

2 June 2022, Radisson Blu Royal Garden Hotel, Trondheim

BRU21 Conference

Digital and Automation Solutions
for the Oil and Gas Industry



Program revision 07 April 2022

BRU21 Conference focuses on research and innovation within Automation and Digitalization for the Oil and Gas Industry. It provides an arena for meetings and discussions between industrial and academic institutions and presents the latest results from the BRU21 program (www.ntnu.edu/bru21).

DAY 1: WEDNESDAY, JUNE 1

19:00-21:00 Conference dinner, Radisson Blu Royal Garden Hotel, Trondheim
(Aperitif from 18:30)

DAY 2: THURSDAY, JUNE 2

9:00-16:00 BRU21 conference, Radisson Blu Royal Garden Hotel, Trondheim

9:00-10:00 Registration and meetings

- Conference registration
- BRU21 Program Steering Committee meeting (BRU21 steering committee only)

10:00-11:40 Welcome and plenaries

- *Welcome*, Ute Mann, Head of Department of Geoscience and Petroleum, NTNU
- *BRU21 introduction*, Alexey Pavlov, BRU21 program manager, NTNU
- *Trondheim – the innovation capital of Norway in the digital age*, Lodve Berre, NTNU Technology Transfer AS
- *Digitalization and innovation in the O&G industry strategy*, Gunnar Hjelmtveit Lille, Managing director of OG21
- *BRU21 innovations:*
 - PRODECS: A game changing solution for investment valuation under uncertainty*, Semyon Fedorov, Verena Hagspiel
 - Automated well log matching with machine learning*, Veronica Torres

11:40-12:40 Lunch

12:40-14:00 Technical sessions: BRU21 research and innovation

14:00-15:00 Poster session, exhibition, networking and snacks

15:00-15:45 **Panel debate:** *How to unlock/scale up the innovative potential of digitalization?*
 Experts from Equinor, AkerBP, Cognite, OG21, NTNU (Participants to be announced). The debate is led by Egil Tjøland, NTNU.

15:45-16:00 **Concluding remarks** – Ute Mann

DAY 3: FRIDAY, JUNE 3

NTNU, Department of Geoscience and Petroleum, S.P. Andersensvei 15a, Trondheim

9:00-12:00 **Technical program at NTNU**

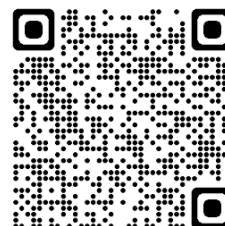
- Meetings/discussions with BRU21 science team: research, innovation, new projects and research directions
- Visit to NTNU laboratories

For conference registration please scan the QR code or visit our website

<http://www.ntnu.edu/bru21/bru21-conference>

Conference secretariat:

bru21@videre.ntnu.no



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TECHNICAL SESSIONS: 12:40-14:00

Drilling and Well	Reservoir Management and Production Optimization	Machine Learning in Exploration and Production
Prediction and early detection of karsts for safer drilling in carbonates - Danil Maksimov	Non-disturbing well testing for data-driven production optimization - Thiago Lima Silva	On a hybrid gray-box approach to virtual flow metering - Mathilde Hotvedt
Real-time fault and symptoms detection in drilling operations with wired pipe - Mostafa Gomar	Reservoir history matching using observability-based ensemble Kalman filter - Tarek Daa-Eldeen	Application of Data-Driven Models in Reservoir Management - Cuthbert Shang Wui Ng
Casing wear modelling, real-time monitoring and prediction - Sigbjørn Sangesland	Economic model predictive control for management of produced water discharge - Otávio Fonseca Ivo	Enabling Machine Learning methods for some exploration workflows - Kenneth Duffaut
Drilling optimization based on continuous micro-testing - Alexey Pavlov	Data-driven optimization of gas lift allocation - Joakim R. Andersen	Machine learning-based lithofacies classification from seismic data - Pranav Audhkhasi

New Business and Operational Models	Field Development and Economics	Operations, Maintenance, Safety and Security
Trust building in adopting Digital Twins: Maneuvering between technological fashion skepticism and optimism: - Nataliia Korotkova	Optimization of sequential production of two oil fields with an option to switch - Semyon Fedorov	Safety, reliability, and maintenance modelling required for digitalization and automatization - Jørn Vatn
The role of shared understanding in collaborative work: A case study of early-stage design in the Oil and Gas industry - Itishree Mohallick	Early phase field planning using a digital twin and environmental factors - Seok Ki Moon	Maintenance grouping in remote operations: a stochastic programming approach - Abu Md Ariful Islam
Remote operations and future operating models - Ensuring reliability of Unmanned Autonomous Systems - Rialda Spahic	Price stress testing in digital offshore field development planning - Guowen Lei	Predictive maintenance for lifetime extension - Endre Sølvsberg
Digital platforms as an intermediary for innovation: A case study of OSDU in the oil and gas industry - Mahdis Moradi	Optimal field planning considering uncertainties and environmental performance - Olga Noshchenko	Industry 4.0 and smart predictive maintenance - Tom Ivar Pedersen
	Short-term optimization under uncertainty in the Norwegian natural gas system - Siva Kumar	

ELECTRONIC POSTERS: 14:00-15:00

BRU21 Innovation, Research and Education		
COMPUTERWELL: Drillstring Digital Twin - Sigve Hovda	PERMEAN: Rapid downhole testing of permeability anisotropy - Guowen Lei	MAC: Acoustic look-ahead technology based on machine learning - Danil Maksimov
PRODECS: Investment valuation under uncertainty - Semyon Fedorov	DRILLBOTICS: Robotic drilling rig for autonomous directional drilling - NTNU Drillbotics team	CERBERUS: Field-hardened robotic autonomy - Kostas Alexis
BRU21 ACADEMY: Digitalization/Automation courses for the O&G industry - Jørn Vatn	Safety and security in design and operation of Instrumented Control Systems - Bálint Zoltán Téglásy	Offshore energy hubs: design, operation, and maintenance strategies - Ramon Abritta