



# Complex Underground Multipurpose Facilities: Safety Challenges and Solutions

Workshop organised by ITA COSUF:  
**Committee on Operational Safety of Underground Facilities**





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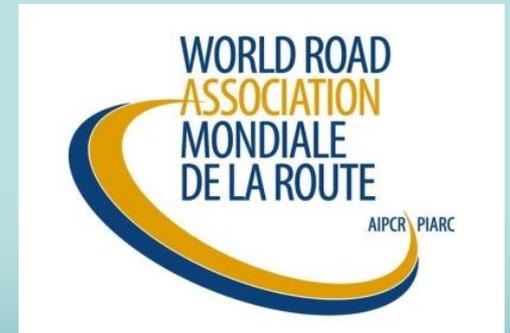


**Opening speech  
by ITA COSUF chairman**

**D. Lacroix, Centre d'Etudes des Tunnels (CETU – France)**

# What is ITA COSUF?

- **A committee of ITA,**  
the International Tunnelling and  
Underground Space Association  
(68 Member Nations,  
310 Affiliate Members)
- **Also supported by PIARC,**  
the World Road Association  
(120 Member Governments,  
members in more than 140 countries)



# Origins of ITA COSUF

- 8 European research projects / thematic networks funded under the 5<sup>th</sup> & 6<sup>th</sup> Framework Programmes



D.A.R.T.S.



which wished to continue co-operation and were established an ITA committee in 2005



# ITA COSUF Scope and Objectives

## ➤ **Scope**

- safety and security
- in operation (*construction is excluded*)
- in all kinds of tunnels (road, rail, metro) and other **underground facilities**

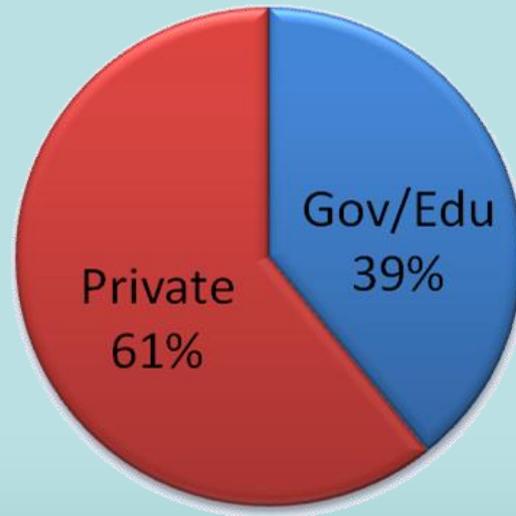
## ➤ **Objectives**

- Maintain / develop a international **network** (to exchange knowledge & build teams)
- Enhance **R&D** activities and foster **innovation**
- **Promote** underground safety and security (incl. by supporting improved regulations)



# Membership

- **Open to corporate and individual membership**  
(currently more than 70 corporate members)
- **Annual fee**  
(250€: public/education, companies with < 10 staff, individuals;  
500€: others)



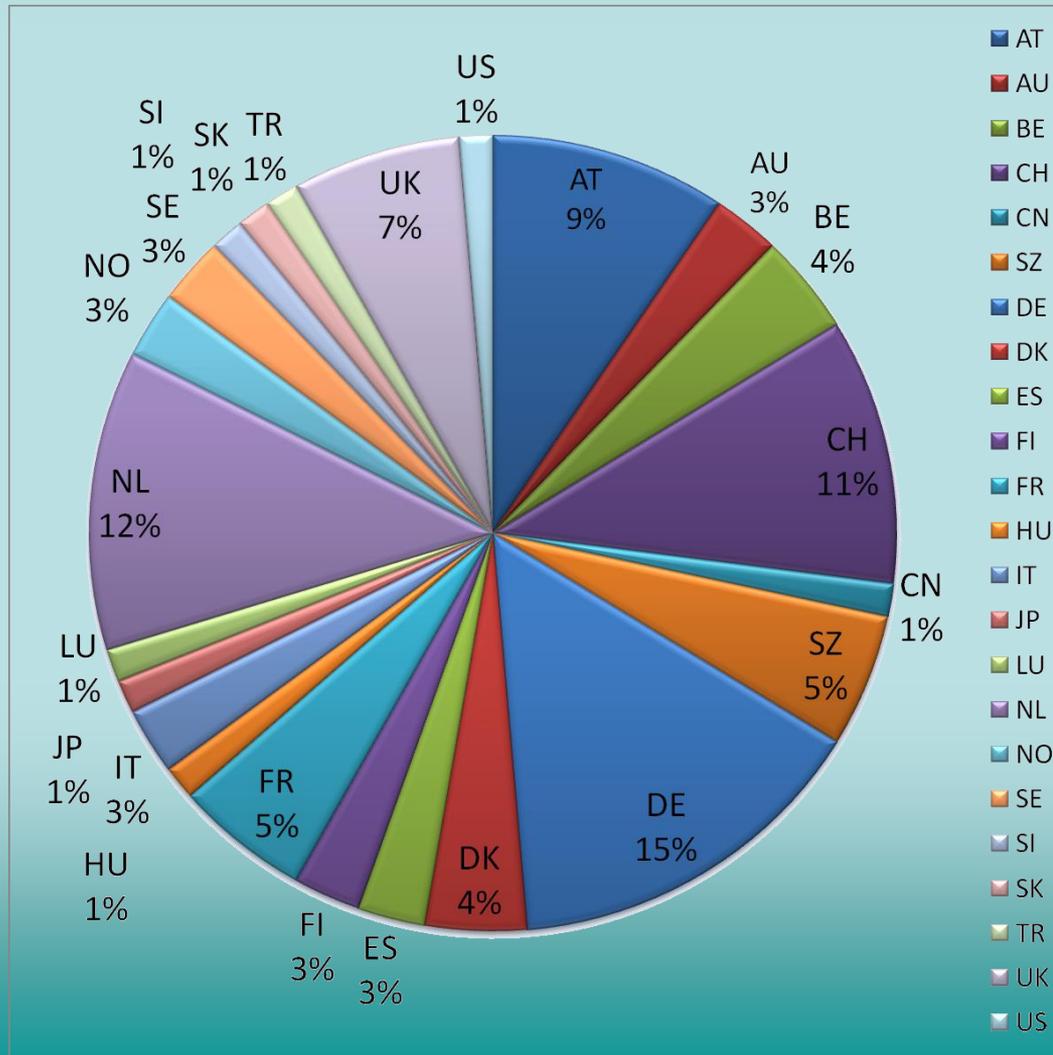
**YOU can become a member!**

Register at [cosuf.ita-aites.org](http://cosuf.ita-aites.org)



# Membership

➤ 23 countries from 4 continents are represented



# Activity Groups

- 4 AGs open to all ITA COSUF members (and only them)
- Each AG meets twice a year, together with ITA COSUF workshops
- Main activities:
  - Exchange **information**,
  - Draft **recommendations & articles**,
  - Organise **workshops**,
  - Etc.



# Activity Groups

- **AG1: Interaction with European and international activities**

Leader: Ben van den Horn

- **AG2: Regulations and best practice**

Leaders: Stig Ravn  
Peter Reinke

## Draft new product:

- ✓ *Available on COSUF website*
- ✓ *Comments until 15 September*
- ✓ *Then finalisation and approval by Steering Board*



ITA COSUF  
ITA Committee on Operational Safety of Underground Facilities

*Draft V0.8  
27.03.2013  
At this stage, further  
distribution to  
third parties only upon  
agreement by authors.*

ENGINEERING METHODOLOGY  
FOR PERFORMANCE-BASED  
FIRE SAFETY DESIGN OF  
UNDERGROUND RAIL SYSTEMS

1

ITA COSUF Report  
R21/2013 (Version 0.8)

9

# Activity Groups

➤ **AG1: Interaction with European and international activities**

Leader: Ben van den Horn (Arcadis, NL)

➤ **AG2: Regulations and best practice**

Leaders: Stig Ravn (Barbara consult, UK)  
Peter Reinke (HBI, CH)

➤ **AG3: Research and new findings**

Leader: Götz Vollman (Ruhr Universität Bochum)

➤ **AG4: Road Tunnel Safety Officers**

Leader: Johan Bosch (RWS, NL)



# European Forums of Road Tunnel Safety Officers

- 1<sup>st</sup> Forum in Lyon in November 2009
- 2<sup>nd</sup> Forum in Brussels in January 2012



# European Forums of Road Tunnel Safety Officers

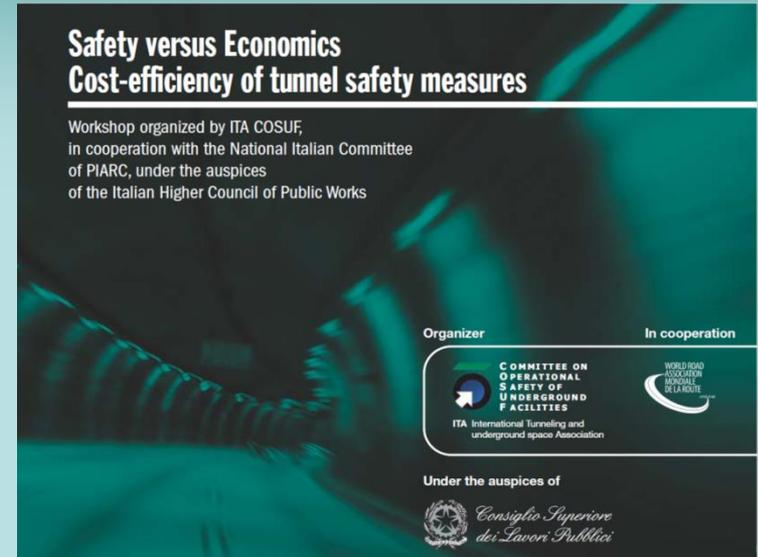
- 1<sup>st</sup> Forum in Lyon in November 2009
- 2<sup>nd</sup> Forum in Brussels in January 2012
- Co-operation between ITA COSUF (AG4), PIARC and the European Commission (which jointly open the forums)
- Attended by > 40 Safety Officers from 18 countries
- Next forum : 1<sup>st</sup> half of 2014



# ITA COSUF Workshops

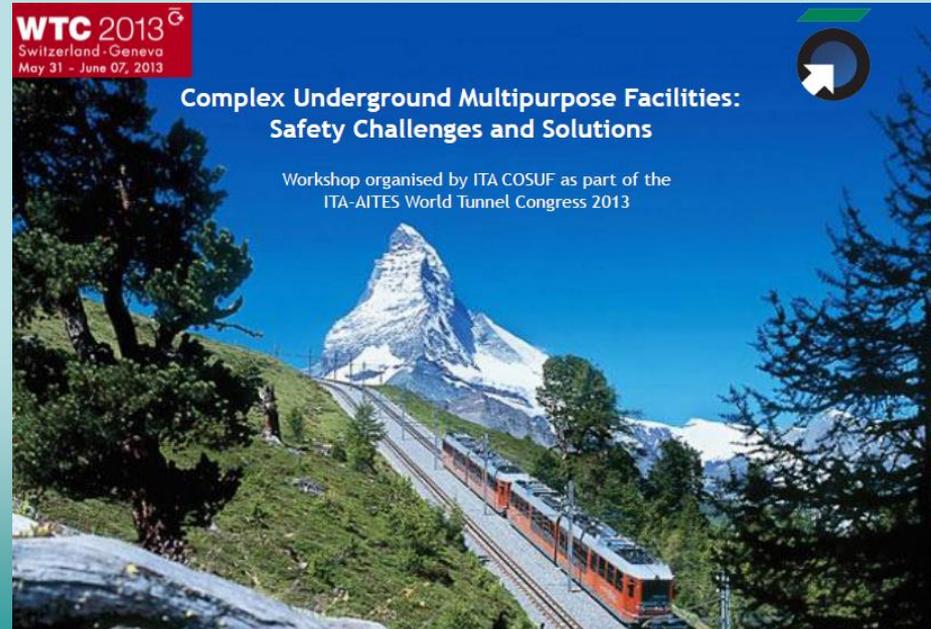
➤ One open workshop every year

- 22 June 2012 = Rome  
Safety vs Economic Crisis:  
Cost-Efficiency of Tunnel  
Safety Measures



# ITA COSUF Workshops

- One open workshop every year
- 22 June 2012 = Rome  
Safety vs Economic Crisis:  
Cost-Efficiency of Tunnel  
Safety Measures
- 4 June 2013 = Geneva  
Complex Underground  
Multipurpose Facilities:  
Safety Challenges and  
Solutions



# ITA COSUF Workshops

## ➤ One private workshop every year

(reserved for members)

- 26 Oct. 2012 = Madrid

Safety in complex underground facilities

*co-organised with AETOS & PIARC*



# ITA COSUF Workshops

- One private workshop every year  
(reserved for members)
  - 26 Oct. 2012 = Madrid  
Safety in complex underground facilities
  - 30 Sept. 2013 = Prague  
Blanka Tunnel project presentation and visit



# Other events endorsed by ITA COSUF

## **SOLIT<sup>2</sup> Conference (Safety Of Life In Tunnels – Integration of fire-fighting systems)** **Berlin, 27-28 June 2012**

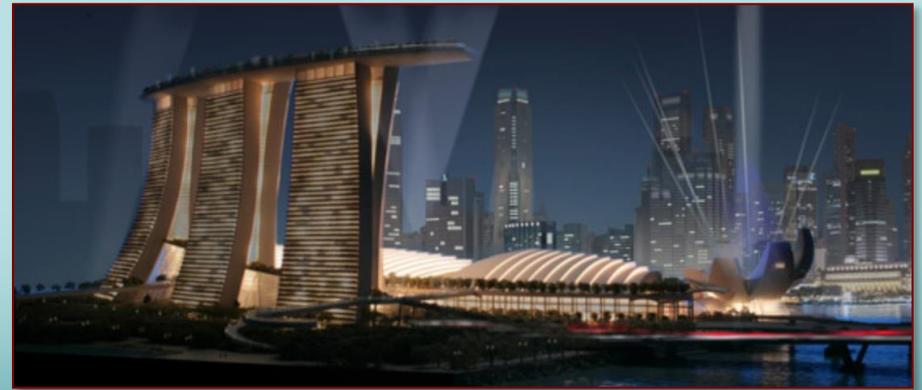
- ITA COSUF :
  - sponsored the conference
  - organised a half-day session



# Other events endorsed by ITA COSUF

## 13<sup>th</sup> World Conference of ACUUS (Associated research centres for urban underground space) Singapore, 7-9 November 2012

- One-day ITA COSUF workshop  
*on safety & security of complex  
underground infrastructures*



# Other events endorsed by ITA COSUF

## **ISTSS (International Symposium on Tunnel Safety and Security) 2014**

- Will take place in Marseille (France) on 12-14 March 2014



# ITA COSUF Award

- **Granted to a student or young researcher / professional**
  - for outstanding research / innovation work
  - on safety or security of underground facilities
- **Jury** = COSUF Steering Board
- **Presentation at annual open workshop**
  - Delivery by ITA COSUF Chair
  - Followed by presentation of nominee's work



# ITA COSUF Award

- **2009 Award:** Ben Nieman (Univ. Delft, NL)  
« Cracking on the Unheated Side during a Fire in an Immersed Tunnel »
- **2010 Award:** Stefan Krazmeir (IFAB, DE)  
« Excellent record on tunnel safety research »
- **2012 Award:** Ying Zhen Li (SP, SE)  
« Comprehensive works on fire dynamics in tunnels »



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- **2013 Award:** This afternoon!  
At the end of the workshop



# Today's Workshop

## Complex Underground Multipurpose Facilities: Safety Challenges and Solutions

- In the core of COSUF scope
  - Not only road or rail or even multimodal transport, but all kinds and mixes of underground facilities
- A variety of facilities:
  - Keynotes on nuclear waste, particle physics research
  - Lectures on combinations of road, rail, shopping malls...
- A variety of approaches
  - Research on underground fires
  - Analysis and evaluation of risks
  - Real case presentations and syntheses
  - Emergency management, Evacuation modelling, etc.





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**Let's start it now!**