FIG Working Week 2023

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers

Comm. 6 Annual Meeting

Engineering Surveying

Werner Lienhart, Chair of FIG Commission 6

Vassilis Gikas, Vice-Chair of FIG Commission 6

Organized By NSPS FIG INTERNATIONAL FEDERATION OF SURVEYORS

Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

Commission 6 Activities at Working Week: Part 1

- Saturday/Sunday
  - Workshop: Uncertainty and Quality of Multi-Sensor Systems
- Monday
  - Sessions TS01F, TS02F: Surveying by Drones
  - Session TS02G: Combining Positioning and Sensing Systems

Commission 6 Activities at Working Week: Part 2

- Tuesday
  - Session TS05I: Applications of Lidar in Engineering Geodesy
  - FIG Comm. 6 Annual Meeting
  - Joint Comm. 4, 5, 6, 7: Dinner
- Wednesday
  - Session TS09I: Assessment and Control of Critical Civil Infrastructure

Joint Commission 4, 5, 6, 7 Dinner

- Tuesday
- Restaurant Lisbon
- 7600 Dr. Phillips Boulevard, Suite 12 Orlando
- Start at 7 pm, arrival as soon as 6 pm
- Separate Checks
- Enrolment at conference reception desk

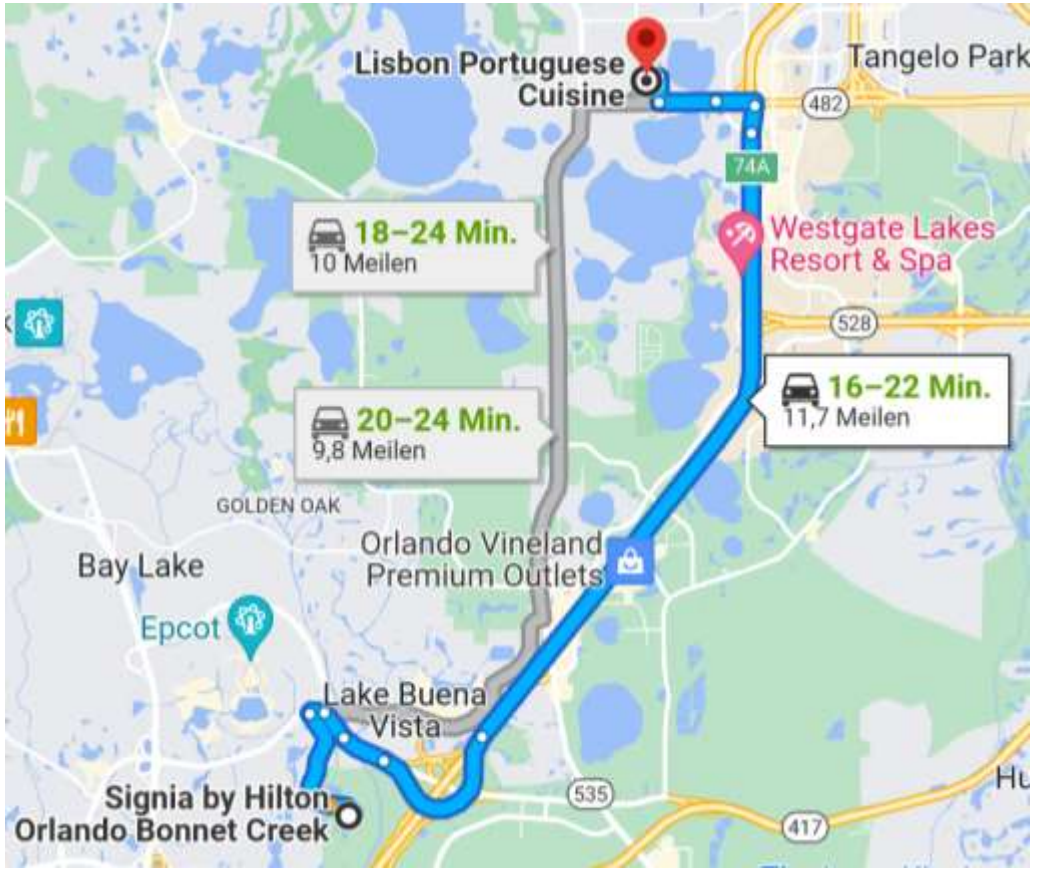
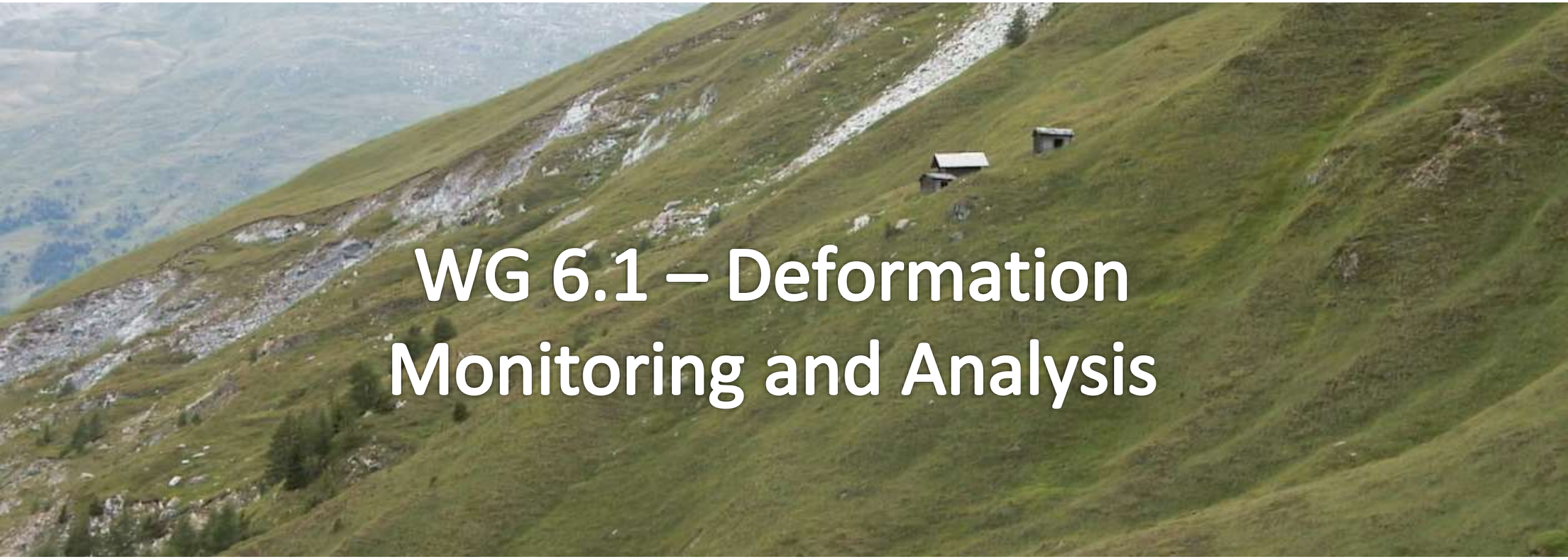


FIG Working Week 2023
28 May - 1 June 2023 Orlando Florida USA
Protecting Our World, Conquering New Frontiers



WG 6.1 – Deformation Monitoring and Analysis

Organized By NSPS FIG INTERNATIONAL FEDERATION OF SURVEYORS
Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

Working Group 6.1 Deformation Monitoring and Analysis

- Chair: Wolfgang Niemeier
  - University Professor
  - Technische Universität Braunschweig, Germany

- Co-Chair: Corinna Harmening
  - University Professor
  - Karlsruhe Institute of Technology, Germany

Working Group 6.1 Deformation Monitoring and Analysis

- Goals
  - Promoting studies on the potential of existing and new sensors to determine geometric deformation quantities for structural and geotechnical objects.
  - Promoting the adaptation of modern numerical concepts and algorithms to derive relevant deformation quantities in real time, including machine learning, artificial neural networks and fuzzy logics.
  - Investigate and adopt modern analysis techniques (Big Data, IoT, etc) to cope with huge volume data, arising from large numbers of low-cost sensors
  - Promoting multidisciplinary cooperation with structural and geotechnical experts

Working Group 6.1 Deformation Monitoring and Analysis

- Activities
  - 2023: Collaboration in Scientific Workshop on Uncertainty and Quality of Multi- Sensor Systems at FIG Working Week 2023
  - 2024: Preparation of guidelines on IoT sensors and Machine Learning in Engineering Surveying
  - 2025: 6th Joint International Symposium on Deformation Monitoring (JISDM), to take place 7-9 April 2025 in Karlsruhe, Germany

FIG Working Week 2023
28 May - 1 June 2023 Orlando Florida USA
Protecting Our World, Conquering New Frontiers

WG 6.2 – Dynamic Structural Monitoring

Organized By NSPS FIG International Federation of Surveyors
Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

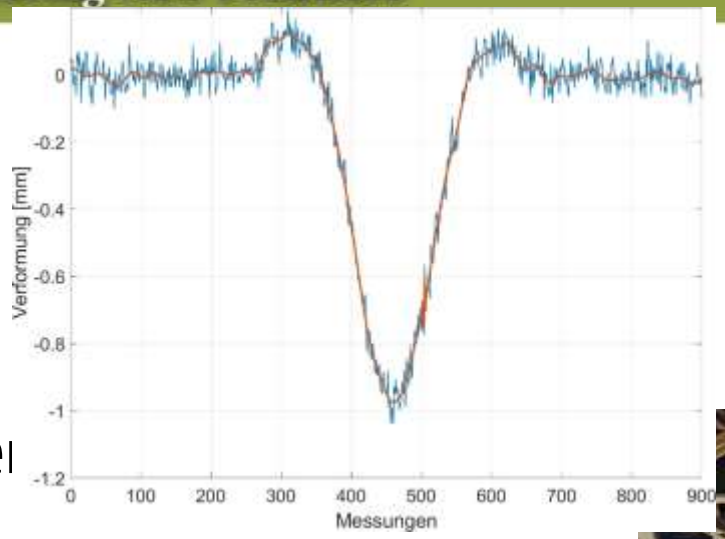
Working Group 6.2 – Dynamic Structural Monitoring

- Chair: Dr. Panos Psimoulis
  - Associate Professor in Geospatial Engineering at Nottingham Geospatial Institute, University of Nottingham
  - Research interests: structural and ground deformation monitoring using GNSS and other modern geodetic techniques
- Co-Chair: Prof. Florian Schill
  - Professor for Engineering Surveying at the University of Applied Sciences Mainz
  - Research interests: (dynamic) monitoring, profile laser scanning, time series analysis, wavelet transformation

Working Group 6.2

Goals

- Initiate studies of application of modern geodetic/surveying techniques (GNSS, profile laser scanning, cameras) in monitoring of dynamic response of civil engineering structures
- Focus on advanced methods and data analysis of geodetic time-series
- Test and push the performance of the geodetic/surveying instruments



Working Group 6.2

Activities

- Initiate collaborations within geodetic/surveying society
- Run workshop/summer school in monitoring of dynamic response of civil engineering structures
- Develop best practice guidelines for monitoring dynamic structural response
- Publications in surveying/civil engineering journals

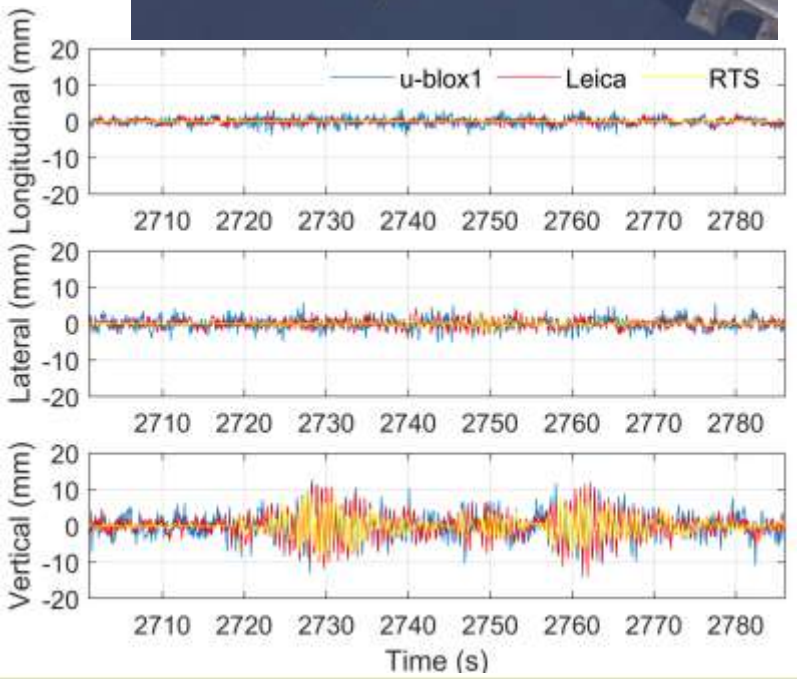


FIG Working Week 2023
28 May - 1 June 2023 Orlando Florida USA
Protecting Our World, Conquering New Frontiers

WG 6.3 – Applications of immersive technologies in Engineering Geodesy

Organized By NSPS FIG International Federation of Surveyors
Diamond Sponsors esri THE SCIENCE OF WHERE Trimble

Working Group 6.3 Applications of Immersive Technologies in Engineering Geodesy

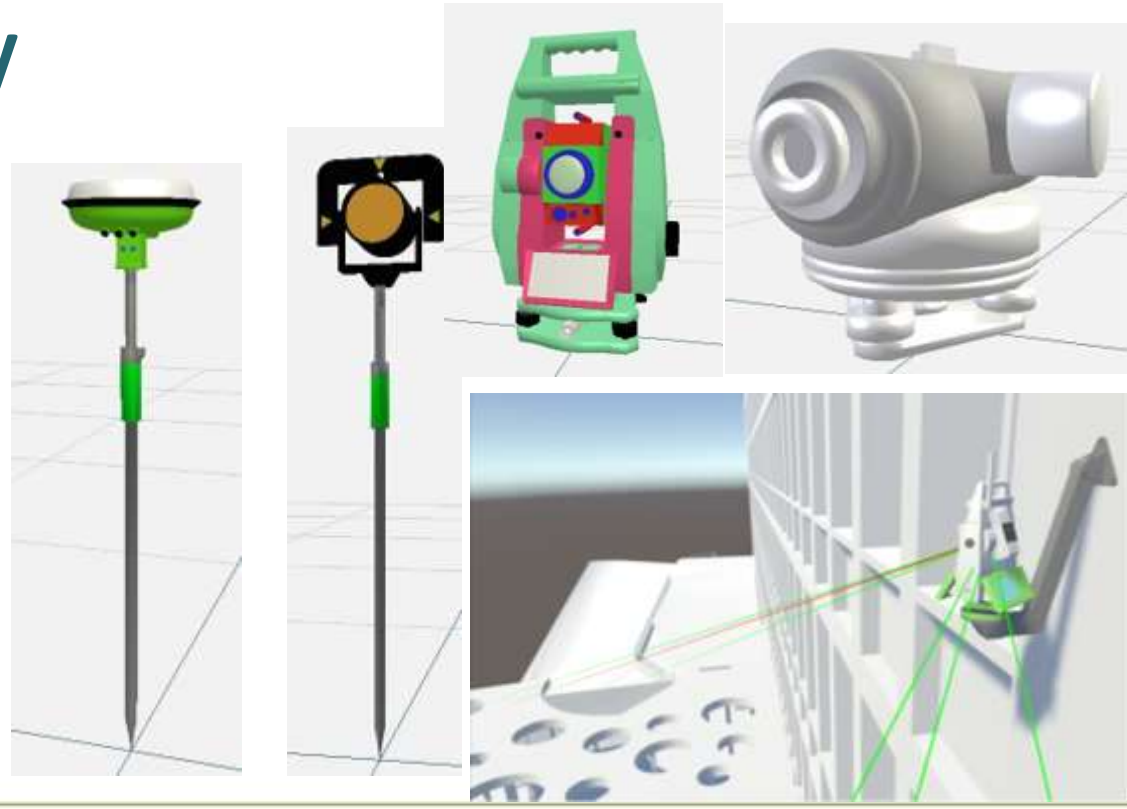
- Chair: Peter Bauer
  - University Assistant & Member of the FIG Young Surveyors Network
  - Graz University of Technology, Austria
  - peter.bauer@tugraz.at
- Co-Chair: Dimitrios Bolkas
  - Associate Professor
  - Pennsylvania State University, Wilkes-Barre Campus, USA
  - dxb80@psu.edu

Working Group 6.3 Applications of Immersive Technologies in Engineering Geodesy

- Goals
  1. Connect surveying experts interested in immersive technologies
  2. Establish a database of geodetic models needed for relevant applications
  3. Derive best practice examples

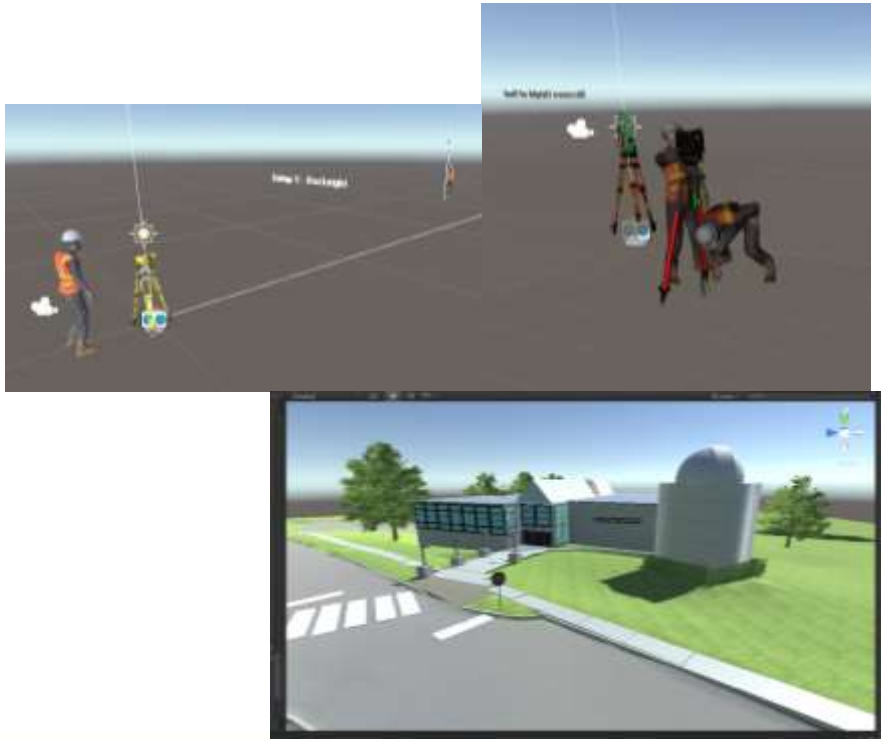
Working Group 6.3 Applications of Immersive Technologies in Engineering Geodesy

- Activities
  - Establish a platform where AR/VR/MR objects, e.g. 3D models of total stations can be shared
  - Collection of AR/VR/MR related publications; published in a joint paper
  - Creation of simple geodetic virtual application for sharing and demonstration purposes



Working Group 6.3 Applications of Immersive Technologies in Engineering Geodesy

- Timetable
  - **2023: Kick-off**, Search for interested parties, definition of AR/VR/MR catalogue
  - **2024:** Virtual workshop I: Catalogue filled with elements, and topic of VR application is set
  - **2025:** Virtual workshop II: Catalogue is made accessible, and VR application is published
  - **2026:** Reporting and finalisation, Joint paper



Working Group 6.3 Applications of Immersive Technologies in Engineering Geodesy

- Goal 1: Connecting surveying experts interested in immersive technologies
  - Matthew O'Banion – West Point, USA
  - Thomas Kersten – HafenCity Universität Hamburg, Germany
  - Allan Ng – Cal Poly Pomona, USA
  - Eugene Levin - Meharry Medical College, USA
  - Jörg Blankenbach – RWTH Aachen University, Germany
  - Schotte Wolfgang – LKA Stuttgart, Germany
  - **Anyone else interested? You are welcome to join!**