

Commission 6

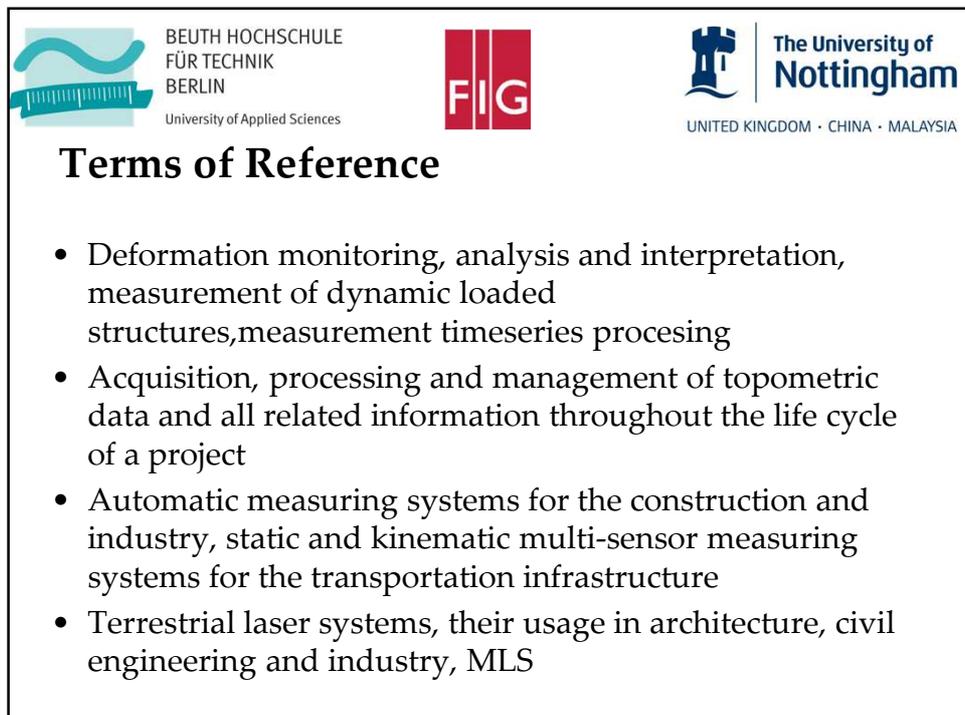
Engineering Surveying
Dr. Ivo Milev Berlin Chair elect

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Professor Gethin Wyn Roberts
Chairman Commission 6
Dean of Science and Engineering
The University of Nottingham Ningbo, China
格辛·温·罗伯茨 教授
理工学院院长

FIG



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FIG

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Terms of Reference

- Deformation monitoring, analysis and interpretation, measurement of dynamic loaded structures, measurement timeseries procesing
- Acquisition, processing and management of topometric data and all related information throughout the life cycle of a project
- Automatic measuring systems for the construction and industry, static and kinematic multi-sensor measuring systems for the transportation infrastructure
- Terrestrial laser systems, their usage in architecture, civil engineering and industry, MLS



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Mission Statement

- Implementation of innovative technologies and modernization of the engineering surveys processes of data acquisition, processing, interpretation and quality control but also the epoch by epoch data management and analysis of the engineering object condition changes as important part of the maintenance and emergency situation alert.



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- Vice Chairs for Administration
- Dr Craig Hancock, The University of Nottingham, UK
- Dr Lawrence Lau, The University of Nottingham Ningbo China



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- WG6.1 Deformation Monitoring and Analysis (Prof W. Niemeier)
- WG6.2 Engineering Surveys for Construction Works and Structural Engineering (Joel Van Cranenbroeck)
 - Study Group 6.2.2 Laser Scanners (Joint with Commission 5, Commission 6 has lead)
 - Study group 6.2.5 Railway Surveying Techniques
- WG6.3 Machine Control and Guidance (H VadJensen)
- WG6.4/5.5 Ubiquitous Positioning Systems (Dr A Kealy, Dr G Rechster)



TECHNET
technet-rail 2010 GmbH

FIG

Introduction

Application Groups - focus engineering surveying

- Linear Objects
 - Roads
 - Railways
 - Pipelines
 - Power lines
 - Harbor and river engineering objects scanned from the water side
- Construction work - buildings
- Industry

Other

- Cultural heritage
- Mining

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Monitoring and Deformation analysis



Image by Joel van Cranenbroeck

Leica
Geosystems

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NY Metro NY_63_Street



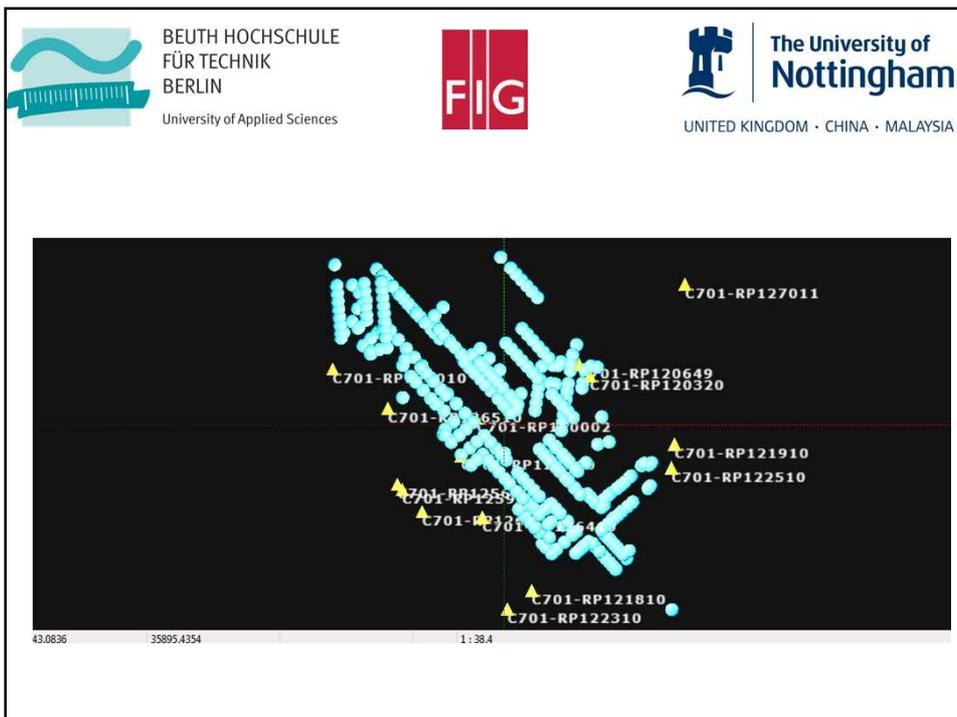
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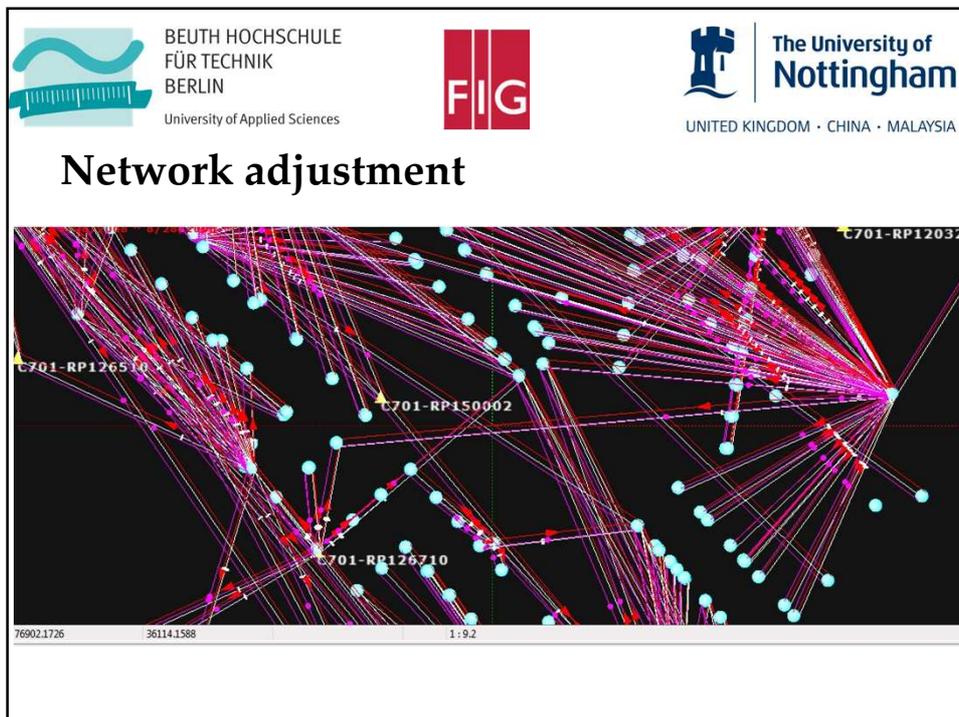
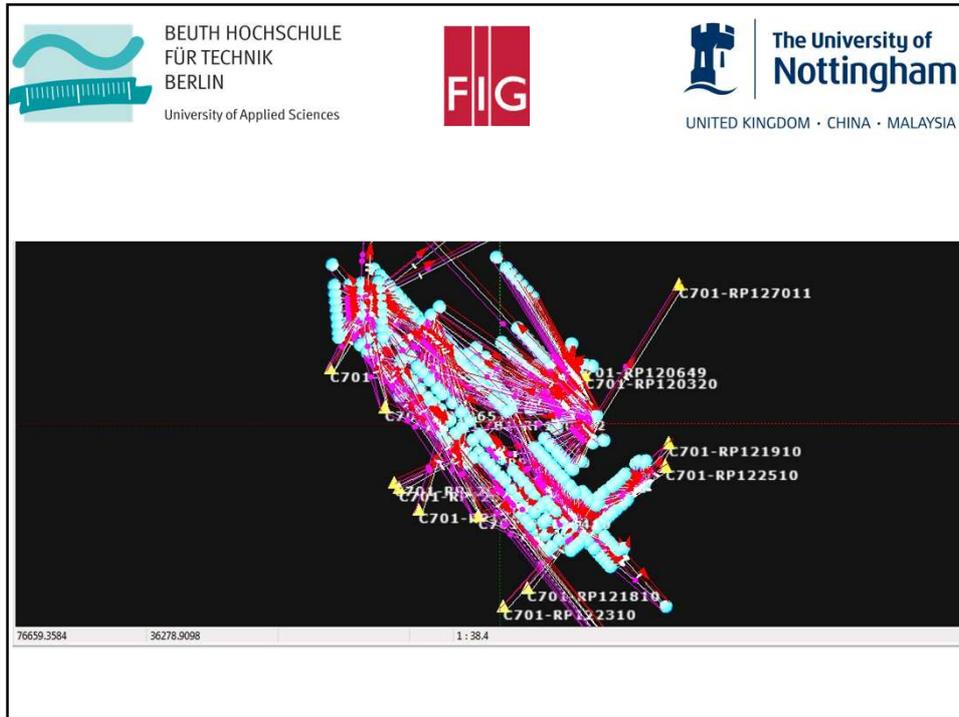
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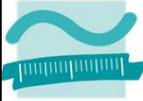
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Laser scanner based monitoring



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Scanning Complex

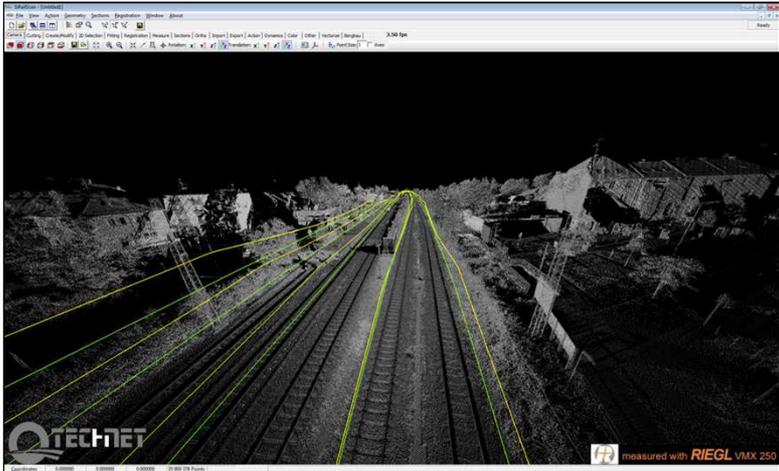


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as - built documentation

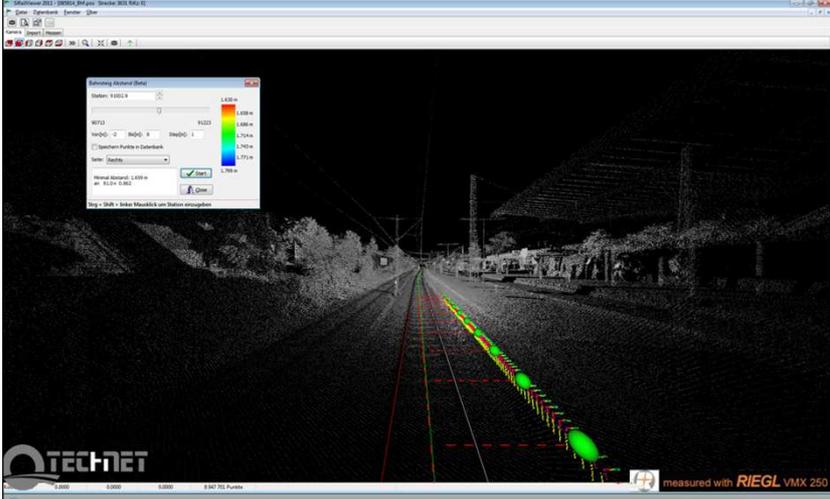


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Limit check and Clearance

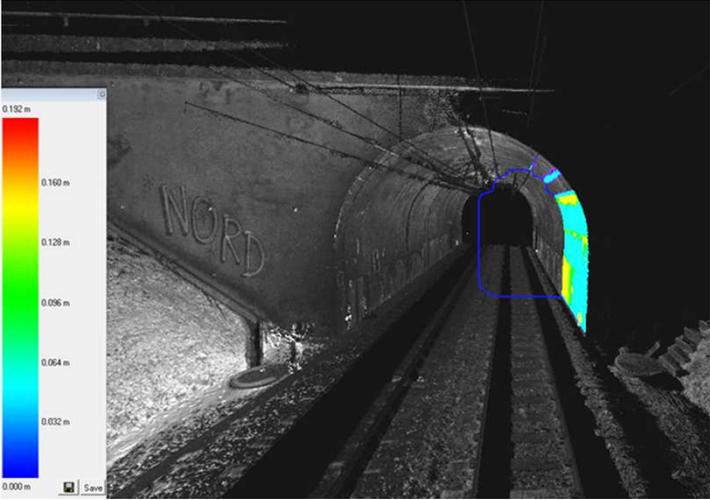


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Clearance





Lynx Mobile Mapper system MLS

- High end



Application for the data synchronization - road

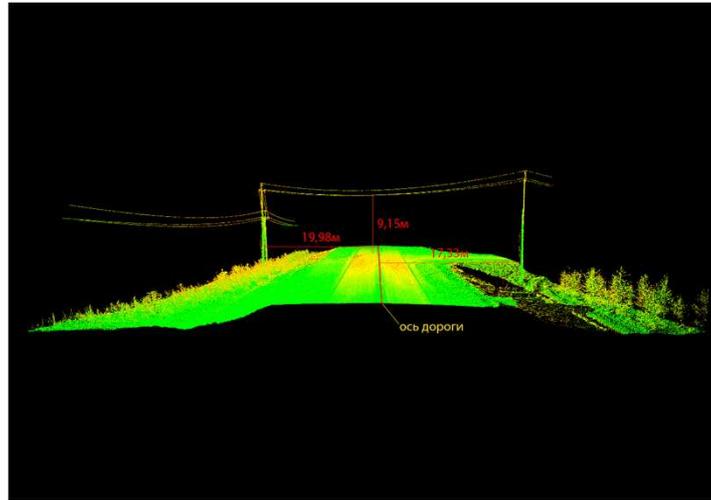
Kinematic
system

- Roads

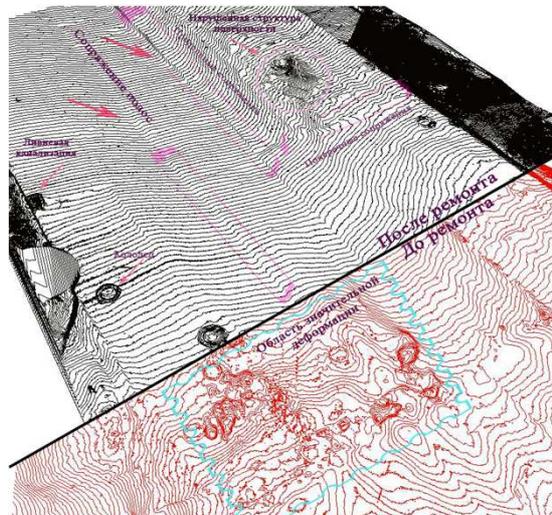


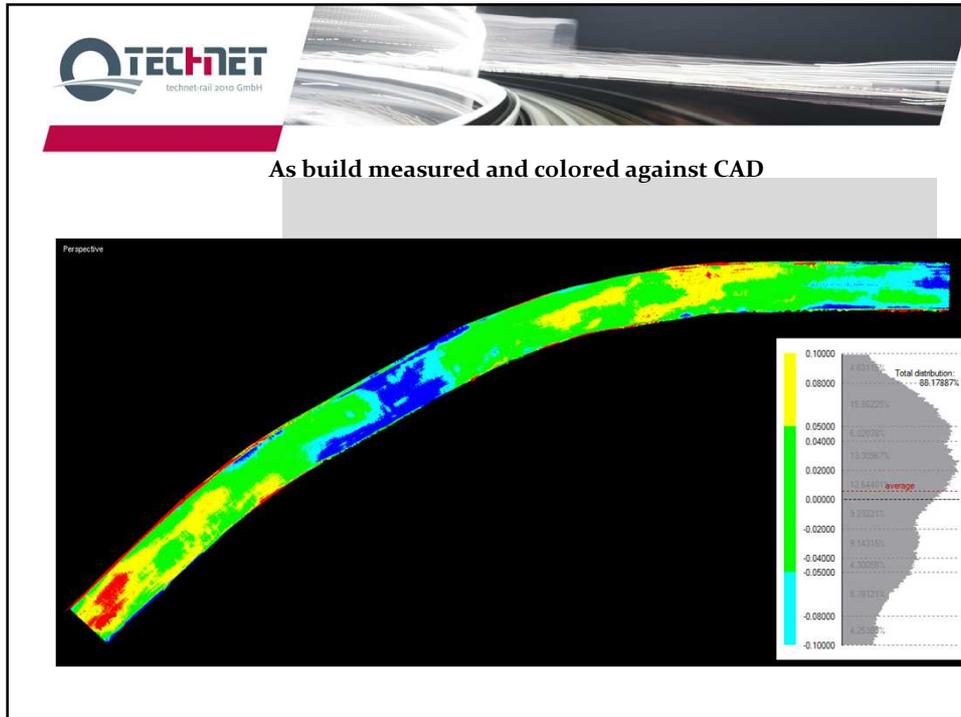


Clereance



Inconsistencies in the roadway deck



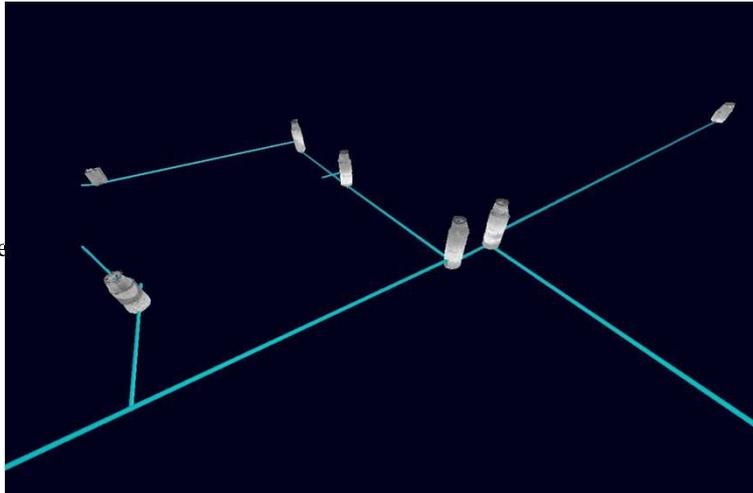





Linear Objects Infrastructure

Parameter calculation

Slopes of the pipes

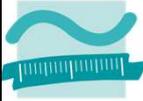



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- **Events**
- Nov 2011 – WG6.1, Hong Kong
- 2011 Marrakech, Ulaanbaatar, Novosibirsk, Kazakhstan
- 2012 Novosibirsk
- Nov 2012, Kazakhstan, Uruguay
- Nov 2012, WG6.2 Hong Kong
- June 2013 Philippines
- 2013 Nigeria
- July 2013 Ningbo China with Young Surveyors
- 2013 6.1 Deformation Monitoring, UK



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- **Rome 2012**
 - TS01F - Dam and Reservoir Engineering Surveying
 - TS01L - Mining and Underground Engineering Surveying I
 - TS02F - Engineering Surveying – Photogrammetry
 - TS03F - Deformation Monitoring I
 - TS04F - Deformation Monitoring II
 - TS05J - Mining and Underground Engineering Surveying II
 - TS06G - Engineering Surveying, Machine Control and Guidance
 - TS07A - Laser Scanners I
 - TS07M - Remote Sensing Applications and Case Studies
 - TS08C - Laser Scanners II
 - TS09D - Laser Scanners III
 - TS09I - Engineering Surveying
 - TS05H - Remote Sensing I
 - TS06I - Remote Sensing II
 - TS08B - The Impact of Earthquakes and Geodynamics on Geodetic Reference Frames



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- **Contact**
 - Ivo.milev@technet-rail.de
 - Ivo.milev@beuth-hochschule.de