with future owners of tunnels and underground space infrastructures. The new partnership with UNEP will be the opportunity to organise joint webinars on different topics where the underground space is really bringing benefits to the environment. The cyberagora organised by ITACUS and ISOCARP allows to present and develop concepts of underground urbanism.

### GOAL 5

**Improve communication with Member Nations, industry and the general public.**

The Tunnelling Week has been an event with participation of most of ITA stakeholders, but also new people from all over the world, sharing experience and communicating on benefits of the tunnelling and underground space. ITA is improving its presence on social media such as Twitter and LinkedIn. The Young Members, ITACUS through dedicated networks are also broadcasting to different audience.

# Working Groups & Committees

## WORKING GROUPS

A task force composed of ExCo members has been set up to consider revising the By-Laws of the Working Groups, in particular with regard to WG Animateurs and their reappointment, and taking into account gender balance. Also the work of the WG animateur should be evaluated each term and the WG activity reports should reflect the actual activity of the WG.

A table of all WG activities to be published on the ITA website will be prepared.

A reorganization of the WGs by theme is under consideration.

A meeting between Exco, Committees and WGs chairs has been held online on November 4, 2021. The objectives of the meeting were:

- To open a dialogue between ITA ExCo and WG Animateurs and Committee Chairs,
- How to engage WGs/Committees in different roles (publication creation and review, educational outreach, etc.),
- How to be better involve WGs and Committees in training courses,
- How can we improve WG productivity and collaboration going forward?

It is important to take into consideration that modifying the structure and organisation of WGs is a difficult task, as WGs are the very core of ITA and many people are involved. WGs Animateurs/Vice-Animateurs and participants are the ones bringing the technical knowledge of ITA and sharing it with the whole tunnelling industry.

### WG 2 - Research

The Working Group 2 is currently working on the following topics:

- Update of ITA guideline on Risk Management published in 2004,
- Face Support Pressure Calculations in Shield Tunnelling,
- Stress Measurement and Hydro Fracturing,
- Tunnelling-induced Damages on Utilities,
- Review of Settlement Recommendation published in 2007,
- Selection Criteria for Geophysical Exploration Methods,
- Damage of Segmental Lining,
- Longitudinal joints design for fibre reinforced segmental tunnel lining.

Since the 2 years of pandemic have impacted the dynamic of the group, during this time we have focused our effort mainly into disseminating the work done by ITA-WG2 in the last few years. This effort has resulted in the following activities to be highlighted in the period 2021-2022:

- The cooperation with ITACET:

05/2021 (E. Chiriotti): Advanced training for

tunnelling engineers on Geotechnical investigations for soft grounds, Netivei Israel (National Roads Company of Israel),

12/2021 (E. Chiriotti): Advanced training for tunnelling engineers on Tunnel Project Management, Netivei Israel (National Roads Company of Israel),

02/2022 (E. Chiriotti): Training course "Advances in design and construction of tunnels" on the topic The Design and Construction Process, MIT-WPU, India.

- The cooperation to ITA initiatives:

09/2021 (E. Chiriotti): ITA Tunnelling Week on "Structural use of fibre reinforced concrete in precast segments » on the topic Lessons from Twenty Years of Application

03/2022 (E. Chiriotti, R. Tluczek, V. Nasri): ITA Luchtime Lecture #13, on "Site Investigations", developing the following topics:

- ◆ Strategy for site investigation of tunnelling projects (ITA Report n.15),
- ◆ Example of site investigations in dense urban environment,
- ◆ Innovative techniques for site investigations – the case of Gautrain Rapid Rail Link.

These opportunities were used by the Animateur and members of WG2 to spread the knowledge of ITA-WG2 reports such as Site Investigations (2015), Monitoring (2011), use of FRC (2016), segmental tunnel lining design (2019).

Finally, it has to be highlighted the publication in 2021 of the Portuguese version of WG2 report on Site Investigations upon the initiative of the CBT – Comitê Brasileiro de Túneis. This is an important result showing how national associations can benefit the work of ITA Working Groups and contribute to its further dissemination among the technical community.



### WG 3 - Contractual practices in underground construction

A recommendation will be determined in Copenhagen from a selection of the following topics:

- Procurement practices,
- Alliance contracts,
- Risk management (in collaboration with other WG),
- Dealing with hardship/force majeure/unforeseeable event,



# Working Groups & Committees

- Design contracts,
- How prescriptive should an Owner be in specification of a TBM (in collaboration with WG 14).

and a publication of the ITA-FIDIC Emerald Book Errata list and Contracts Guide.

Many meetings or activities were held this year including:

- TG10: 3 web meetings held, Emerald Book errata list handed over to FIDIC CC, Contracts Guide drafting in progress,
- Training on Emerald Book to SANCOT,
- F2F meetings animateur – members on procurement & design contracts,
- WG3 web meeting held on May, 24th, 2022. 26 participants from a span of 14 time zones, topics for decision listed and discussed.

## WG 5 – Health and safety in works

A report on Human Factors Drafting started just before COVID lockdown. Since then, progress has been poor partly. However about 50% of ITA WG5 have been heavily involved in CEN TC151/WG 4 revising European standards 16191 and 12110 to take account of high pressure compressed air and ITA Report 10. This revision has now led to the consideration of the need to review ITA Report 14 on refuge chambers. In addition, TC151 WG 4 are drafting a new European standard on MSVs.

ITA WG 5 is actually having a greater influence on tunnelling safety currently through CEN/TC151 than it would do with ITA documents. CEN/TC151/WG4 did try to get an ITA representative on this WG but this has not been achieved yet.

## WG 6 – Maintenance and repair of underground structure

Next goal of the WG 6 is a strategic review to provide improved focus on recent activity of:

- Managing groundwater infiltration into operating tunnels (sub report),
- Refurbishment of existing / operating tunnels (In two parts, (a) data base of case studies and (b) opportunity to jointly review document on ground water containment in operating tunnels in conjunction with PIARC).

This year, WG 6 took part of one Lunchtime Series lecture and and is currently active in a European group aligned with the renovation of tunnels (in particular TMI).

## WG 11 – Immersed and floating tunnels

Many exchanges were held on the following topics:

- Finalization of the 4th issue of Owners Guide led by Jonathan Baber,

- Finalisation of special TUST edition set of papers led by Hans Mortier,
- Finalisation and distribution of SFT guide draft led by Mathias Eidem.

The WG has delivered a Lunchtime lecture presentation in April 2022 for ITACET. Several publications and items are in progress such as:

- Owners Guide Final issue – undergoing peer review,
- Immersed tunnel project database – additional case studies,
- Guide for submerged floating tunnels
- Update of A better Way to Cross Waterway – possibly video version,
- Preparation of TUST special Edition technical papers for 2021,
- Maintenance and repair leaflet,
- Innovations leaflet.

## WG 12 – Sprayed concrete use

The Report on “In-service condition of sprayed concrete in tunnel linings in operation” is still on the track and planned for publication in 2023.

## WG 14 – Mechanization of excavation

The Task Group 4 of WG 14 has worked on the expanding on a prior completed major work product (2019 by WG 14+15) related to the handling, treatment and disposal options of tunnel spoil material. The document will be released in Copenhagen.

## WG 15 – Underground and environment

Report on Environmental risk assessment of soil excavated by EBP TBM is still going on.

The Member Nations must be request for their experience and recommendations.

The next possible topics could be:

- Considering global development agenda in underground space use,
- Noise and vibration related to underground works.



# Working Groups & Committees

## WG 17 - Long tunnels at great depth

The report on “Logistics aspects for long & deep tunnels” is scheduled for publication end of 2022.

The group has participated in the ITACET Lunchtime lecture Serie in November 2021 on “Specificity and Challenges of long tunnels at great depth”. 3 presentations have been given in collaboration with WG 17:

1. “Long and deep tunnels : why are they so specific ? ”- An overall presentation that highlights the mains specificity and challenges regarding long and deep tunnel, with also an overview of the geotechnical hazards that may be encountered – or their magnitude is by far increased – when excavating at high overburden.
2. “TBMs design & mitigations measures for long & deep tunnels” An illustrated presentation based on the ITA Report n°19 “TBM excavation under difficult rock conditions”, showing what could be anticipated to mitigate risks on TBMs
3. Logistics challenges regarding long & deep tunnels” An introduction to the specifics logistical aspects and difficulties related to and increased by the length and depth of the works to be built.



## WG 19 - Conventional tunnelling

The “Guidelines for the Design and Construction of Conventional Tunnelling in Urban Setting” is on the final draft with a view to completing the draft report in Sept 2022.

The group has started working on another report entitled: “Guidelines for the Application of Waterproofing Systems in Conventional Tunnelling”. The outline will be discussed during the WTC 22 in Copenhagen.

The topics for two potential reports will be discussed during the WTC 2022 in September:

- Advancement of Equipment for Conventional Tunnelling,
- Safety-in-Design for Conventional Tunnelling.

## WG 20 - Urbans problems - Underground solutions

The report on “Role of Underground Space in Urban Resilience” is on the track. In an ever changing world the urban environment needs to become more sustainable, but also more resilient to changing circumstances. The role of this project is to investigate in which manner Underground Space can enable such resilience.

## WG 21 - Life cycle asset management

Project to prepare a guideline for the life cycle asset management for owners and clients including checklists, description of the method and necessary information from the different installations in a tunnel and their interaction.

## WG 22 - Information modelling in tunnelling

In addition to the monthly meetings, the WG 22 worked on 2 documents:

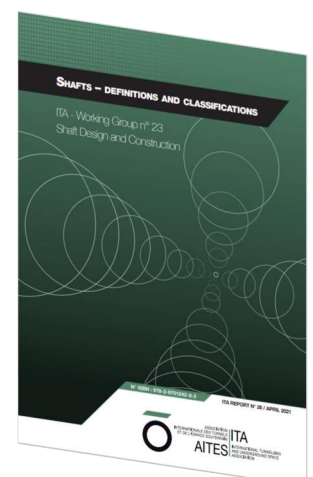
1. ITA-AITES Recommendations for the application of ISO 19650 series during the delivery of underground projects and assets – Information Management Process and Responsibility Matrix.
2. ITA-AITES - BIM in Tunnelling – Guideline for bored tunnels.

A final draft process of a MOU with building SMART International is in progress. Finally, WG 22 organised the ITACET Lunchtime lecture series # 15 on “Building Information Modelling”.

## WG 23 - Design and construction of shafts

Working Group 23 held several webinars on subjects relevant to design and construction shaft. Otherwise, the report on “Shaft –Definitions and Classifications” has been published. Siamak Hashemi and Neal Wedding participated in the Tunnelling Week program in September 2021 introducing WG23 and current work.

The Group cooperated with ITACET in organizing a training session entitled “Advances in Design and Construction of Tunnels” for MIT-WPU India on 3 February 2022 and presented a session entitled “Design of Shafts, portals and junctions” (Mike Wongkaew on behalf of WG 23).





# Working Groups & Committees

## COMMITTEES



Over the last year, ITA-CET has continued to pursue and further strengthen collaborations with ITA Working Groups, other ITA Committees and ITA Member Nations. Two meetings were organized in the spring of 2021 with this aim in mind: a meeting with ITA WG animateurs and co-animateurs which took place on 10th May and another one with key correspondents from ITA Member Nations, which was held on 25th May.

These two meetings enabled both the ITA-CET Committee and ITACET Foundation to clarify their respective roles, present training offers co-organized by both entities and identify a venues for future collaborations within ITA.

Collaborations with the ITA Working Groups and Committees have taken the form of monthly “bite-size” online lectures, which have become known as the “ITACET lunchtime lecture series”. These events include presentations made by prominent members of the ITA Working Groups and Committees (usually the animateurs/chairs) and take place on the second Tuesday of every month. On average, they attract around 190 live participants, with many more registering to stream the event afterwards.

Over the last reporting period, within the scope of these lunchtime lectures, sessions on the following topics have been successfully organized with ITA WGs or Committees:

- Compressed air (WG5)
- Modern approaches to tunnel waterproofing (ITAtch)
- Automation in tunnel Construction (ITA Young Members)
- Tunnel resilience (WG20)
- Tunnel refurbishment (WG6)
- Structural use of permanent fibre-reinforced sprayed concrete linings (WG12)



- Long tunnels at great depth (WG17)
- Mechanized tunnelling (WG14)
- Fires in tunnels – structural design and lessons learnt (ITA-COSUF)
- Underground space use (ITACUS)
- Site investigations (WG2)

Tailor-made training events for ITA Member Nations have continued, with several online events organized over the last reporting period:

- An online training session on “Calculation methods in tunnel design” was co-organized with Mexico (AMITOS) and held over 4 half-days in April and May 2021. This event attracted 188 participants.
- A comprehensive online course in tunnelling was organized for Israel (Netivei), comprising several separate modules, held between May and October 2021. Around 35 students attended face-to-face with many more following online.
- In September 2021, at the occasion of the AFTES 2021 international congress, a face-to-face session on “Excavation control and instabilities in conventional excavation methods” was held and gathered 32 participants.
- In February 2022, an online course entitled “Advances in tunnel design and construction” was organized for India (MIT Pune) over 4 half-days, gathering around 200 participants.

The Committee has continued to nurture its university network. A second event for university professors and PhD students was initially planned in December 2021 in Leoben, Austria, but due to continued travel restrictions at that time has now been postponed to Tuesday, 22 November 2022. The Committee has also exchanged with several universities of the ITA-CET network, notably concerning endorsement or re-endorsement procedures for Master courses.

Finally, in terms of communication actions, ITA-CET news articles have regularly appeared in ITA newsletters and the Committee published its own newsletter in August 2021.



Another challenging Covid year confronted us with the fact of having no physical meetings throughout the entire year. But even if we can't and don't want to get used to it, ITA COSUF managed to enjoy several meetings during the last year although they were virtual meetings only. The beginning was made by a TSO Webinar, carried out on April 29th 2021 with a very exciting presentation of “Tunnels in the 21<sup>st</sup> Century – the next level”, presented by André Stein. Another contribution covered the topic “Tunnels & Cybersecurity” presented by Jasper Kimstra and was followed by a very interesting presentation about the new Kohlbrand crossing in Hamburg, presented by Olaf Thimann and Frank Embert-Kreiser.



# Working Groups & Committees

The ITA General Assembly took place in June 2021, where ITA – COSUF delivered a report and gave a short presentation about the activities of the last year. As all the meetings were virtual meetings, COSUF decided to organize the ITA COSUF General Assembly on October 20<sup>th</sup> 2021, separated from the ITA General Assembly, as we normally link our General Assembly to our workshops in autumn.

One highlight in 2021 was definitely the NEC Workshop on October 20<sup>th</sup> 2021. It was an online two days workshop organized in collaboration of COSUF, PIARC, and KPT, with the following programme, investigating the latest developments and challenges regarding New Energy Carriers in Road Tunnels. The first keynote lecture was presented by Felix Haberl from Volvo Powertrain, and the topic was “Development of powertrains for heavy duty vehicles up to 2040 – R&D strategy of Volvo trucks”. Dmitriy Makarov together with Vladimir Molkov (Ulster University) presented “Preliminary results from the HyTunnel-CS project”. Max Lakkonen (IFAB) gave some insight in “New challenges of New Energy Carriers in other underground spaces than tunnels – Example case: Underground car parks”. Patrik Föbtleitner and Peter Sturm (TU Graz) presented results from the “BRAFA project – results from fire tests of BEVs – fire characteristics and extinguishing techniques”. Haukur Ingason (RISE) gave a presentation about “RISE research on gas containers exposed to fires”. Rémi Berger (CARA) gave a second keynote lecture to open day two with a look out for the future and speaking about “New energies, trends, developments, opportunities and future prospects”. Ola Willstrand (RISE) presented “RISE research on fires in Electric Vehicles” and Christoph Willmann (Cetu/INERIS) spoke about “NEC in tunnels – additional risks for users – consolidated results”. Frank Leismann (STUVA) shared some “Results of SUVEREN, Fire safety of Lithium Ion Batteries and impact of Electric Vehicles underground structures”. Both days closed by a summarizing wrap-up session including discussions with the audience. The third workshop in the reporting period was the TSO Webinar on November 18<sup>th</sup> 2021.

Apart from the workshops, ITA COSUF held a couple of online meetings, two of which were Steering Board Meetings, and ITA COSUF is currently preparing for the next Tunnel Safety Officer meeting, taking place in the End of June 2022 in Brussels.

According to our plans, it will be our first physical meeting since 2020.

**ITA COSUF facts & figures**

- 74 members / 4 Activity Groups
- 2 Webinars / 1 two days workshop
- 2 SB meetings / 2 AG meetings
- 1 General Assembly
- 2 Publications in preparation
- 1 physical TSO meeting in preparation



As in 2021, due to the ongoing global pandemic, ITACUS found itself focussing on online activities. The following activities took place between April 2021 and April 2022:

June 18th: ITACUS presents at the Hagerbach NXT50 festival as part of Mission Earth First launch.

June 24th: Cyber Agora (second of three) led by ITACUS and ISOCARP, the virtual seminar focused on the role of underground urbanism in our urban future.

September 8th: ITACUS co-chairs presented at the AFTES Congress 2021 in Paris.

September 22nd: ITACUS Session as part of the ITA Tunnelling Week.

October 5th: Presentation by the co-chairs at the Urban Economic Forum.

October 15th: Both co-chairs gave virtual presentations at the XVI Andean Seminar on Tunnelling and Underground Works which took place in Colombia.

October 28th: Special session led by ITACUS on underground urbanism at the ISOCARP World Planning Congress.



October 31st Han Admiraal and Antonia Cornaro took part in a panel discussion as part of World Cities Day organised by ITACUS tutor Abidemi Agwor.

November 16th: Both co-chairs participated online in an international seminar with the Chilean, Colombian and Mexican Tunnelling Associations.

February 12th: ITACUS co-hosted with ITACET the 12th Lunchtime Lecture on the topic ‘Planning, Modelling and use of the subsurface’.

March 15th: Cyber Agora (third of three) led by ITACUS and ISOCARP, the agora on underground urbanism focuses on the policy and governance aspects of underground space use.

March 31st: Co-chair Antonia Cornaro presented at the ISOCARP Cyber Agora on Climate Action by women in Planning.



# Working Groups & Committees

ITACUS became an official partner to the UNEP-led Sustainable Infrastructure Partnership and Green Growth Knowledge Platform. A case study on the underground data centre is in the final stages of the editorial process. Once the case study is published in May or June 2022, we'll discuss potential workshops with UNEP (that are co-organized with Duke University, ILO, etc.). On-going Discussions have been initiated with Metropolis.org India's National Institute of Urban Affairs, Carbonbase, and UN Sustainable Development Solutions Network Youth to explore partnership opportunities.

On-going Launch of the "exploring underground urbanism" online initiative to expand the existing network and engagement of ITACUS. As part of this initiative, a spotlight feature is published every Thursday to highlight the underground space use engagements and interests of professionals working in the built environment. On-going Launch of a new and improved social media engagement strategy across ITACUS social media handles. Content focuses on developments in the underground space and works being led by members and supporters of ITACUS. On LinkedIn, the number of members has increased 3.3 times from 149 on September 1, 2021, to 498 on March 9, 2022; average impressions per week have increased from 500-800 to 7k-9k during the same period. On-going Partnership with the National Institute of Disaster Management, Ministry of Home Affairs, Government of India to deliver a technical thematic paper on planning the use of underground spaces, with a focus on India. On-going Long-term partnership with UN Environment Programme for the Sustainable Infrastructure Partnership and Green Growth Knowledge Platform. As part of this long-term partnership, a case study is developed highlighting the use of underground spaces for data infrastructure.



During this last year, ITAttech worked on different topics led by Activity Group leaders, representing the ITA Prime Sponsors. Between April 2021 and March 2022, ITAttech held 6 Steering board meetings and numerous Activity Groups meetings. Two documents have been finalised and will be released at the WTC 2022: Guideline for radially installed bolts in tunnelling Rock support for mechanically bored tunnels. ITAttech participated also actively in different Lunchtime lectures organised by ITA-CET and notably the one on Waterproofing with participation of MBCC, Sika and Normet. Structural use of Permanent fibre sprayed concrete linings with participation of Bekaert. Several others LLS are planned for this year. ITAttech had also the opportunity to be active during the ITA tunnelling week with sessions dedicated to « Structural use of fiber reinforced concrete in precast segments » & « Permanent sprayed concrete linings ».

ITAttech continued its work a comprehensive training program for applying waterproofing membranes. ITAttech participated in a workshop organised for the Asian Infrastructure Investment Bank, on Drill & Blast excavation and associated technologies for waterproofing, lining and remote measurements, with the participation of Sandvik, MBCC, Normet and Geodata.



During this year, ITAYm was involved in the following activities:

- Successfully attended the digital Tunnelling Week including ITAYm digital booth at the digital exhibition and held the ITAYm-Session with presentations of young members,
- The ITAYm General assembly held the 30th June 2021. For the elections, 13 candidates were presented but no one of them received a majority,
- The committee has been working with ITA organizations to get youth actively involved and contributing to the activities of the organization. This includes participation in ITACUS and especially ITACET,
- Continued Breakthrough's independent newsletter with information from YM groups around the world. 5 newsletters have been issued in the last 12 months,
- Published the 7th edition of Breakthrough magazine with Tunnelling Journal,
- Celebration of World Tunnel Day on the 4th of December with another 24 hours digital zoom-marathon. The committee encouraged national youth groups to participate and share their national celebrations and/or news,
- Focused on being active on social media, especially Facebook and LinkedIn,
- Working together with the organizing committee of WTC 2022 for the ITAYm-session,



# Governance 2021-2022

## ITA Executive Council



Jinxiu (Jenny) Yan  
President  
2019-2022



Tarcisio B. Celestino  
Past-President  
2019-2022



Lars Babenderede  
First Vice-President  
2019-2022



Arnold Dix  
Vice-President  
2019-2022



Randall Essex  
Vice-President  
2019-2022



Giuseppe Lunardi  
Vice-President  
2019-2022



Abidemi Agwor  
2019-2022



Hamdi Aydin  
2019-2022



Hangseok Choi  
2019-2022



Jeyatharan Kumarasamy  
2019-2022



Andres Marulanda  
2019-2022



Jamal Rostami  
2019-2022



Gérard Seingre  
Treasurer  
2019-2022



Soren Eskesen  
WTC2022  
2019-2022



Ioannis Fikiris  
WTC2023  
2020-2023

## ITA Advisers

Felix Amberg, Switzerland, ITA Former Treasurer  
 André Assis, Brazil, ITA Former President  
 Claude Berenguier, France, ITA Former General secretary  
 Einar Broch, Norway, ITA Former President,  
 Alexander Gomes, Australia, ITA Former Vice-President  
 Alfred Haack, Germany, ITA Former President  
 Martin Knights, United Kingdom, ITA Former President  
 Timo Laitinen, Finland, ITA Former Representative of Prime Sponsors  
 Yann Leblais, France, ITA Former Vice-President  
 Eric Leca, France, ITA Former Vice-President  
 In-Mo Lee, Republic of Korea, ITA Former President  
 Rick Lovat, Canada, ITA Former Vice-President  
 Tom Melbye, Switzerland, ITA Former Representative of Prime Sponsors  
 Daniele Peila, Italy, ITA Former Vice-President  
 Sebastiano Pelizza, Italy, ITA Former President  
 Harald Wagner, Austria, ITA Former Vice-President

## ITA Governance Council



Damian McGirr  
Governance council



Eivind Grøv  
Governance council

The Governance Council worked closely with the Executive on the Organisational Review and Compliance Assessment (ORCA).

Former members of ITA ExCo have been invited to be advisers of the ExCo. A first meeting has been organized.

## WORKING GROUPS

	ANIMATEUR	VICE-ANIMATEUR
WG2	Elena Chiriotti	Ron Tluczek
WG3	Matthias Neunschwander	Martin Smith
WG5	Donald Lamont	Werner Burger
WG6	Henry Russel	Ed Taylor
WG9	Conrad Felice	Wenge Qiu
WG11	Jonathan Baber	Eelco Van Putten
WG12	Karl Gunnar Holter	Alun Thomas
WG14	Brian Fulcher	Karin Böppler
WG15	Cedric Thalmann	Nikolai Bobylev
WG17	Magali Schivre	Roberto Schuerch
WG19	Nasri Munfah	Robert Galler
WG20	Wout Broere	Giuseppe M. Gaspari
WG21	Martin Muncke	Laeticia D'Aloia Schwartzentruber
WG22	Jurij Karlovsek	Paolo Cucino
WG23	Siamak Hashemi	Joe Luxford

## COMMITTEES

	CHAIR	VICE-CHAIR
ITA-CET	Robert Galler	Michel Deffayet
ITA-COSUF	Maximilian Wietek	Eric Premat
ITAtch	Nick Chittenden	Alberto Rey
	CO-CHAIR	CO-CHAIR
ITACUS	Han Admiraal	Antonia Cornaro

## YOUNG MEMBERS GROUP

CHAIR	VICE-CHAIR
Jasmin Amberg	Chrysothemis Paraskevopoulou

## SECRETARIAT

Olivier Vion	Executive Director
Anne Brissaud	Communication Officer
Claudia Clivaz	Executive Secretary
Jocelyne Kervinio	Accountant
Sonia Salles	ITAtch Secretariat & Awards secretary
Anette Schmidt	Marketing





# Member Nations

As usual, the Executive Committee has continued to prioritise the development of its relationship with Member Nations by involving them in the Association's activities, notably on the Virtual WTC, Activity Report. For the sixth year, the activity reports have been presented in a dedicated magazine. This year we have received reports from 45 Member Nations out of the 78 Member nations. Thanks to the work done by each Member Nation, the ITA Secretariat and Tunnelling Journal, we can share with everyone the various activities carried out in ITA Member Nations, as well as know more about present and future tunnelling activities all over the world.



Due to the Covid pandemic, many Member Nations had to cancel their physical events and they mostly been organized online.

Another involvement is to grant the sponsorship of the Association to events organised by Member Nations:

- **Webinar "Automatización y digitalización para desarrollo minero y de túneles"**, organized by Chilean Committee of Tunnelling and Underground Spaces, August 25, 2021,
  - **Congrès de l'AFTES**, Paris, France, September 6-8, 2021,
  - **TAC2020: Vision Underground Conference**, Toronto, Canada, October 19-21, 2021,
  - **International Conference on Underground and Mining Construction (UMC 2021)**, Hanoi, Vietnam, October 21, 2021,
  - **International Webinar "Desarrollo de Obras Subterráneas Urbanas en Latinoamérica"**, online organized by Chilean Committee of Tunnelling and Underground Spaces, ACTOS Colombia and the Association México Subterráneo, November 16, 2021,
  - **"Stuva Expo 2021"**, Karlsruhe, Germany, November 24, 2021,
  - **5th Brazilian Tunnelling Congress and Underground Structures and LAT 2021 – Latin American Tunnelling International Symposium**, Sao Paulo, Brazil, December 1, 2021,
  - **"2nd ATC2 – Symposium, focused on digital transformation in tunneling"**, Austria and online, December 2, 2021,
  - **Tunnelling Asia 2022 biennial conference**, Mumbai, India, February 24, 2022,
  - **6th International Symposium on Tunnels and Shafts in soils and rocks**, Mexico, 29-31 March, 2022.
- **China's (Shanghai) International Symposium on Tunneling 2021**, Shanghai, China, 18-20, April 2021,
  - **ATS 2020+1 conference**, Australia, 10-13 May 2021,
  - **"Webinar: Oportunidades y proyecciones del espacio subterráneo / Opportunities and projections of the subterranean space"**, online, organized by the Chilean Committee of Tunnelling and Underground Spaces, 20 May 2021,
  - **2021 International Conference on Tunnels and Underground Spaces (ICTUS21)**, Seoul, South Korea, 23-27 August 2021,
  - **Webinar "Automatización y digitalización para desarrollo minero y de túneles"**, organized by Chilean Committee of Tunnelling and Underground Spaces, August 25, 2021,





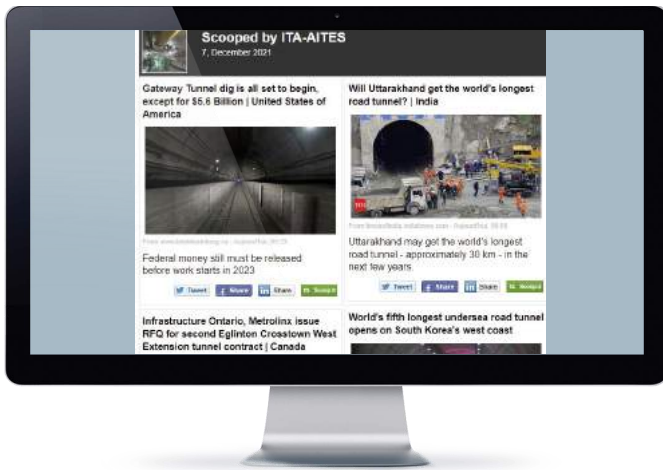
# Communication

Within the ITA-AITES, communication is an important aspect of the strategy. A yearly communication plan has been prepared; it is updated regularly. This document brings together all the communication actions imagined for the promotion of the ITA (print, web, social media, video...) from ITA to the different public (internal, tunnelling industry, general public, media...).

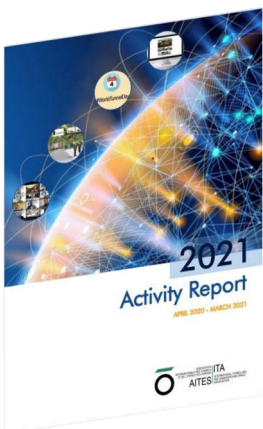
Several significant actions have been carried out this year:

## NEWSLETTERS

This year we sent 3 newsletters "ITA@new". It allows us to share our news, and to inform our members. In addition, we continue to spread our "ITA Scoop-it" newsletter twice a month.



## PRINT



On the occasion of the General assembly in June 2021, ITA has published 2 reports: the ITA activity report and the Member Nations report. These 2 documents are available on the ITA website.

## PUBLICATIONS & REPORTS

The scientific journal TUST is available in electronic version for all members (Member Nations and Affiliate Members). It is accessible on the private area of the ITA portal.

Last but not at least, 4 reports from WGs and Committees have been published:

- Shafts—definition and classification - WG 23,
- Contractual framework checklist for subsurface construction contracts (2nd edition 2021) - WG 3,
- Strategy for site investigation WG2 in Portuguese version,
- Guideline on Services of Machinery for Mechanized Tunnel Excavation - ITAtech AG Excavation.



## SOCIAL MEDIA



Social networks have become almost unavoidable due to their exposure and represent a major communication support. ITA is present on 3 major social networks: LinkedIn, Twitter and Youtube. Concerning the LinkedIn company page, we can see a significant increase of followers. This year we reached more than 4,500 followers i.e. + 30% in 1 year. The ITA Twitter account is now more than 1270 followers with an increase of 14%. The ITA Youtube channel has been enhanced with all the sessions of the ITA Tunnelling Week. Those sessions are also available on our website as well as those of the ITA Awards' finalists.



## VIDEO

On the occasion of the unveiling of the ITA Tunnelling Awards 2021 finalists which took place during the Tunnelling Week, ITA released a video on the tunnelling works done over the world in 2020/2021.

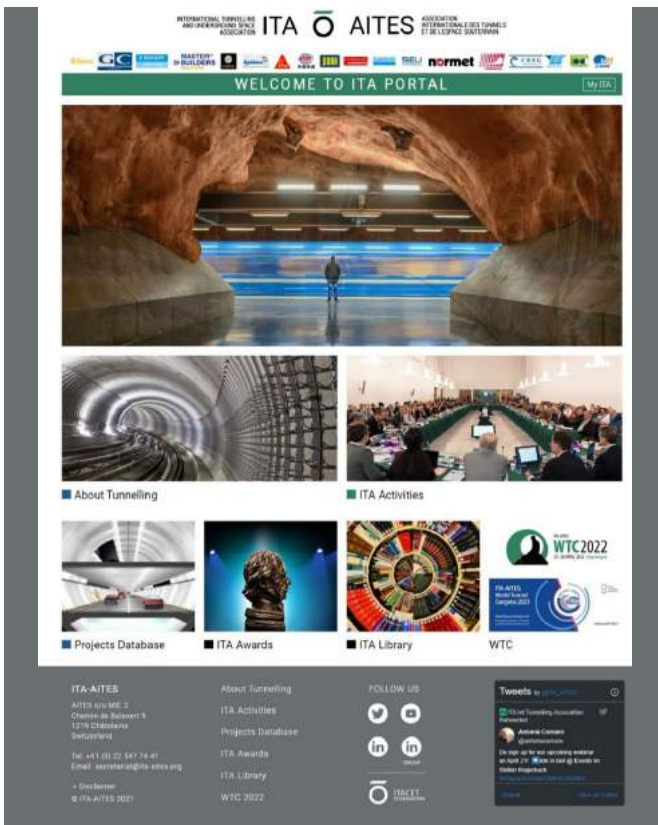




# Communication

## WEBSITE

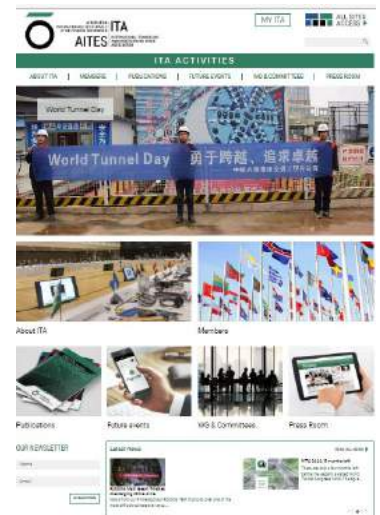
We regularly conduct audience analysis of our websites in order to constantly improve and optimize it. This year, the total traffic for all ITA website represents 135 000 sessions and 10,800 users. The average per month is 11,250 sessions and 8,970 users.



Both sites, ITA Activities and Library have done well with strong increases. We note an increase in users by 13% for the ITA activities site and 86 % for the Library. The other sites are slightly down specially the Awards website but more things happened directly on the virtual event website including registration.

SITE	SESSIONS (1 YEAR)	USERS (1 YEAR)
Portal	19,300 (-9%)	14,100 (-14%)
About Tunnelling	37,600 (-11%)	32,150 (-9%)
Project Database	4,800 (-7%)	4,100 (-4%)
ITA Activities	43,100 (+10%)	32,600 (+13%)
My ITA (private area)	2,280 (-7%)	1,980 (-7%)
Awards	14,100 (-28%)	10,100 (-31%)
Library	13,900 (+84%)	12,600 (+96%)

Connections came from more than 150 countries with in head ranking: 1. China, 2. United States, 3. France, 4. India, 5. United Kingdom, .... Let us note that the most viewed pages in the site ITA Activities were those in the Publications and Working Groups tabs. Most users came from India, USA, China, UK and Indonesia. For the site About Tunnelling, the most users mainly came from China, India, Mexico, and USA.



## PRESS

In 2021-2022, ITA directly or indirectly participated in articles published in technicals magazines or current affairs programme. Some of them are available on the ITA website in the section ITA Press releases and ITA in the Press.

We welcome this year our new press officer Maxime Forgues who replaces Diane Loth.

During all the year, our press releases have been sent out all over the world. A special push was made with the sending of 15 press releases for the ITA Awards 2021. Some of them were dedicated for specific geographical region depending on the result of the Awards.





# Conferences & events

## 7th ITA Tunnelling and Underground Space Awards

This year, for the 7th edition of the ITA Tunnel Awards, 24 finalists from 13 countries have been unveiled. The digital award winners have been celebrated on Dec. 2, 2021, during an Award Week from 29 November to 2 December.

All the finalists have been selected by the 16 members of the panel of judges.

The digital platform which remained available until December 18th included pre-recorded presentations of the finalists in the 7 categories.

An exhibition hall with 8 exhibitors allowed sponsors to present their documents, they had also the possibility to chat with visitors.

ITA promoted this event through specialized media and social media with specific campaigns to assure large participation in the event and clear visibility to our sponsors.

We had more than 1400 registrations on the platform with an average visit time of 11 hours. In the exhibition hall, the booths gathered more than 400 visitors with a unique visit on each booth of 250 people.

All finalists sent a pre-recorded presentation that has been put online and was available on the platform.

During the Awards week, each finalist was invited to participate in a panel discussion through a Zoom webinar. During this panel discussion, each finalist was able to briefly present their project/initiative for about 7-8 minutes and then there was a 30-minute discussion with all panelists.



On Friday the 3rd December, as a side event, the ITA Young Members celebrated the World Tunnel Day by organizing a 24-hours online meet-up (Zoom-marathon): ITAYm WORLD TUNNEL DAY.



This unique and international event attracted underground specialists: experts, architects, civil engineers, and urban planners who shared this exceptional evening. All pre-recorded presentations are available on the ITA Awards website. The video of the awards 2021 is available on the ITA YouTube channel.

**ITA TUNNELLING AWARDS WINNERS 2021**

**MAJOR PROJECT OF THE YEAR (OVER €500M):**  
Klang Valley Mass Rapid Transit (KVMRT) Putrajaya Line Underground Works

**PROJECT OF THE YEAR (BETWEEN €50M &€500M): (2 winners)**  
Large-diameter Shield Tunnel Engineering Project in Karst Strata of Sea Area  
South Extension of the Metro Line 14 in Paris — GC02 contract

**PROJECT OF THE YEAR INCL RENOVATION (UP TO €50M):**  
Relocation of Shatin Sewage Treatment Works into Caverns

**TECHNICAL INNOVATION OF THE YEAR:**  
Riachuelo Lote 3 — Innovative method for the construction of sea outfall — The Risers Concept

**TECHNICAL INNOVATION OF THE YEAR:**  
Is shield tunneling spoil a waste? A novel solution says no.

**INNOVATIVE UNDERGROUND SPACES:**  
Ledfal Mine Data Center The Norwegian Solution — where scale and flexibility meet resiliency

**YOUNG TUNNELLER OF THE YEAR**  
**Michael MAINS**





# Conferences & events

## ITA Tunnelling Week



The event was held from 20 to 24 September 2021 digitally. In total 1,432 people registered for the ITA Tunnelling Week and 1,095 people attended.

In addition to those who attended during live events each session has been watched as an on-demand session between 400 and 1600 times.

The concept of the Tunnelling Week and the specific format has been well received, even though in some regions it was more difficult to access to the specific platform for the lecturers.

An updated proposal has been submitted for a series of live and preregistered conferences during a full week in September. The different stakeholders of ITA were involved: Member Nations, WGs, Committees.

The event fully digital took place in the same platform as the one used for Awards 2020 and 2021 with proposal of an exhibition (joint sponsoring and exhibition). We had a few numbers of exhibitors, but they all seemed satisfied with the system and the information which is given to them after the event and notably list of all people attending their booth and documents viewed and downloaded.

The program of the ITA Tunnelling Week was as follows:

- 5 sessions on projects from MNs,
- 1 session ITACUS,
- 2 sessions ITAtech/WGs,
- 1 session Health & Safety,
- 1 session Young Members.



All sessions included a panel discussion mainly from the ITA Executive Committee.

With regard to the registration, it was proposed to have a free registration for the Tunnelling Week. For that, a specific communication has been prepared with regular news sent by email or through social media.

## Next World Tunnel Congresses



WTC 2022 Copenhagen, Denmark



WTC 2023 Athens, Greece

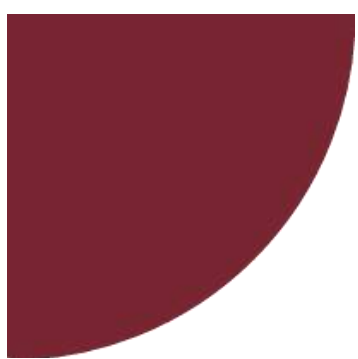
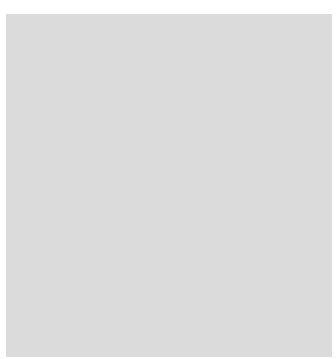
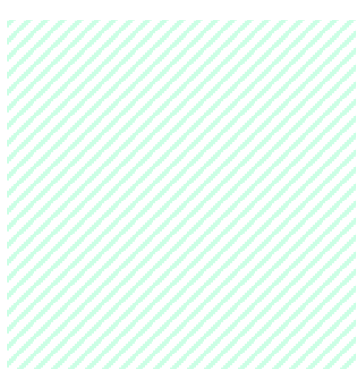
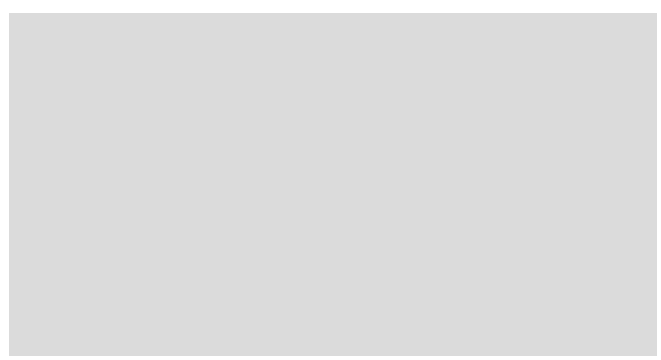
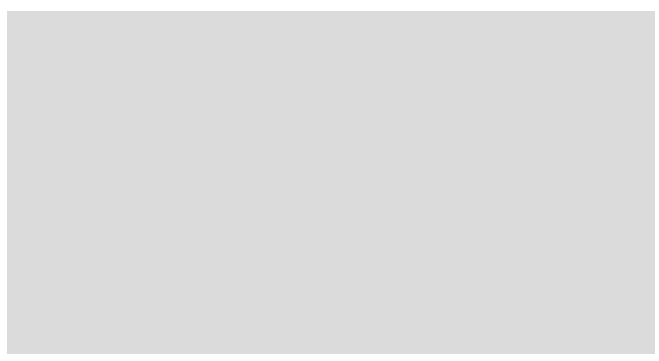
WTC 2024 Shenzhen, China

## World Forum on Underground Urban Transportation

In the frame of the 2nd United Nations Global Sustainable Transport Conference, ITA organised a side event on October 13th, 2021. The event was a 2 hours zoom webinar with presentations showing examples of transport tunnels bringing huge benefits to sustainability such as:

- Underground Urban Transports for Sustainable Cities,
- SMART Tunnel, Malaysia,
- Alaskan Way Seattle, USA,
- M30 Madrid, Spain,
- Sao Paolo metro, Brazil,
- Shenzhen Chegongmiao Integrated Traffic Hub, China.





ASSOCIATION  
INTERNATIONALE DES TUNNELS  
ET DE L'ESPACE SOUTERRAIN

**AITES**

**ITA**

INTERNATIONAL TUNNELLING  
AND UNDERGROUND SPACE  
ASSOCIATION

**ITA-AITES**

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