

- 1+2 *User driven seismic data classification.*
- 3 *Pen & touch based interaction techniques for seismic interpretation.*
- 4 *SeisTablet – collaborative seismic interpretation workflow using tablets and large displays.*

THE VRGeo CONSORTIUM

Hardware and Software Technologies for Interactive Visualization Systems in the Oil and Gas Industry

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

Exploration for oil and gas creates huge datasets. Discovering subtle structures in this data can mean the difference between success or failure of a borehole. Only the best visualization and interaction techniques are good enough. In 1998, Adolfo Henriques from Statoil, Norway, took the initiative to establish a consortium of companies with a common interest in exploring the possibilities of interactive visualization systems.

The VRGeo Consortium

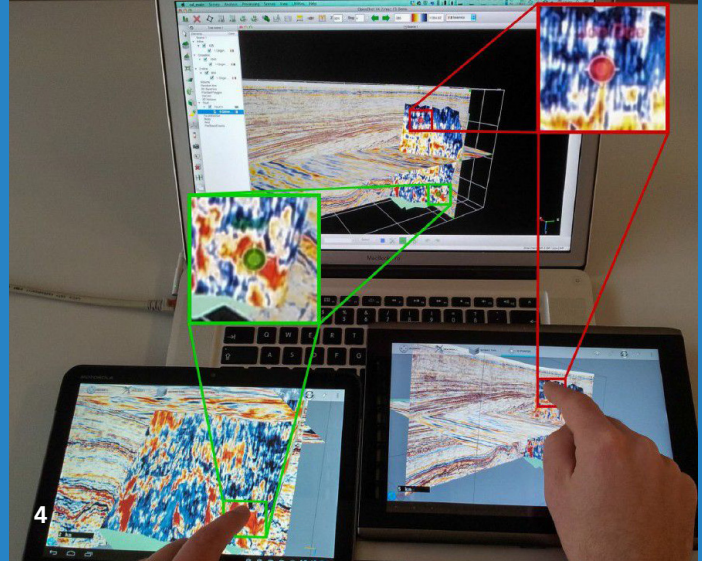
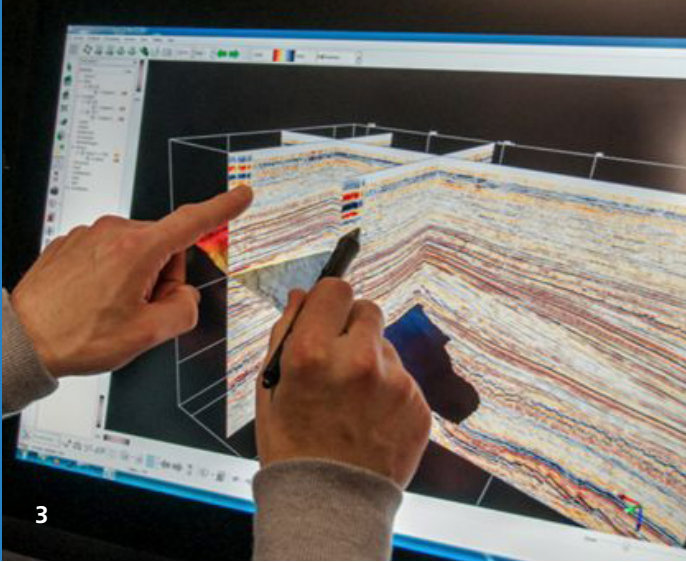
The VRGeo Consortium is a consortium of the oil and gas industry and their technology providers. The mission is to develop new methods and technologies, which eventually find their way into the oil and gas companies by means of the technologies providers.

The VRGeo Consortium successfully exists since 1998. Many VRGeo results can be found in soft- and hardware, which is used in oil and gas companies today.

Consortium Members

The members of the VRGeo Consortium represent oil and gas companies, their suppliers of software applications, and their providers of related technology.

Industrial companies are full members and scientific institutions are academic members of the VRGeo Consortium. Current industrial members are Eni, ExxonMobil, Saudi Aramco, Statoil, Barco, HP, Landmark Graphics, and NVIDIA. Current academic members are CMR and NTNU, both from Norway. Fraunhofer IAIS hosts the VRGeo Consortium and is conducting the technical R&D work.



Research & Development

VRGeo's main focus is on Visual Analytics Systems for the oil and gas industry, covering:

- Advanced Visualization (e.g. large seismic horizon and volume rendering): real-time, interactive, remote
- Natural Interfaces (e.g. multi-touch or speech control): fit to the task, easy to use, intriguing, human, invisible
- Team Work Environments (e.g. multi-user display systems): collaborative, multi-disciplinary, task-specific, immersive
- Technology watch related to oil and gas exploitation

The VRGeo R&D agenda is defined once a year by the VRGeo Consortium members. The members of the consortium decide on the continuation of existing topics and the introduction of new topics.

Major Achievements

- The VRGeo Multi-Touch: Together with Landmark Graphics, the VRGeo R&D team developed a stand-alone multi-touch table solution running Landmark's DecisionSpace(R) Desktop software for the inspection and annotation of 2D seismic surveys.
- The VRGeo Occlusion Spectrum Methodology: Together with Eni, the VRGeo R&D team developed a methodology to classify volumetric data based on "Ambient Occlusion" of voxels.

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

The Value Proposition

Being a full member of the VRGeo Consortium means to...

- be part of one of the rare international working groups where experts from oil and gas share experiences, ideas, challenges, and resources for basic research.
- represent your company in the VRGeo Steering Committee with one vote.
- have the right to nominate one academic member.
- have an impact on the VRGeo R&D agenda according to your individual needs and strategic objectives.
- have direct access to VRGeo prototype solutions for R&D purposes.
- have the right to review and license all VRGeo R&D results.
- give collective feedback and impact on suppliers' roadmap.
- have access to Fraunhofer's research staff in terms of collaborative R&D activities and also for topic-specific consulting purposes.
- optionally nominate one or more individual collaborators per year as resident professional to work at Fraunhofer IAIS as a participant in the VRGeo R&D program.
- 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.

Testimonials

"VRGeo is a perfect forum to discuss, experience and influence technology development within oil & gas science",
Jens Grimsgaard, Leading Researcher Geophysics Interpretation, Statoil ASA.

"...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.