# EAGE

# GE | EAGE
# GEOTECH

## 1ST EAGE GEOPHYSICAL MONITORING CONFERENCE AND EXHIBITION 2021

### 1-4 MARCH 2021 | ONLINE



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| **Third EAGE Workshop on** Practical Reservoir Monitoring | **Second EAGE Workshop on** Distributed Fibre Optic Sensing |
| **First EAGE Workshop on** Induced Seismicity | **First EAGE Workshop on** Directional Drilling and Geosteering |

## SECOND ANNOUNCEMENT AND PROGRAMME

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# Welcome to
## the First EAGE Geophysical Monitoring Technology Conference and Exhibition 2021

| Third EAGE Workshop on **Practical Reservoir Monitoring** | Second EAGE Workshop on **Distributed Fibre Optic Sensing** |
|---|---|
| First EAGE Workshop on **Induced Seismicity** | First EAGE Workshop on **Directional Drilling and Geosteering** |

## ABOUT THE CONFERENCE

The First EAGE Geophysical Monitoring Technology Conference and Exhibition is dedicated to the use of geophysical monitoring solutions and technologies in a wide range of subsurface, reservoir and production challenges. Embracing the push towards a low carbon future and the emerging opportunities available for geoscientists, EAGE GeoTech 2021 will bring together leading etxperts in geoscience, reservoir engineering, drilling and data science to tackle some of the major challenges in subsurface resource production and other industrial applications.

The innovative format of the Conference brings together four dedicated workshops under one comprehensive conference programme. This will provide cost savings for attendees while providing unique opportunities for crossover knowledge exchange and interaction.

The featured workshops are:
- Third EAGE Workshop on Practical Reservoir Monitoring
- Second EAGE Workshop on Distributed Fibre Optic Sensing
- First EAGE Workshop on Induced Seismicity Monitoring
- First EAGE Workshop on Directional Drilling and Geosteering

The Technical Programme also offers two complementary courses:

### Introduction to Geosteering
**Tuesday 2 March 2021 (9:00 - 16:00)**
*Convened by Dr. Vlad Karen Payrazyan (Rogii) and Kirill Ronzhin (Rogii)*
This course will give a comprehensive introduction to all aspects of geosteering: pre-job, real-time well placement and post analysis. Participants will learn how to integrate various datasets from different disciplines such as drilling, geophysics, petrophysics and geology in order to execute a successful well placement job. Attendees will get to know multiple data types, including but not limited to MWD and LWD logs, image logs, mudlogs, seismic and structural surfaces and how to analyze it.

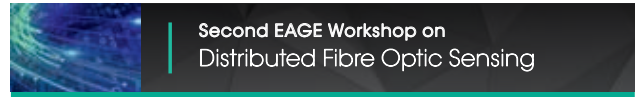### Introduction to Distributed Fibre Optic Sensing
**Wednesday 3 March 2021 (12:00 - 17:00)**
*Convened by Mahmoud Farhadiroushan (Silixa)*
This course provides introduction to fibre optics and the basic principles of distributed sensing technology. It also covers key components, cable designs and installation methods for onshore and offshore completions. Case studies focusing on the implementations and applications across the oil and gas industry will be presented in order to gain a better understanding of the practical benefits of distributed fibre optic sensing technology. Advanced system architectures to address future applications, such as subsea wells, will be also highlighted.

# Presentations | Monday 1 March

## Third EAGE Workshop on
## Practical Reservoir Monitoring

### PRM - A Repeatable Story
C. MacBeth (Heriot-Watt University), M. Thompson (Equinor)

| 12:00 | Welcome Address Day 1 |
|---|---|
| 12:05 | **Keynote 1: The Life and Times of a 4D Geophysicist** - M. Calvert[1]* [1]Total E&P Denmark |
| 12:35 | **Keynote 2: A Career Monitoring Reservoirs - 20 years as a 4D Practitioner** - J. Brain[1]* [1]Shell UK Ltd. |
| 13:05 | Discussion |
| 13:20 | Coffee Break |

### Planning
J.E. Lindgård (OCTIO), D. Lecerf (PGS)

| 13:30 | **Finding the sweet spot? Choosing the right seismic monitoring strategy for your field** - M. Branston[1], C. Leone[1], M. Chapelle[1], A. Murineddu[1], M. Paydayesh[1], R. Campbell[1], M. Shadrina[1], J. Butt[1]* [1]Schlumberger |
| 13:50 | **Swath matching technique: The application of 4D acquisition techniques to towed streamer 3D.** - A. Styles[1]*, D. Hillier[1], S. Stockwell[1], L. Sierralta[1] [1]ION |
| 14:10 | Discussion |
| 14:25 | Coffee Break |

### Efficiency
P. Mitchell (TAQA), J.E. Lindgård (OCTIO

| 14:35 | **Efficient deep-water ocean-bottom-node time-lapse seismic processing workflows illustrated with examples offshore Nigeria** - O. Osabuohien[1]*, P. Smith[2], P. Kristiansen[2] [1]Schlumberger; [2]Schlumberger |
| 14:55 | **PRM seismic acquisition real-time monitoring. An example of how digitalization can enables acquisition productivity and efficiency.** - C. Fayemendy[1]*, E. Sadikhov[1], M. Schuberth[1] [1]Equinor |
| 15:15 | Discussion |
| 15:30 | Coffee Break |

### Advances in PRM
P. Johann (Petrobras), K. Wang (Shell)

| 15:40 | **Practical implementation of a Permanent Reservoir Monitoring system at Johan Sverdrup** - C. Fayemendy[1]*, E. Sadikhov[1], A.E. Bjåstad[1], H. Nakstad[2]*, S.E. Aasen[2], F. Cazeneuve[2] [1]Equinor ASA; [2]Alcatel Submarine Networks |
| 16:20 | **Keynote 3: Renewal and Repeatability** - S. Pannetier Lescoffit[1]* [1]Equinor ASA |
| 16:50 | Discussion |
| 17:05 | End of Day 1 |

## Second EAGE Workshop on
## Distributed Fibre Optic Sensing

### Geophysical and Geotechnical Monitoring
M. Farhadiroushan (Silixa), A. Wuestefeld (Norsar)

| 12:00 | Welcome Address Day 1 |
|---|---|
| 12:05 | **Keynote: Seismic Monitoring of CO2 Geosequestration Using Multi-well DAS VSP: Stage 3 of CO2CRC Otway Project** - R. Pevzner[1]*, K. Tertyshnikov[1], R. Isaenkov[1], E. Sidenko[1], S. Popik[1], A. Yurikov[1], S. Yavuz[1], B. Gurevich[1], J. Correa[2], T. Wood[2], S. Glubokoviskikh[2], B. Freifeld[3], S. Nikolov[4], M. Mondanos[4], P. Barraclough [1]Curtin University; [2]LBNL; [3]Class VI Solutions; [4]Silixa Ltd; [5]CO2CRC Ltd |
| 12:35 | **Optimizing Distributed Sensing Measurements in Multi-Well Acquisition** - A. Chavarria[1]*, T. Bown[1] [1]OptaSense |
| 12:55 | **Subsea Fiber Topology and Effect on 3D and 4D Subsea DAS VSP Images** - M. Willis[1]*, A. Ellmauthaler[1], G. Wilson[1], O. Augusto Barrios[1] [1]Halliburton |
| 13:15 | **Feasibility of reservoir monitoring using nonlinear seismic effects measured by downhole distributed acoustic sensors** - A. Yurikov[1,2]*, R. Isaenkov[1,2], K. Tertyshnikov[1,2], B. Gurevich[1,2], E. Sidenko[1,2], S. Glubokovskikh[1,2], V. Shulakova[3,2], B. Freifeld[4,2], J. Correa[5,2], T. Wood[5], R. Pevzner[1,2] [1]Curtin University; [2]CO2CRC; [3]CSIRO; [4]Class VI Solutions; [5]LBNL |
| 13:35 | Discussion |
| 13:50 | Coffee Break |

### Flow Measurements, Leakage and Geohazard Detection
R. Pevzner (Curtin University), S. Soulas (LYTT)

| 14:00 | **Monitoring acoustic events in boreholes using wavelength-scanning coherent optical time domain reflectometry in multimode fiber** - X. Lu[1]*, M. Schukar[1], S. Großwig[2], U. Weber[2], K. Krebber[1] [1]Bundesanstalt Für Materialforschung Und–prüfung (BAM); [2]GESO Gesellschaft für sensorik |
| 14:20 | **Monitoring of water injection and production using integrated fibre optic sensing dataset** - L. Ricard[1]*, J. Dautriat[1], M. Myers[1], M. Pujol[2] [1]CSIRO Energy; [2]Rockwater |
| 14:40 | **Assessing the time lapse performance of perforations using temperature** - L. Ricard[1]*, S. Jackson[2] [1]CSIRO Energy; [2]CSIRO Energy |
| 15:00 | **Engineered Distributed Acoustic Flow Profiling Sensing Solutions** - M. Farhadiroushan[1], C. Milne[1]*, T. Parker[1], S. Hafezi[1], R. Aghayev[1], V. Mahue[1], S. Shatalin[1] [1]Silixa Ltd |
| 15:20 | Discussion |
| 15:35 | Coffee Break |

### Integration and Reservoir Monitoring
Y. Li (Blue Sky Days), M. Willis (Halliburton)

| 15:45 | **Keynote: Integrated Distributed Fibre Optic Sensing System for Reservoir and Subsidence Monitoring** - M. Farhadiroushan[1]*, T. Parker[1], S. Shatalin[1], A. Gillies[1], Z. Chen[1], R. Aghayev[1], A. Zarifi[1], J. Maxwell[1] [1]Silixa Ltd |
| 16:15 | **A Fully Optical Three-Component Accelerometer for Borehole Applications** - C. Christensen[1], R. Metzbower[1], A. Berzanskis[1], J. Haldorsen[1]*, G. Bergery[2], V. Lesnikov[2], M. Verliac[2] [1]MagiQ Technologies; [2]Total SA |
| 16:35 | **DAS interrogation on standard single mode fibres in long tie-back subsea wells** - J.K. Brenne[1]*, M. Eriksrud[1] [1]Alcatel Submarine Networks |
| 16:55 | **Dark fiber for subsurface characterization along railways** - E. Obando[1]*, P. Doornenbal[1], P. Hölscher[1], A. Van Uitert[2], C. Mas[2], H. Zandberg[2], A. Chalari[3] [1]Deltares; [2]ProRail; [3]Silixa |
| 17:15 | Discussion |
| 17:30 | End of Day 1 |

## First EAGE Workshop on
## Directional Drilling and Geosteering

### Workshop Course:
### Introduction to Geosteering
Dr. V.K. Payrazyan (ROGII), K. Ronzhin (ROGII)

**09:00-16:00**

## Third EAGE Workshop on
## Practical Reservoir Monitoring

### Insights
C. MacBeth (Heriot-Watt University), D. Lecerf (PGS)

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| **12:00** | **Welcome Address Day 2** |
| **12:05** | **Offshore Reservoir Management -** M.C. Costa[1]* [1]Equinor |
| **12:35** | **Reservoir insights unlocked by multidisciplinary integration -** S. Oppert[1]*, S. Carley[1] [1]Chevron |
| **12:55** | **Sim2Seis and 4D seismic data for fast-track production history matching; a North Sea case study -** S. Harrington[1]*, A. Atkinson[2], M. Paydayesh[1], L. Ouagueni[3] [1]Schlumberger; [2]Rockflow Resources Ltd; [3]Tailwind Mistral Ltd |
| **13:15** | **Quantitative Use of 4D seismic on Atlantis field -** D. Kumar[1]*, J. Van Gestel[1], M. Le Good[1], P. O'Connor[1], Y. Gu[1], T. Alakbarova[1], J. Long[1], T. Doré[1] [1]BP |
| **13:35** | **Discussion** |
| **13:55** | **Coffee Break** |

### Moving Beyond the Norm
P. Mitchell (TAQA), M. Thompson (Equinor)

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| **14:05** | **Background Seismicity Monitoring Using Conventional Offshore Geophones: An Input to the Carbon Capture and Storage Project -** Z. Zarifi[1]*, A. Furre[1], P. Ringrose[1], L. Ottemöller [2], R. Thorsen[1] [1]Equinor ASA; [2]Department of Earth Sciences, University of bergen |
| **14:25** | **Early Detection of Non-Conformance in Monitoring of CO2 Storage Reservoirs Using Auto-Encoder Neural Networks -** E. Barros[1]*, B. Boullenger[1] [1]TNO |
| **14:45** | **Monitoring the Snøhvit gas field using seabed gravimetry and subsidence -** H. Ruiz[1]*, M. Lien[1], H. Alnes[2], M. Haverl[2], H. Sørensen[2] [1]OCTIO AS; [2]Equinor Energy AS |
| **15:05** | **Discussion** |
| **15:20** | **Coffee Break** |

### Pushing the Envelope
P. Johann (Petrobras), K. Wang (Shell)

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| **15:30** | **Keynote 5: Informing neural networks with fluid flow consistent property correlations: A 4D seismic inversion application -** G. Côrte[1]*, J. Dramsch[2], H. Amini[1], C. MacBeth[1] [1]Heriot-Watt University; [2]Technical University of Denmark |
| **16:00** | **Keynote 6: Time lapse seismic modelling in fractured carbonate reservoirs -** S. Oppert[1]*, J. Adachi[1], N. Ruby[1], M. Ramos[1] [1]Chevron |
| **16:30** | **Keynote 7: Centre for Geophysical Forecasting -** M. Landrø[1]* [1]Norwegian University of Science & Technology |
| **17:00** | **Discussion and Closing Remarks** |
| **17:30** | **End of Day 2** |

## Second EAGE Workshop on
## Distributed Fibre Optic Sensing

### Microseismic
F. Hveding (Saudi Aramco), N. Noether (fibristerre Systems)

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| **12:00** | **Welcome Address Day 2** |
| **12:05** | **Keynote: Distributed Acoustic Sensing in Antarctica -** M. Kendall[1]* [1]University of Oxford |
| **12:25** | **Distributed Acoustic Sensing in Antarctica: What we can learn for studying microseismicity elsewhere -** T. Hudson[1]*, A. Baird[2], J. Kendall[1], S. Kufner[3], A. Brisbourne[3], A. Smith[3], A. Butcher[4], A. Chalari[5], A. Clarke[5] [1]University of Oxford; [2]NORSAR; [3]NERC British Antarctic Survey; [4]University of Bristol; [5]Silixa Ltd |
| **12:45** | **DAS Microseismic Monitoring with Multiple Fiber Optic Arrays -** S. Cole[1]*, J. Furlong[2], M. Karrenbach[1], V. Yartsev[1], L. LaFlame[1] [1]OptaSense; [2]OptaSense |
| **13:05** | **Discussion** |
| **13:20** | **Coffee Break** |

### Calibration of Data
G. Galli (ENI), V. Lantiq (Febus Optics)

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| **13:30** | **Laboratory measurements of elastic properties at seismic frequencies using DAS sensors -** A. Yurikov[1]*, M. Lebedev[1], R. Pevzner[1], K. Tertyshnikov[1], V. Mikhaltsevich[1] [1]Curtin University |
| **13:50** | **Effects of temperature on DAS measurements -** E. Sidenko[1]*, R. Pevzner[1], K. Tertyshnikov[1], M. Lebedev[1] [1]Curtin University |
| **14:10** | **NOR-FROST: A near-surface test site for fibre optic sensing -** A. Wuestefeld[1]*, S. Stokkan[1], A. Baird[1], V. Oye[1] [1]NORSAR |
| **14:30** | **Discussion** |
| **14:45** | **Coffee Break** |

### Geomechanics
M. Karrenbach (Optasense), S. Moriggi (ENI)

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| **14:55** | **Keynote: Enhanced integrity monitoring via distributed strain sensing along the cemented production casing of salt cavern wells -** N. Nöther[1]*, M. Schlichtenmayer[2], C. Pretzschner[3], M. Facchini[1] [1]fibrisTerre Systems GmbH; [2]ESK GmbH; [3]ESK GmbH |
| **15:25** | **Ground Condition Monitoring of a Landslide using Distributed Rayleigh Sensing -** P. Clarkson[1]*, R. Crickmore[1], A. Godfrey[1], C. Minto[1], B. Purnell[1], D. Gunn[2], B. Dashwood[2], J. Chambers[2], A. Watlet[2], J. Whiteley[2] [1]Optasense; [2]British Geological Survey |
| **15:45** | **Urban traffic monitoring using Distributed Acoustic Sensing along laid fiber optic cables -** K. Hicke[1]*, S. Chruscicki[1], S. Münzenberger[1] [1]BAM Federal Institute for Materials Research and Testing |
| **16:05** | **Discussion** |
| **16:20** | **Coffee Break** |

### Data Processing
Y. Li (Blue Sky Days), A. Tura (Colorado School of Mines)

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| **16:20** | **Radon transform-based detection of microseismicity on DAS networks: A case study from Antarctica. -** A. Butcher[1]*, T. Hudson[2], J. Kendall[2], S. Kufner[3], A. Brisbourne[3], A. Stork[4] [1]University of Bristol, UK; [2]University of Oxford; [3]NERC British Antarctic Survey; [4]Silixa Ltd |
| **16:40** | **Signal detection in DAS data using spectral analysis -** V. Rocheva[2], T. Zharnikov[1]*, F. Hveding[3] [1]Aramco Research Center - Moscow, Aramco Innovations LLC; [2]Skoltech; [3]Saudi Aramco, EXPEC ARC PTD |
| **17:00** | **Towards fast DAS passive seismic monitoring combining Compressive Sensing with a deep learning decoder -** I. Vera Rodriguez[1]* [1]NORSAR |
| **17:30** | **Discussion** |
| **17:45** | **End of Day 2** |

## Second EAGE Workshop on
## Distributed Fibre Optic Sensing

### Workshop Course:
### Introduction Distributed Fibre Optic Sensing
M. Farhadiroushan (Silixa)

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| 12:00 - 17:00 | |

## First EAGE Workshop on
## Induced Seismicity

### Induced Seismicity in The Netherlands
D. Bruhn (TU Delft), C. Strobbia (realtimeseismic)

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| 12:00 | **Welcome Address Day 1** |
| 12:05 | **Keynote: Future monitoring of induced seismicity in the Groningen field -** J. Van Elk[1]*<br>[1]NAM BV |
| 12:35 | **EPOS-NL is the Dutch solid Earth science infrastructure for research on georesources and geohazards -** R. Pijnenburg[1]*, S. Laumann[2], R. Wessels[1], G. Ter Maat[1], L. Armstrong[2], J. Bie kowski[3], R. Sleeman[3], P. Vardon[2], D. Bruhn[2], A. Barnhoorn[2], A. Niemeijer[1], O. Plümper[1], E. Willingshofer[1], C. Spiers[1], K. Wapenaar[2], J. Trampert[1], M. Drury[1]<br>[1]Utrecht University (UU); [2]Delft University of Technology (TU Delft); [3]Royal Netherlands Meteorological Institute (KNMI) |
| 13:00 | **Seismic monitoring network for induced seismicity in the Netherlands -** P. Kruiver[1]*, J. Spetzler[1], E. Ruigrok[1,2], B. Dost[1]<br>[1]Royal Netherlands Meteorological Institute; [2]Utrecht University |
| 13:25 | **Discussion** |
| 13:00 | **Coffee Break** |

### Advanced Analysis of ISM
L. Eisner (Seismik), T.J. Moser (Moser Geophysical Services)

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| 14:00 | **Systematic Recovery of Instrumental Timing Errors Using Interferometric Surface Waves Retrieved from Large N Seismic Arrays -** C. Weemstra[1]*, J. De Laat[2], A. Verdel[3]<br>[1]Delft University of Technology; [2]Dublin Institute for Advanced Studies; [3]Netherlands Organization for Applied Sciences |
| 14:25 | **Identification of Tectonic Structures Based On Tremors in Bobrek Coal Mine Using A Collapsing Method -** A. Lesniak[1], E. W gli ska[1]*, K. Mirek[1]<br>[1]AGH University of Science and Technology |
| 14:50 | **Towards efficient probabilistic characterisation of induced seismic sources in the Groningen Gas field -** L.O.M. Masfara[1]*, K. Weemstra[1]<br>[1]Delft University Of Technology |
| 15:10 | **Discussion** |
| 15:30 | **Coffee Break** |

### New Approaches to ISM Analysis
S. Karimi (Nanometrics), T. Urbanic (Meta Innovation Technologies)

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| 15:40 | **Keynote: Machine Learning & AI Approaches -** M. Van der Baan[1]*<br>[1]University of Alberta |
| 16:10 | **Next maximal event magnitude from statistical method -** N. Cao[1]*, L. Eisner[1], Z. Jechumtalova[1]<br>[1]Seismik S.r.o. |
| 16:35 | **Towards Synthetically Trained Convolutional Neural Networks for Induced Earthquake Detection and Localization -** N. Vinard[1]*, G.G. Drijkoningen[1], D.J. Verschuur[1]<br>[1]Delft University of Technology |
| 17:00 | **Discussion** |
| 17:15 | **End of Day 1** |

## First EAGE Workshop on
## Directional Drilling and Geosteering

### Data Integration and Multidisciplinary Workflows
K. Ronzhin (ROGII), A. Goertz (OCTIO Gravitude)

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| 12:05 | **Welcome Address Day 1** |
| 12:05 | **Advanced Geosteering using Data Integration on XRF/XRD, Gas Analysis and LWD data to Optimize Well Placement -** J. Dashti[1]*, B. Al-Ajmi[1], H. Sabri[1], B. Al-Adsani[1], H. Farwan[1], A. Al-Shoeibi[2], M. Sanclemente[2], D. Krott[3], R. Cuevas[3]<br>[1]Kuwait Oil Company; [2]Geolog International B.V.; [3]ROGII |
| 12:25 | **A multidisciplinary approach for precise well-placement and accurate wellbore positioning, utilizing third-party directional and LWD tools -** G. Zahid[1]*, R. Harvey[2], J. Massop[3]<br>[1]GazServ Inc.; [2]Belloy Petroleum Consulting Ltd.; [3]Remote Operations Professionals Inc. |
| 12:45 | **Discussion** |
| 13:00 | **Panel Discussion: Where does G&G and Drilling Meet?** |
| 13:50 | **Coffee Break** |

### Wellbore Position Uncertainty
D. Marbebe (Saudi Aramco), J. Singer (Fugro)

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| 14:00 | **Keynote** |
| 14:40 | **Identifying the value of an advanced surveying technique to aid the decision making process while geosteering -** R. Rakhmangulov[1]*, D. Levitskiy[2], D. Leontyev[2], V. Gredzhev[2]<br>[1]Schlumberger; [2]Arctic SPG 2 |
| 15:00 | **Integrated approach for the U-type horizontal well drilling & geosteering in shallow Turonian sands. -** A. Valiakhmetov[1]*, V. Kramar[1], R. Khabibullin[1], I. Shmarin[2], V. Vorobev[3], I. Dubnitsky[3]<br>[1]Schlumberger; [2]OOO Rusgazburenie; [3]OJSC Severneftegazprom |
| 15:20 | **Discussion** |
| 15:35 | **Coffee Break** |

### Automation and Data Analytics
F. Chinellato (ENI), L. Peters (TNO)

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| 15:45 | **Automatization and optimization of geosteering processes at Rosneft company -** M. Lisitsyna[1]*, T. Rakhimov, A. Mikhoparkin<br>[1]IGIRGI (Rosneft) |
| 16:05 | **Assisted Geosteering Through Advanced Computed Algorithms -** D. Marbebe[1], A. Sabirov[1]*, W. Davila[1], K. Ronzhin[2], V.K. Payrazyan[2]<br>[1]SAUDI ARAMCO; [2]ROGII |
| 16:25 | **New Data Transfer Protocol Capabilities Automate Data Streaming Channel Setup and Reduce the Probability of Errors -** P. Neri[1]*, R. Philo[1]<br>[1]Energistics |
| 16:45 | **Discussion** |
| 17:00 | **End of Day 1** |

## Presentations | Thursday 4 March



### First EAGE Workshop on
### Induced Seismicity

#### Microseismic Data Analysis: New approaches
L. Eisner (Seismik), T.J. Moser (Moser Geophysical Services)

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| 12:00 | **Welcome Address Day 2** |
| 12:05 | **Keynote: Corkscrew Well Paths for Improved Microseismic Event Locations with DAS Recordings -** A. Wuestefeld[1]*<br>[1]NORSAR |
| 12:35 | **Picking Automatization by Pattern Matching: A New Methodology Using EAT Events -** L. Duboeuf[1]*, V. Oye[1], I. Berre[2]<br>[1]Norsar; [2]Universitetet i Bergen |
| 13:00 | **Monitoring and forecasting failure in laboratory using coda wave decorrelation -** A. Veltmeijer[1]*, M. Naderloo[1], A. Barnhoorn[1]<br>[1]TU Delft |
| 13:25 | **Discussion** |
| 13:40 | **Coffee Break** |

#### Microseismic Monitoring & Interpretation
C. Strobbia (realtimeseismic), J. van Elk (NAM)

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| 13:50 | **Keynote 4** |
| 14:20 | **Effective Monitoring of Hydraulic Fracture Stimulations Using Microseismcity: Part 1, Source Scaling Behavior and Stress Release -** T. Urbancic[1]*, E. Ardakani[1]<br>[1]META INNOVATION TECHNOLOGIES |
| 14:45 | **Effective Monitoring of Hydraulic Fracture Stimulations Using Microseismcity: Part 2, Tapered Gutenburg – Richter Relationship -** T. Urbancic[1]*<br>[1]META INNOVATION TECHNOLOGIES |
| 15:10 | **Discussion** |
| 15:25 | **Coffee Break** |

#### Risk Assessment & Mitigation Utilizing Microseismicity
S. Karimi (Nanometrics), T. Urbanic (Meta Innovation Technologies)

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| 15:35 | **Keynote 5: Using Microseismicity to Manage Induced Seismicity During Hydraulic Fracturing at the Preston New Road PNR1 Well -** J. Verdon[1]*, T. Kettlety[1], A. Baird[1], M. Kendall[1]<br>[1]University of Bristol |
| 16:05 | **Using next-generation seismic monitoring and processing to help manage injection and extraction operations -** A. Baig[1]*<br>[1]Nanometrics Inc. |
| 16:30 | **Developing Approaches for Background Seismicity Monitoring of Potential CO2 Storage Sites in Horda Area Offshore Norway -** R. Dehghan-Niri[1]*, V. Oye[2], A. Wuestefeld[2], R. Bakke[1], M. Wilks[2], A. Furre[1], P. Ringrose[1]<br>[1]Equinor ASA; [2]NORSAR |
| 16:55 | **Discussion** |
| 17:10 | **End of Day 2** |



### First EAGE Workshop on
### Directional Drilling and Geosteering

#### Case Studies & Best Practices
M. Verliac (Total), F. Chinellato (ENI)

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| 12:05 | **Welcome Address Day 2** |
| 12:05 | **Keynote** |
| 12:45 | **Geological monitoring for drilling a transport section well bore using inverse values of ROP -** I. Mostovich[1]*<br>[1]Rock Flow Dynamics |
| 13:05 | **A business system that allows to geosteer 3,000 horizontal wells per year. -** V. Filimonov[1]*, K. Kudashov, V. Antsupov<br>[1]Rosneft PJSC |
| 13:25 | **Discussion** |
| 13:40 | **Coffee Break** |

#### Current Challenges & Future Developments
K. Ronzhin (ROGII), V. Filimonov (Rosneft)

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|---|---|
| 13:50 | **Keynote** |
| 14:30 | **Prototype Concept of Reservoir-Profile-Update-Rate to Quantitatively Evaluate Efficiency of Reservoir Description with Different Services while Drilling -** X. Tian[1], J. Wan[1], B. Chang[2]*, C. Wang[2]<br>[1]CNOOC-Shenzhen; [2]Schlumberger |
| 14:50 | **From 2D extra-deep resistivity reservoir mapping to 3D structural modelling. Conegliano UGS, Italy -** P. Sudiro[1]*, T. Gukov[2]<br>[1]Baker Hughes; [2]Edison Stoccaggio |
| 15:10 | **Geomodel Update while Geosteering ERD wells based on Deep Electromagnetic Reservoir Mapping Technology, Russia Far East. -** T. Popov[1]*, V. Kim[1], I. Kabirova[1], E. Bolychev[2], V. Maltsev[3]<br>[1]Schlumberger; [2]Rosneft; [3]SMNG |
| 15:30 | **Discussion** |
| 15:45 | **Coffee Break** |

#### Look Ahead Technologies
G. Nardi (Weatherford), A. Goertz (OCTIO Gravitude)

| | |
|---|---|
| 15:55 | **Evaluation and Application of ElectroMagnetic Look-Ahead Technology -** F. Chinellato[1]*, M. Mele[1]<br>[1]ENI S.p.A. |
| 16:15 | **Mapping Water Encroachment in Low Deviated Well in Real-Time, A Solution from LWD EM-Look Ahead Technology -** I. Pasaribu[1]*, N.F. Al-Khalifa[2], M.F. Hassan[2], D. Joshi[2], H. Al-Ajmi[2]<br>[1]Schlumberger; [2]Kuwait Oil Company (KOC) |
| 16:35 | **Improving structural prediction while geosteering through resistivity to acoustic impedance conversion using field data -** G. Alberelli[1]*, C. Tarchiani[1], A. Leone[1], M. Nickel[2], D. Steckhan[2]<br>[1]ENI S.p.A.; [2]Schlumberger Stavanger Research |
| 15:30 | **Discussion** |
| 15:30 | **End of Day 2** |

# TECHNICAL COMMITTEES

## Third EAGE Workshop on Practical Reservoir Monitoring

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| Kirill Ronzhin* | Rogii |
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# REGISTRATION

| REGISTERED AND PAID | UNTIL 5 FEBRUARY 2021 | FROM 6 FEBRUARY 2021 |
|---|---|---|
| EAGE Green Member[1,5] | € 345 | € 405 |
| EAGE Bronze/Silver/Gold Member[1,5] | € 295 | € 355 |
| EAGE Platinum Member[1,] | € 295 | € 295 |
| EAGE Retired Member | € 155 | € 215 |
| Non-member[3] | € 395 | € 455 |
| EAGE Student Green Member[1,2,5] | € 60 | € 95 |
| EAGE Student Bronze/Silver/ Gold Member[1,2,5] | € 50 | € 75 |
| Student Non-member[2,3,4] | € 85 | € 120 |

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To qualify for the reduced student registration fee:
- Students must be enrolled in a full time study programme at a recognized university or institute
- The registration must be accompanied by a copy of a student ID card and/or official proof of enrolment

The Non-member fee includes EAGE membership for the remainder of 2021. This membership will be activated shortly after the event.
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Green membership status gives you a € 50 discount (€ 25 for students) on the Non-member fee for each EAGE event registration; starting from the Bronze status, you can benefit from an even greater reduced EAGE member registration fee. Find here for more information on the recognition programme.
All fees are in Euros (€). One Euro of your total registration fee is donated to the EAGE Green Fund.

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# CONTACT

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