ON DEMAND PRESENTATIONS

A LITERATURE REVIEW OF MEDICAL SUPPORT IN CAVE RESCUE AND CONFINED SPACE MEDICINE – IMPLICATIONS IN URBAN UNDERGROUND SPACE DEVELOPMENT.
Dr Jimmy Goh  CGH, Singapore

BEHAVIOUR OF AN UNDERGROUND METRO STATION FOR DIFFERENT CONSTITUTIVE MODELS - A STUDY ON THE INFLUENCE OF MOHR-COULOMB AND OTHER ADVANCED CONSTITUTIVE MODELS USING PLAXIS 2D FOR THE PROPOSED CHENNAI METRO RAIL PHASE 2 PROJECT
Ganesh Deepak  Kanchuboyina AECOM, India

COMPARISON OF ENVIRONMENTAL CONTROL METHODS IN LARGE SCALE URBAN UNDERGROUND PROJECTS
Atte Werneman Forcit Consulting Ltd., Sweden

COST BENEFIT ANALYSIS OF THE ATHENS METRO LINE 3 EXPANSION PROJECT.
Prof Andreas Benardos National Technical University of Athens, Greece
Dr Athanassios Mavrikos National Technical University of Athens, Greece

DESIGN OF UNDERGROUND HIGHWAY RELOCATION TO PROMOTE URBAN REGENERATION IN ATHENS
Prof Andreas Benardos National Technical University of Athens, Greece

EFFECTS OF THE UNDERGROUND DISCHARGE CHANNEL / RESERVOIR FOR SMALL URBAN RIVERS IN TOKYO AREA
Dr Hideo Nakamura Nihon University, Japan

EXPERIENCE IN USING CROSS-WELL TOMOGRAPHY TO ASSESS SOIL STABILIZATION BY INJECTING A SOLUTION
Dr Mikhail Lebedev Research OJSC “NIPII “Lenmetrogiprotrans”, Russian Federation

FIRE SAFETY ISSUES IN UNDERGROUND SPACES: A NEED FOR REGULATORY EVOLUTION – FRENCH, SWISS AND HONG KONG SAR, CHINA (HONG KONG) CONTEXTS
Michel Deffayet Centre d’Etudes des Tunnels, France

RESEARCH ON THE DEVELOPMENT AND UTILIZATION OF UNDERGROUND SPACE IN BEIJING OLD CITY
Prof Xiaodong Shi Beijing institute of urban panning and design, China
Kejie Wu Beijing Municipal Institute of City Planning & Design, China

SIMULATION MODELS FOR URBAN TRANSPORTATION AS INPUT FOR RISK ANALYSIS
Dr Sandra König Austrian Institute of Technology, Austria

STUDY ON PLANNING OF NEW UNDERGROUND RAILWAY & NEW STATION IN THE YAESU-KYOBASHI-NIHONBASHI DISTRICT (PART 2)
Masami Yokotsuka The Urban Underground Space Center of Japan(USJ), Japan

THE DESIGN AND CONSTRUCTION OF A LARGE COMPOSITE SUBWAY STATION IN LIMITED SPACE: AN EXEMPLARY APPLICATION OF OCUE METHOD IN XUZHOU, CHINA
Dr Junzuo He Department of Geotechnical Engineering, Tongji University, China

JACKING PRECISION CONTROL OF PIPE ROOF AND LARGE BOX CULVERT BELOW URBAN EXPRESSWAY-A CASE STUDY OF A LARGE UNDERPASS IN SHANGHAI
Dr Chihao Cheng Tongji University, China

A NEW SOLUTION TO THE CONSTRUCTION OF UNDERGROUND METRO STATIONS IN DENSE URBAN AREAS IN SOFT GROUND: CONSTRUCTION COMBINATION OF OPEN-CUT SHAFTS WITH QUASI-RECTANGULAR JACKING BOXES
Yifeng Yang Department of Geotechnical Engineering, Tongji University, China

WATERPROOFING DESIGN FOR BURIED DECKS
Ben Hickman CSSW.LONDON, United Kingdom

RYAZANSKAYA TRANSIT ORIENTED DEVELOPMENT, MOSCOW RUSSIA
Dr Stefano Ceccotto Geodata SPA, Italy

STUDY ON THE DISTRIBUTION OF SULFUR-BEARING FORMATIONS IN THE SICHUAN BASIN AND ITS DAMAGE TO TUNNEL ENGINEERING
Prof Peidong Su Southwest Petroleum University, China

SPATIAL ACCESSIBILITY AND FUNCTIONAL LAYOUT IMPACTS ON URBAN UNDERGROUND SPACE DEVELOPMENT: A CASE STUDY OF SHANGHAI
Yun-Hao Dong Research Center for Underground Space and Department of Geotechnical Engineering, Tongji University, China

UNDERGROUND HEAT STORAGES
Arto Wegelius AFRY Finland Oy, Finland

PRINCIPLES OF THE INTEGRATED DEVELOPMENT OF MOSCOW CITY UNDERGROUND SPACE
Prof Dmitry Koniukhov JSC Mosinzhproekt, Russian Federation
## Wednesday February 3

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<thead>
<tr>
<th>Time</th>
<th>Session 1 Architecture</th>
<th>Session 2 City Development 1</th>
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<tbody>
<tr>
<td>9:00</td>
<td>OPENING &amp; WELCOME WORDS</td>
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<td>9:05</td>
<td>WELCOME WORDS FROM ACUUS</td>
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<td>9:15</td>
<td>WELCOME WORDS FROM CITY OF HELSINKI</td>
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<td>9:30</td>
<td>KEYNOTE 1 - PETER VESTERBACKA</td>
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<td>9:50</td>
<td>KEYNOTE 2 - TUOMAS SILVENNOINEN</td>
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<td>10:00</td>
<td>BREAK</td>
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**SESSION 1 ARCHITECTURE**

**STREAM 1** 11.00-12.00 CHAIR: Pia Selroos

10:45 DESIGN FRAMEWORK FOR LIGHTING AND OCCUPATIONAL WELL-BEING IN UNDERGROUND SPACES  
Dr Henriik Pihlajaniemi  
Oulu School of Architecture, University of Oulu, Finland

11:00 A SPATIAL PROTOTYPE OF NATURAL VENTILATION IN UNDERGROUND PUBLIC SPACES COMBINING COURTYARD WITH WIND TOWER  
Dr Tueming Wen  
Southeast University, School of Architecture China

11:15 THE IMPLICATIONS OF TECHNOLOGICAL PROGRESS IN ARCHITECTURAL THINKING: THE FUTURE IMPOSSIBILITY FOR AN ARCHITECTURE OF HIDING  
Julian Beqiri  
Architect at OMA (Office for Metropolitan Architecture) Rotterdam, Netherlands

11:30 THE IMPLEMENTATION OF NETWORK GOVERNANCE FOR SUSTAINABLE URBAN UNDERGROUND USAGE, A COMPARATIVE ANALYSIS OF THE CASE STUDIES OF THE CITIES OF RIO DE JANEIRO, BRAZIL AND HELSINKI, FINLAND.  
Luis Carlos Mestrinho  
MSc. Bartlett School of Planning, UCL, United Kingdom

11:45 WILLINGNESS TO WALK IN UNDERGROUND SPACE – EVIDENCE FROM SINGAPORE  
Dr John Zacharias  
Peking University, China

12.00-12.30 BREAK

**SESSION 3 SAFETY AND HUMAN FACTORS 1**

**STREAM 1** 12.30 -13.30 CHAIR: Janne Lehto

12.30 CONSTRUCTION OF UNDERGROUND SERVICE TUNNELS AS PART OF DISASTER MANAGEMENT  
Nanami Suzuki  
The Urban Underground Space Center of Japan(USJ), Japan

12.45 RESILIENCE OF UNDERGROUND PEDESTRIAN SYSTEM: A NEW APPROACHES THROUGH NETWORK ANALYSIS  
Dr Zhiwei Zhao  
Research Center of Underground Space, Army Engineering University of PLA, China

13.00 CAVERN FIRE SAFETY – OVERVIEW OF REQUIREMENTS AND PRAGMATIC SOLUTIONS IN HONG KONG  
Wai Hon Tsang  
Geotechnical Engineering Office, Hong Kong

13.15 ENHANCING UNDERGROUND DEVELOPMENT USERS’ HEALTH THROUGH FACILITIES MANAGEMENT: A STUDY OF THE UNDERGROUND METRO SYSTEM IN HONG KONG  
Dr Isabelle Chan  
University of Hong Kong

13.30-14.00 BREAK

**SESSION 4 ITACUS SESSION PLANNING FOR SUSTAINABLE UNDERGROUND SPACES**

**STREAM 2** 12.30 -13.30 CHAIR: Han Admiraal and Antonia Comaro

12.30 CONSTRUCTION OF UNDERGROUND SERVICE TUNNELS AS PART OF DISASTER MANAGEMENT  
Nanami Suzuki  
The Urban Underground Space Center of Japan(USJ), Japan

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Dr Isabelle Chan  
University of Hong Kong
SESSION 5 TECHNICAL APPROACHES AND INNOVATIONS

14:00 INNOVATIONS OF THE SERIES TECHNOLOGIES OF SELF-ADVANCING MACHINE IN SOIL AND THEIRS APPLICATION PROSPECT
Prof. Lu Qingguo, Beijing University of Technology, China

14:15 A NON-INVASIVE GROUNDWATER FLOW DETECTION BEHIND SHORTCRETE SURFACES BY MEANS OF THERMOGRAPHIC MEASUREMENTS.
Arend Oudman, City of Helsinki, Finland

14:30 OPPORTUNITIES AND CHALLENGES IN THE DIGITALIZATION OF THE TUNNEL BLASTING OPERATION
Hector Parra, Forcit International, Finland

14:45 DIAGNOSTICS OF CONDITION OF SOIL LYING IN THE FOUNDATION OF SEWER COLLECTORS AND METRO TUNNELS BY CROSSHOLE SOUNDING METHOD IN URBAN UNDERGROUND SPACE
Dr. Aleksei Arkhipov, “Geodiagnostika” LLC, St. Petersburg, Russian Federation

15:00 INFLUENCE OF THE DEEP PIT CONSTRUCTION ON A SETTLEMENTS OF SURROUNDING BUILDINGS
Prof. Ilizar Mirsayapov, Kazan State University of Architecture and Engineering, Russian Federation

15:15 IMPROVING TUNNELING LONG-TERM DRILL AND BLAST PRODUCTIVITY
Jouko Muona, Sandvik Mining and Rock Solutions, Finland

15:30 - 16:00 BREAK

SESSION 6 UNDERGROUND INFRASTRUCTURES

STREAM 2 14:00 - 15:15 CHAIR: Mikael Rinne

14:00 AN EDGE-COMPUTING-BASED SENSING SYSTEM FOR TUNNEL AND UNDERGROUND SPACE RISKS
Raida Huang, Tongji University & Shanghai Municipal Engineering Design Institute (Group) Co., Ltd., China

14:15 RENOVATION MODE FOR GROWING UNDERGROUND PEDESTRIAN SYSTEM WITHIN STATION AREA: A CASE STUDY OF SHANGHAI JING’AN TEMPLE STATION
Ziyun Zhang, Tongji Research Center for Underground Space, Tongji University, China

14:30 DEFORMATION CHARACTERISTICS OF SEDIMENTARY ROCK DUE TO CONTINUOUS CHANGES OF MOISTURE CONTENT IN WETTING PROCESS
Dr. Yota Togashi, Saitama University, Japan

14:45 INTEGRATION OF 3D MODELS OF STRUCTURES AND GEOLOGICAL COMPOSITION AS AN UNDERGROUND INFRASTRUCTURE MODEL
Toshiaki Haleda, JGC Japan Corporation, Japan

15:00 UNDERGROUND URBANISM - PLANNING IN 3D
Elizabeth Reynolds, MRTPI, United Kingdom

15:15 INITIATIVES FOR FORMATION AND EFFECTIVE UTILIZATION OF UNDERGROUND PEDESTRIAN NETWORKS IN JAPAN
Yuji Tsutsui, Ministry of Land, Infrastructure, Transport and Tourism, Japan

15:30 MAPPING OF UNDERGROUND SERVICE SPACE IN THE CENTER OF HELSINKI
Arend Oudman, City of Helsinki, Soil and Bedrock Unit, Finland

15:45 UNDERGROUND URBANISM IN THE U.S.
Dr. Priscilla Nelson, Colorado School of Mines, United States

16:00 UNDERGROUND URBANISM FOR DEVELOPED AND DEVELOPING COUNTRIES IN OUR MODERN HISTORY
Dr. AMY HUANQING LI, ACUUS, Canada

16:45 RE-PROMOTING SUSTAINABLE UNDERGROUND URBANIZATION FOR DEVELOPED AND DEVELOPING COUNTRIES IN OUR MODERN HISTORY
Dr. K. N. GUNALAN, Asce President 2020

17:00 17.00 - 17.30 BREAK
THURSDAY FEBRUARY 4

SESSION 10 KEYNOTE SESSION

9:00 KEYNOTE 5 - JIAN WANG
Shenzhen Chegongmiao Integrated Underground Traffic Hub Project

9:30 KEYNOTE 6 - ROSS DIMMOCK
Smart technologies for creating urban underground spaces

SESSION 11 URBAN PLANNING 2

10.30 A FEASIBILITY STUDY OF URBAN UNDERGROUND LOGISTICS SYSTEM - A CASE STUDY OF SHANGHAI
Dr Bin Lu, Shanghai Municipal Engineering Design Institute (Group) Co., Ltd., China

10:45 EVALUATION OF SPATIAL PERFORMANCE OF URBAN UNDERGROUND PUBLIC SPACE: A CASE STUDY OF WUJIAOCHANG SUB-CENTER IN SHANGHAI
Chen-Xiao Ma, Research Center for Underground Space and Department of Geotechnical Engineering, Tongji University, China

SESSION 12 PERSPECTIVES

10:30 STUDY ON THE MANDATORY STANDARD OF URBAN UNDERGROUND SPACE CONSTRUCTION
Dr Yiqun Fan, Shanghai Municipal Engineering Design Institute (Group) Co., Ltd., China

10:45 VISUALIZATION OF 3D ROCK MASS PROPERTIES IN UNDERGROUND TUNNELS USING EXTENDED REALITY
Dr Mateusz Janiszewski, Aalto University, School of Engineering, Finland

SESSION 13 DESIGN PARTNERED BY SESSION 14 GEOTHERMAL ENERGY

12:15 ENVIRONMENTALLY DRIVEN TUNNELLING IN FINLAND, TURKU WASTEWATER TREATMENT PLANT OUTLET INCREASE
Guido Nuijten, AFRY Finland Oy, Finland

12:30 SUB SEA TUNNEL LINKING FÖGLÖ WITH THE MAIN CITY MARIEHAMN IN ÅLAND
Prof Eivind Grov, SINTEF, Norway

12:45 DISPLACEMENT OF 'SLURRY WALL' IN THE COURSE OF SUBWAY STATION CONSTRUCTION ON THE WATER-BORNE TERRITORY ACCORDING TO ‘TOP-DOWN’ TECHNOLOGY
Dr Mikhail Lebedev, OJSC "NIPII "Lenmetrogiprotrans", Russian Federation

13:00 ROAD TUNNEL CONSTRUCTION UNDER LIIPOLA DISTRICT IN VT12 LAHTI SOUTHERN BYPASS -PROJECT
Olli Salo, AFRY Finland Oy, Finland

13:15 PREDICTION OF BLAST-INDUCED GROUND VIBRATIONS WITH THE USE OF ARTIFICIAL NEURAL NETWORKS: A CASE STUDY IN GREECE
Zannis Xenios, National Technical University of Athens, Greece

13:30 LOCAL GEOTHERMAL LOW TEMPERATURE HEATING NETWORKS – CARBON NEUTRAL FUTURE OF DISTRICT HEATING
Mikael Maksimow, QHeat, Finland
### Session 15 Sustainability and Environment

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<tr>
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<tbody>
<tr>
<td>14:15</td>
<td><strong>Seasonal Underground Storage of Solar Thermal Energy</strong></td>
<td>Dr Mateusz Jamieson, Aalto University, Finland</td>
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<td>14:30</td>
<td><strong>Underground Green Farming</strong></td>
<td>Klaus Wachter, SCAUT Association, Switzerland</td>
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<td>14:45</td>
<td><strong>Cargo Sous Terrain – An Intelligent Logistic Solution for Our Cities</strong></td>
<td>Dr Hans-Martin Braun, AFRY Switzerland Ltd., Switzerland</td>
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<td>15:00</td>
<td><strong>Hydrogeology and Hydrogeochemistry in Planning of Underground Facilities</strong></td>
<td>Anneli Wichmann, AFRY Finland Oy, Finland</td>
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<td>15:15</td>
<td><strong>Sustainable Underground Operations – Thoughts on Battery Electric Vehicles in Tunnelling</strong></td>
<td>Panu Rajikonen, NORMET OY, Finland</td>
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<td>15:30</td>
<td><strong>Carbon Footprint in Rock Construction Project</strong></td>
<td>Jyrki Lilja, YIT Suomi Oy, Finland</td>
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<td>15:45</td>
<td><strong>Parameters that Affect Tenability Conditions During Fire Emergency in Metro Tunnels</strong></td>
<td>Despoina Papakonstantinou, National Technical University of Athens, Greece</td>
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<td><strong>Role of Fan Control Technologies in Safe, Reliable and Energy Efficient Tunnel Ventilation</strong></td>
<td>Maria Fedorovich, AFR, Finland</td>
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### Session 16 Reuse of Underground Spaces

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<tr>
<td>14:15</td>
<td><strong>Development of Public Spaces Affected by the Development of Underground Spaces: A New Method to Improve Living Standards in Tehran Metropolis</strong></td>
<td>Mohammad Mahdi Safaee, ACUUS Iran, Islamic Republic of</td>
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<tr>
<td>14:30</td>
<td><strong>Underground Heat Mine – Potential for Large Scale Production and Storage of Co2-Free Thermal Energy</strong></td>
<td>Dr Lasse Ahonen, Geological Survey of Finland, Finland</td>
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<td>14:45</td>
<td><strong>The Effects of Predesign on Reusable Underground Spaces in an Urban Context</strong></td>
<td>Ville Annila, Kalliosuunnittelu Oy Rockplan, Finland</td>
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<td>15:00</td>
<td><strong>Savilahit Underground Sport and Event Center</strong></td>
<td>Veera Tasapuro, AINS Group, Finland</td>
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<td>15:15</td>
<td><strong>Significant Role of the Underground World in Helsinki Energy Transition</strong></td>
<td>Jouko Kivirinne, Helen LTD, Finland</td>
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<td>15:30</td>
<td><strong>The Onset of Underground Urban Planning in Flanders</strong></td>
<td>Shana Debrock, Department of Design Sciences University of Antwerp, Belgium</td>
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### Session 17 Urban Planning 3

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<th>Time</th>
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<tbody>
<tr>
<td>16:15</td>
<td><strong>Mapping Subsurface Qualities for Planning Purposes: A Pilot Study</strong></td>
<td>Dr Jenny Norman, Chalmers University of Technology, Sweden</td>
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<tr>
<td>16:30</td>
<td><strong>Underground Master Plan of the City of Helsinki</strong></td>
<td>Pasi Rajala, City of Helsinki, Finland</td>
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<tr>
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### Session 18 Safety and Human Factors 2

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<td>16:15</td>
<td><strong>Underground Rescue 2019 - 2022</strong></td>
<td>Risto Mäkeläinen, Callio Underground Rescue, Finland</td>
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<tr>
<td>16:30</td>
<td><strong>Computer Modeling Analysis of Metro Ticket Gates Impact to Evacuation Procedures</strong></td>
<td>Despoina Papakonstantinou, National Technical University of Athens, Greece</td>
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### Closing Session

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<tr>
<td>16:45</td>
<td><strong>Keynote 7 - Janet Benini</strong></td>
<td>Sustained Transportation Operations During Pandemic</td>
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<td>17:00</td>
<td><strong>Keynote 8 - Dimitris Kaliampakos</strong></td>
<td>ACUUS 2023 Announcement and Closing Words</td>
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