













## Course Schedule

7-8-9 June 2016 | Poppi, Tuscany (Italy)

### Tuesday, 7 June, 2016

	Registration and networking time with coffee, tea and snack	8:00-9:00	
	A.1 Welcome and Introduction	9:00-9:20	John Dunicliff & Paolo Mazzanti
	A.2 Overview of Monitoring – Part 1 <ul style="list-style-type: none"> <li>– Why do we need to “monitor”?</li> <li>– What do we measure?</li> </ul>	9:20-9:40	John Dunicliff
	A.3 Overview of Monitoring – Part 2 <ul style="list-style-type: none"> <li>– Remote vs contact monitoring</li> <li>– Long term vs short term monitoring</li> <li>– Continuous vs periodic monitoring</li> <li>– Monitoring equipment vs monitoring network</li> </ul>	9:40-10:00	Paolo Mazzanti
	A.4 Introduction of Participants and Exhibitors	10:00-10:30	John Dunicliff (moderator)
	Coffee Break	10:30-11:00	
	A.5 Welcome Addresses from Supporters	11:00-11:15	Paolo Mazzanti (moderator)
	A.6 Systematic Approach to Planning Monitoring Programs, Illustrated by a Deep Excavation in a City	11:15-12:20	John Dunicliff
	B.1 Introduction to Contact Systems <ul style="list-style-type: none"> <li>– Paper on your memory stick</li> <li>– What the lectures will cover</li> <li>– Sources of information</li> </ul>	12:20-12:45	John Dunicliff
	Lunch Break	12:45-14:00	
	B.2 Vibrating Wire Piezometers: Guidelines and Lessons Learned <ul style="list-style-type: none"> <li>– Overview</li> <li>– Installation methods</li> <li>– Installation demonstration</li> <li>– Data reduction</li> <li>– Troubleshooting</li> <li>– Lessons learned</li> <li>– 5 minutes Q&amp;A</li> </ul>	14:00-14:45	Tony Simmonds


 Sessions “A”: Basic Concepts of Geotechnical and Structural Monitoring

 Sessions “B”: Contact Monitoring

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|  <p><b>B.3 Monitoring, Load, Strain and Total Stress: Guidelines and Lessons Learned</b></p> <ul style="list-style-type: none"> <li>- Load cells</li> <li>- Surface strain gauges</li> <li>- Embedment strain gauges</li> <li>- Hydraulic total pressure cells</li> <li>- Membrane total pressure cells</li> <li>- Innovative sensors for total pressure monitoring</li> <li>- Lessons learned</li> <li>- Case histories</li> <li>- 5 minutes Q&amp;A</li> </ul> | 14:45-15:30 | Giorgio Pezzetti |
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Coffee Break

15:30-16:00

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|  <p><b>B.4 Fiber Optics - Distributed Strain Sensors and Fiber Bragg Grating</b></p> <ul style="list-style-type: none"> <li>- Introduction</li> <li>- Point sensors</li> <li>- Distributed sensors</li> <li>- Applications: choice of technology and hardware</li> <li>- Landslides/pipelines</li> <li>- Boreholes</li> <li>- Piles</li> <li>- Structures</li> </ul> | 16:00-16:30 | Michael Iten |
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|  <p><b>B.5 Fiber Optics - Distributed Temperature and Long Gauge Sensors</b></p> <ul style="list-style-type: none"> <li>- Distributed temperature sensing</li> <li>- Leak detection for pipelines applications</li> <li>- Seepage evaluation in dams, dykes and levees</li> <li>- Long gauge sensors (SOFO)</li> <li>- Pile load test</li> <li>- Alkali silica reaction monitoring</li> <li>- Fiber optic piezometers (Fabry-Perot)</li> <li>- Tailings dam monitoring</li> <li>- Hydraulic tomography</li> </ul> | 16:30-17:00 | Daniele Inaudi |
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|  <p><b>NT.1 New Trends in Contact Monitoring</b></p> | 17:00-17:45 | John Dunnycliff<br>(moderator) |
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Welcome Party

18:00-22:00









 Sessions "B": Contact Monitoring

 Sessions "NT": New Trends in Monitoring


# Course Schedule

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## Wednesday, 8 June, 2016

	Networking and exhibition with coffee, tea and snack	8:00-9:00	
	C.1 Introduction to Remote Systems <ul style="list-style-type: none"> <li>- Basic principles and criteria for remote monitoring</li> <li>- Overview of existing remote systems</li> <li>- How to effectively choose a remote system</li> <li>- Sources of information</li> </ul>	9:00-9:15	Paolo Mazzanti
	C.2 Monitoring of Displacements by Topographic and GNSS Systems <ul style="list-style-type: none"> <li>- Levelling</li> <li>- Total stations</li> <li>- GNSS</li> <li>- Reflectorless total stations</li> <li>- Advantages and limitations</li> <li>- Examples of applications</li> <li>- 5 minutes Q&amp;A</li> </ul>	9:15-10:00	Martin Beth
	C.3 Monitoring of Displacements by Laser Scanner <ul style="list-style-type: none"> <li>- Terrestrial Laser Scanner</li> <li>- Examples of applications</li> </ul>	10:00-10:20	Sarah Owen
	Coffee Break	10:20-10:50	
	C.4 Monitoring of Displacements by Radar Systems <ul style="list-style-type: none"> <li>- Basic principles of radar systems</li> <li>- Radar Interferometry</li> <li>- Satellite SAR monitoring</li> <li>- Terrestrial SAR and RAR monitoring systems</li> <li>- Examples of application</li> <li>- 5 minutes Q&amp;A</li> </ul>	10:50-11:50	Paolo Mazzanti
	D.1 Fundamentals of Vibration Monitoring – Things to Consider <ul style="list-style-type: none"> <li>- Principles of vibration analysis</li> <li>- Vibration measurements and monitoring</li> <li>- Vibration sensors</li> <li>- How to analyze the data</li> <li>- Examples of vibration monitoring</li> <li>- 5 minutes Q&amp;A</li> </ul>	11:50-12:40	Andrea Bellino
	Lunch Break	12:40–13:55	


 Sessions "C": Remote Monitoring

 Sessions "D": Vibration Monitoring, Offshore Monitoring and Data Transmission and Management

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### Wednesday, 8 June, 2016

<p>▶ D.2 Fundamentals of Data Acquisition Systems (Including Wireless Systems): Things to Consider</p> <ul style="list-style-type: none"> <li>– History and Experience</li> <li>– What is a DAS?</li> <li>– Data types and visualisation</li> <li>– Quality Assurance and Verification</li> <li>– Central Components</li> <li>– Instrumentation</li> <li>– Communications</li> <li>– Software</li> <li>– Conclusions</li> </ul>	13:55-14:20	Iain Oakes-Green
<p>▶ D.3 Fundamental of Web-based Data Management for Instrumentation: Things to Consider</p> <ul style="list-style-type: none"> <li>– Main components of web-based data management system</li> <li>– Various methods to input data</li> <li>– Working with data</li> <li>– Configuration</li> <li>– Various reports</li> </ul>	14:20-14:45	Andres Thorarinnsson
<p>▶ D.4 Underwater Monitoring</p> <ul style="list-style-type: none"> <li>– Environmental conditions to be aware of</li> <li>– Some practical advice when being under water</li> <li>– Where is the challenge, in shallow or deep waters?</li> <li>– Differences in approach for direct monitoring solutions above and under water</li> <li>– Methods for remote monitoring under water</li> <li>– Wireless under water</li> <li>– Lessons learned and some case histories</li> <li>– 5 minutes Q&amp;A</li> </ul>	14:45-15:35	Per Magnus Sparrevik
<p> Coffee Break</p>	15:35-16:05	
<p>▶ NT.2 New Trends in Remote Monitoring</p>	16:05-16:50	Paolo Mazzanti (moderator)
<p>▶ NT.3 New Trends in Data Acquisition and Management</p>	16:50-17:35	John Dunicliff & Paolo Mazzanti (moderators)

▶ Sessions "D": Vibration Monitoring, Offshore Monitoring and Data Transmission and Management

▶ Sessions "NT": New Trends in Monitoring

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### Thursday, 9 June, 2016





	Networking and exhibition with coffee, tea and snack	8:00-9:00	
	E.1 Case Histories and Lessons Learned – Implementation of Monitoring Systems for Mining and Major Infrastructures – Instrumentation and monitoring of a main sewer during major infrastructure work – Challenges of implementing instrumentation in a potash mine shaft	9:00-9:35	Martin Dupuis
	E.2 Case Histories and Lessons Learned by Users with Presentations by Participants	9:35-11:00	John Dunicliff & Paolo Mazzanti (moderators)
	Coffee Break	11:00-11:30	
	E.3 Case Histories and Lessons Learned – the Role of Monitoring for the Control of Geotechnical Construction and for the Assurance of Safety and Performance – Monitoring control of the Big Ben Clock Tower during and after compensation grouting – Monitoring control of the Pisa Tower during and after stabilisation by soil extraction – Assurance monitoring of a highly sensitive medical facility during nearby diaphragm wall construction	11:30-12:15	John Burland
	E.4 Workshop on Systematic Planning of a Monitoring Program, for an Embankment on Soft Ground	12:15-13:30	John Dunicliff (moderator)
	Lunch Break	13:30-14:45	
	E.5 Case Histories and Lessons Learned by Users with presentations by Participants	14:45-15:45	John Dunicliff & Paolo Mazzanti (moderators)
	E.6 Open Forum – Questions received from participants during the first two days	15:45-16:00	John Dunicliff & Paolo Mazzanti (moderators)
	Coffee Break	16:00-16:30	

 Sessions “E”: Case Histories and Interactive Sessions

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 E.7 Case Histories and Lessons Learned – Structural Health Monitoring to Extend the Safe Working Life of Infrastructure <ul style="list-style-type: none"><li> Loughbrickland bridge with full B-WiM and WIM system</li><li> FlexiArch bridge system: structural health monitoring</li></ul>	16:30-17:05	Susan Taylor
 E.8 Closing Remarks	17:05-17:30	John Dunicliff & Paolo Mazzanti