

## Editorial



### **BIM for underground infrastructure design**

In recent times, digitalization of the construction sector in its widest definition represents a revolutionary trend in the architecture, engineering and construction industry which improves the way we design, construct & operate buildings and infrastructure projects. These trends result in productivity rise, project risk mitigation and consequentially higher quality end products.

Digital enablement of infrastructure can be delivered by the application of Building Information Modelling (BIM), Digital Engineering, Asset Information Modelling or Virtual Design and Construction. BIM is the digital representation of a physical and functional characteristic of a building, piece of infrastructure or even environment. BIM serves as a shared knowledge resource for information about an asset throughout its lifecycle—supporting decision making—from strategic appraisal and planning, design and construction to operation, maintenance and renewal.

New technologies are driving us to constantly improve our workflows, our products and everything we do. We will need to adopt the development of BIM standards and guidelines and tightly connect with software developers in order to develop powerful tools for the most challenging operations. There is a growing need in the construction industry for BIM-ready graduates and to build a consensus on BIM education across various organisations and universities. We need to put effort into BIM education to represent the process of acquiring the necessary knowledge and the required skills to generate BIM deliverables and satisfy their respective requirements. Exploring these challenges of BIM education can be achieved through the ITACET Tunnelling 4.0 Course or various institutions providing remedial solutions. Bridging the gap between tertiary BIM education outcomes and workplace performance requirements is just the beginning of a large turning wheel of the so-called digital engineering process.

**Jurij Karlovsek – Animateur ITA Working Group 22: Information Modelling in Tunnelling**

# Training session reports

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## UNDERGROUND SPACE USE AND TUNNEL PROJECT MANAGEMENT

Date: 07/12/2018  
Location: Nairobi, Kenya



At the request of Athi Water, (established under the Ministry of Water and Sanitation of Kenya), the ITACET Foundation organized a one-day training session on the topic of Underground Space Use and Tunnel Project Management, held in Nairobi on the 7th December 2018. This was the first ever ITACET event to be held in Kenya...

[Read more...](#)

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## OPERATION AND MAINTENANCE OF HYDRO TUNNELS

Date: 13/12/2018  
Location: Nepal



Nepal is a nation of over 27 million people. Despite its numerous river valleys, over recent decades several regions of the country have been faced with water shortages. Long, dry winters, coupled with water infrastructure that is inadapted to the needs of an ever-increasing urban population have led to a severe lack of water in some areas. ...

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### **Thank you to all those lecturers who presented on behalf of ITACET**

In Kenya:  
Han Admiraal, Tarcisio Celestino, Olivier Vion

In Nepal:  
Massimo Cadenelli, Marco Bacchelli, Francois Laigle

## Forthcoming sessions

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### **TUNNELLING 4.0: INFORMATION TECHNOLOGY FOR THE DESIGN, CONSTRUCTION AND MAINTENANCE OF UNDERGROUND WORKS**

Date: 03/05/2019 to 04/05/2019

Location: Naples, Italy

#### **TUNNELLING 4.0: INFORMATION TECHNOLOGY FOR THE DESIGN, CONSTRUCTION AND MAINTENANCE OF UNDERGROUND WORKS**

The aim of this course is to highlight some of the most advanced aspects of digital and information technology applications in the design, construction, maintenance and refurbishment of underground works.

The use of BIM in tunnelling will be presented and discussed, providing students with relevant examples from the design to the “as built” model implemented during construction, in addition to BIM use during maintenance and refurbishment of underground infrastructure.

The second key topic of the course is the use of automation and virtual and augmented reality as tools to improve the tunnel construction process.

Advanced technologies available for geotechnical mapping and exploration, surveying and monitoring will be discussed, together with automation applied to equipment used in underground construction and to quality control and assessment processes.

The course is designed to inform designers, site managers, young engineers and university students how the most recent innovations in information technology can be applied to tunnelling and be used to improve design, construction and maintenance processes.

To see the detailed programme and to register, please visit: <http://www.wtc2019.com/conference/itacet-training-course>

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## WTC2019: COMMUNICATION AND STAKEHOLDER ENGAGEMENT

Date: 04/05/2019

Location: Naples, Italy

### TUNNEL DESIGN CONSTRUCTION AND OPERATION: COMMUNICATION AND STAKEHOLDERS ENGAGEMENT

There is growing awareness of the need for efficient communication with the populations and the stakeholders involved in the increasing number of underground projects all over the world. Engaging in dialogue is necessary at all stages of ideation, financing, design, construction and operation.

There has been a considerable rise in sustainability policies and procedures over recent years and communication strategies need to be adapted accordingly, whilst making the most of new media.

This course will provide advanced information on communication techniques and approaches that can be applied to foster interaction amongst stakeholders, through the use of new media. It will explain sustainability assessment procedures with a special focus on underground works. Finally, relevant cases histories and examples of best practices will be presented from all over the world.

To see the detailed programme and to register, please visit: <http://www.wtc2019.com/conference/itacet-training-course>

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## Other events in preparation

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- Nigeria: **"Introduction to tunnelling – From design to construction"** - October 2019
- Malaysia: **(WTC2020) – "Innovations in Tunnelling – Geotechnical Engineering and Project Management"** - 15-16 May 2020
- India: **"Structural use of fibre reinforced concrete in precast segments"** - Date to be confirmed
- Chili: **"Mechanized tunnelling in shafts"** - Date to be confirmed
- Colombia: **"Mechanized Tunnelling"** - Date to be confirmed
- Mexico: **"Underground Urban Facilities"** - Date to be confirmed
- Thailand: **"Risk Management in Underground Hydropower Works"** - Date to be confirmed

Visit the Foundation's web site for further updates.

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# Foundation scholarship recipients

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## FORMER FOUNDATION SCHOLARSHIP RECIPIENT INITIATES YOUNG MEMBERS GROUP IN INDIA



Former Foundation scholarship recipient Sandeep Singh Nirmal is behind the recent initiative to set up the young members group of the Tunnelling Association of India. Here he explains how the group was created and its current activities to date.

“India is a rapidly developing nation with a number of construction activities going on across the country. The huge demand in construction of metros, railways, highways and hydropower projects has resulted in a vast scope for tunnelling. This is providing numerous opportunities for young tunnelling professionals to develop their skills and connect with global industries. To provide a platform for collaboration and development, the President of Tunnelling Association of India (TAI), Dr. Mangu Singh, inaugurated the Young Members group on 21st December 2019 in the General Assembly of TAI.

[Read more...](#)

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## ANOTHER SCHOLARSHIP RECIPIENT GRADUATES!



Congratulations to Sweta Nemani who recently graduated from the Politecnico di Torino in Italy after having been awarded a scholarship from the ITACET Foundation to follow the post-graduate Masters in Tunnels and Tunnel Boring Machines. The Foundation wishes her all the best for her future career!

[Read more...](#)

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## UPDATE FROM OUR SCHOLARSHIP RECIPIENT IN FRANCE



Daniela Zapata from Colombia (pictured third from left), enrolled on the 2018-2019 edition of the Specialized Master's in Tunnels and Underground Structures, run by the ENTPE/INSA in Lyon, France, thanks to a scholarship granted by the ITACET Foundation. Here, she provides us with an update on her experience so far.

[Read more...](#)

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## Other news

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### NEW HEAD OFFICE FOR THE FOUNDATION!

ITACET Foundation has now relocated its Head Office from Lausanne to Geneva!

The transfer has been approved by the Swiss Authorities and is now almost complete. In Geneva, we join ITA-AITES in their office within the 'International Environment House'. This transfer is an exciting move for the Foundation, hopefully allowing us to develop and strengthen our ties with the Nation Members of the ITA.

As such, please note that our new address is now:

ITACET Foundation, c/o ITA-AITES, MIE 2, Chemin de Balexert 9, 1219 Châtelaine, Switzerland

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