THE VRGeo CONSORTIUM
Innovation for the Oil and Gas Exploration

VRGeo

Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS

Schloss Birlinghoven
53757 Sankt Augustin, Germany

Contact
VRGeo Consortium Program Manager
Dr. Manfred Bogen
Phone +49 2241 14-2367
manfred.bogen@iais.fraunhofer.de

www.vrgeo.org
www.iais.fraunhofer.de

Seeing the Invisible

In order to enhance recovery from existing fields, to explore new hydrocarbon sources by entering new challenging operational frontiers, and to reduce the environmental footprint, information technology is crucial.

The VRGeo Consortium is a consortium of the international oil and gas industry since 1998. The main goal of this consortium is the development and evaluation of interactive hardware and software technologies for visualization systems in the oil and gas industry.

The VRGeo Consortium Members

Industrial companies are full members and scientific institutions are academic members of the VRGeo Consortium. Current industrial members are ExxonMobil and Wintershall

Dea; current academic members are the University of Utah in Salt Lake City, USA, and the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway.

Fraunhofer IAIS, the big data institute of Fraunhofer-Gesellschaft, hosts the VRGeo Consortium and is conducting the R&D work.
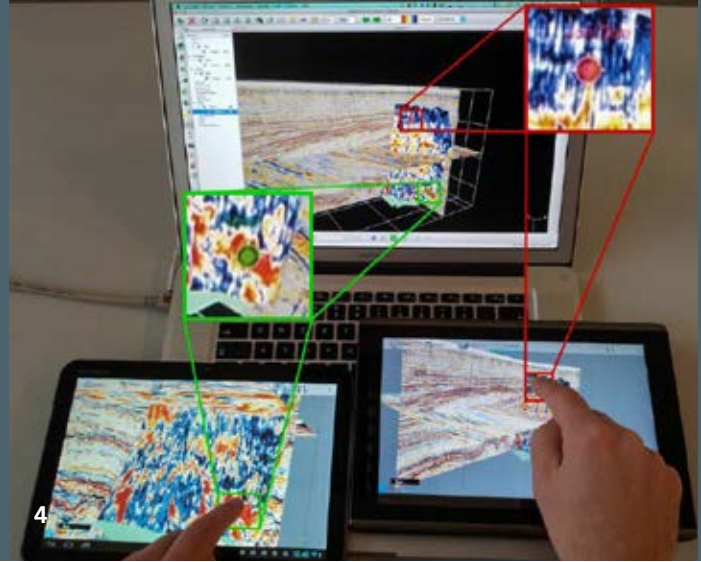
Research & Development

Major challenges and objectives on the VRGeo R&D Agenda as defined by the VRGeo Consortium Steering Committee are:

- Big Geoscience Data Visualization and Analytics
- Novel Human Computer Interaction (HCI) Paradigms and Technologies
- Small and Large-scale Collaborative Environments
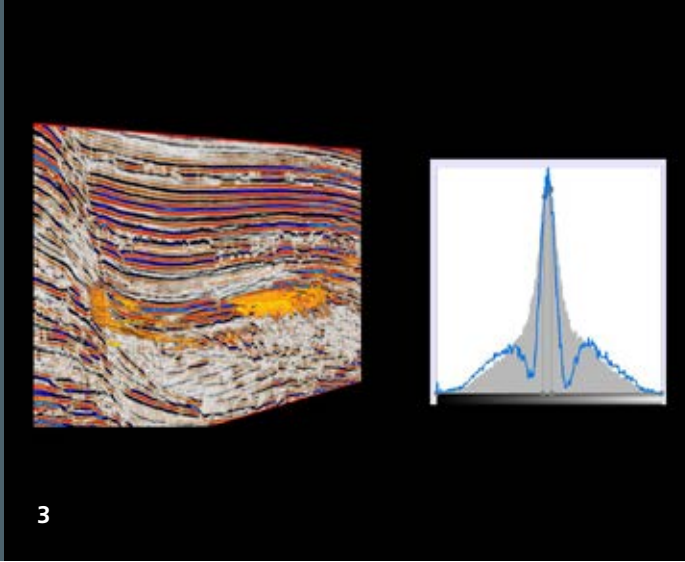
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- Geobody Detective with Deep Learning using Convolutional Neural Networks (CNNs)
- Augmented and Virtual Reality (AR/VR)
- Technology Watch and Innovation Scouting
- Performance Comparisons, Benchmarking, and User Studies

For oil & gas companies, the VRGeo Consortium is a perfect opportunity to share experiences, ideas, challenges, and resources for application-oriented research as it is the mission of the Fraunhofer Gesellschaft.

Major Achievements

1 DeepGeo – an integrated Deep Learning Solution and Data Warehouse for the O&G Industry running at the premises of the VRGeo Consortium members.

2 The VRGeo Multi-Touch Table: The world's first 4K multi-touch table for Landmark Graphics' DecisionSpace(R) Desktop software for the inspection and annotation of 2D seismic surveys.

3 The VRGeo Occlusion Spectrum Methodology: Together with Italian oil & gas company Eni, the VRGeo R&D team developed a methodology to classify volumetric data based on »Ambient Occlusion« of voxels.

4 SeisTablet: A seismic interpretation workflow using tablets and large displays at the same time allows true collaborative seismic interpretation sessions for better team performance.

The Value Proposition

Being a full member of the VRGeo Consortium includes …

- to be part of one of the rare international working groups where experts from oil and gas share experiences, ideas, challenges, and resources for application-oriented research.
- to have an impact on the VRGeo R&D agenda according to your company's individual needs and strategic objectives.
- to have direct access to the VRGeo prototype solutions for evaluation and R&D purposes.
- to have the right to review and license all VRGeo R&D results.
- to represent your company in the VRGeo Steering Committee with one vote.
- to have the right as an industrial member to nominate one or more academic members you already do business with.
- to have access to Fraunhofer's research staff in terms of collaborative R&D activities and also for topic-specific consulting purposes.
- to have the option to work with the VRGeo R&D team on a contract basis to implement innovative R&D ideas at a preferred rate in your company's premises.

Testimonials

»…*Saudi Aramco scientists have developed a billion cell reservoir simulation visualization technology, … , by adopting Fraunhofer Institute's Octreemizer product. Up to a few billion cell models can easily* be visualized in three dimensions using the new technology. Users can rotate the image and generate two dimensional cross sections at desired locations of the three dimensional image of a reservoir property (i.e. pressure or permeability, etc.) by a mouse click. Generating images takes a few seconds only. This product allows engineers geologist to analyze the input and output of a giga-cell simulation in practical times.«, in: From Mega-Cell to Giga-Cell Reservoir Simulation, Dr. Ali H. Dogru: Saudi Aramco Journal of Technology, pp. 63-70, Spring 2008.

»*Identification of opportunities to improve our current technology.*«
»*Ability to test future concepts which might offer technology step changes.*«
»*Forum to discuss visualization topics with a diverse group of visualization experts.*«
»*Interaction between research, users, software and hardware providers.*«
Knut Hansch, Principal Geophysicist, Canamens Energy AS, formerly with BP.

»*Wintershall sees great potential in the technologies that are currently developing under the term 'Industry 4.0'. The use of deep learning and artificial intelligence is of particular interest to us in the field of exploration and analysis of seismic data. The VRGeo Consortium is therefore a great opportunity for us to participate in the development of these technologies. We also expect a more sustainable search for hydrocarbons.*«
Torsten Helbig, Exploration – Resources and Performance Management, Wintershall Holding GmbH