

SEG Builds Online Community for Geosciences Industry

eCommunities provide a secure way for SEG members to reach out and talk to each other.

By Chris Posey, Online Marketing Lead, SEG

SEG enjoys a membership of roughly 32,000, and while the organization itself has more than 80 people on staff to connect with and manage information about those involved with the organization, SEG members have had little in the way of resources designed to aid in managing content contributed by industry colleagues, nor have they had a secure tool available to allow them to connect with peers and colleagues within the industry. SEG has addressed this conundrum of network and knowledge management with the rollout of its new eCommunities. Now users have the ability to access topical content volunteered by other members as well as to participate in discussion forums and to reach out to other members in the geophysics community within a safe, well-monitored online environment. Additionally, eCommunities promote professional networking and serve as a central repository of group activities, decisions, and documentation.

Networking opportunities

eCommunities allow registered users to connect online with other users and with eCommunity members. Membership in an eCommunity allows users to view other Member Profiles, access user-generated content, and partake in online forums and discussions within a clearly defined topical online environment right from the eCommunity homepages. All connection requests must be approved by the user to avoid unsolicited contact and ensure safety.

RTM-based Velocity Modeling Tool Shortens Cycle Time

Model morphing and migration technology allows rapid modification of geophysical salt models.

Contributed by ION

ION's GX Technology (GXT) group has introduced a new suite of data processing tools that allows interpreters within E&P companies to quickly test salt model hypotheses in 3-D using reverse time migration (RTM). Known as RTM³, which stands for Real-time Model Morphing and Migration, this new technology allows the interpreter to test "what if" scenarios in a matter of hours rather than weeks. RTM³ features an intuitive suite of tools and secure, remote access, allowing users to work from any location with good Internet access, saving them valuable drive and data loading time.

As the challenges of exploring and producing in subsalt reservoirs become more complex, E&P companies continue to look for faster and more efficient ways to reduce their risk and improve drilling success. Interpreters within E&P companies use velocity model-building as a key step in depth imaging, which provides necessary input

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In addition to finding specified members, users may also engage in SEG eCommunities to which they belong. These communities are geared toward a user's specific interests, occupation, or academic discipline. Each individual community has its own homepage through which approved members may post announcements, meeting minutes, images, related content, and links.

Document sharing

SEG's eCommunities provide multiple venues through which users may share online publications, documents, PDFs, spreadsheets, etc. with other members. Document sharing is a valuable tool in the eCommunity arsenal in that it makes available to users a vast library of topical resources created by subject-matter experts. Documents are accessible through a variety of formats and are conveniently located on eCommunity pages.

One way users may link to online publications is

through their Member Profiles. Each Member Profile contains a "My Publications" component, whereby a user may provide a title and URL of a publication that exists online. These publications may be viewed and accessed by other members. Members can easily edit publication links and titles and may add to their publications with a single mouse click.

If users are part of a large eCommunity and create a document such as an application or worksheet that needs to be accessed by many or all of the members of that eCommunity, they simply post the document to the Document Library of any eCommunity of which they are a member. Every eCommunity has a private Document Library that may be accessed via the Documents link in its Members Home area. Document Libraries are searchable, and individual documents may be customized in a number of ways to make their access by other eCommunity members simple and secure.

Discussion forums

Often, eCommunities must discuss important matters that affect the entire group. eCommunity Discussion Forums provide a readily accessible online platform for such exchanges. Discussion Forums are private online conversations accessed via the Forum link in the eCommunity Members

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the yet-to-find reserves offshore. “A quarter of the world’s future energy resources may reside in the Arctic,” Lawrence said, “and up to 80% of those will be in the offshore.”

Technology will play a major role in unlocking Arctic potential, Lawrence said, pointing to automated underwater vessels, new facilities, and well design as areas that will be particularly important. He noted several significant steps the industry has taken in technology advancement, including a breakthrough on ice seismic, which offers an alternative to open-water acquisition. On-bottom seismic is another exciting alternative under investigation, he said.

An ongoing challenge is to acquire seismic data at lower cost.

“Shell is working with technology partners to develop an autonomous ocean bottom sensor system that will not require the expense of dedicated ROVs or great lengths of cables,” Lawrence said. “These AUVs, also referred to as flying nodes, will comprise the seismic sensors, the data recording idly deployed from the mother system and then to steer themselves to return to the vessel to offload data,” he explained.

A prototype has been built, and field trials conducted in 2009 were successful. “More field tests will be conducted in the next couple of months,” Lawrence said, noting that a successful system could reduce costs by an estimated 40%.

Tim Dodson, executive vice president of exploration for Statoil, agreed that frontier exploration success will be essential. “We need more high impact discoveries,” he said, noting that he too believes the Arctic is “the premier next frontier.”

Trowell and others on the panel concur in their belief that gas will be the power source of the future. Demand growth for gas is expected to be twice that of oil.

“Probably the most prolific and near-term potential frontiers lie within existing basins, and these are the basis for the new frontiers,” Trowell said. “At the same time, we are going to open up new areas, including east and northwest Africa, the Arctic, and shale gas.”

The industry will have to tread carefully in environmentally sensitive areas, he cautioned. “Some of the challenges facing the industry are resources in remote or pristine areas that will present a new challenge for the industry as we are going to be under huge scrutiny by the public.”

Turning to technology, Trowell said, “I do not believe that seismic is used enough in risk mitigation for frontier wells and exploration.” He cited seismic-while-drilling tools to look ahead of the drill bit for pore pressure variations as one type of existing technology that can lessen drilling risk.

An emerging technology Trowell talked about is elastic imaging, which uses all of the P and shear wave data to preserve reservoir characteristics.

“It’s still a long way to go, but this is where I think we are going to be seeing the next frontier. We are now able to design, implement, and execute a complete new acquisition geometry because of computer power catching up,” Trowell said, “and advances in high-performance computing are going to take us to do more of this and to be able to push the limits on elastic imaging.” ■



David Lawrence



Carl Trowell



Tim Dodson

**Don't miss the Honors and Awards Ceremony
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At the Grand Hyatt | Ballroom | Level 4**

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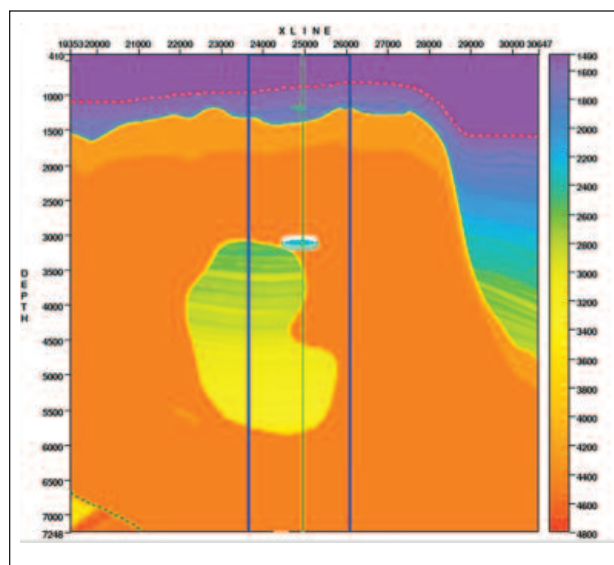
into well placement during both exploration and development. Until now, the only choice in rapid model building was a beam migration. GXT’s new RTM³ leverages the more robust, GXT-pioneered RTM technology to deliver production-sized models substantially faster than was previously possible.

Nick Bernitsas, senior vice president of ION’s GX Technology group, commented, “Our project experience has shown that troublesome interpretations tend to represent a small percentage of the total prospect area but are often the most prospective. Our model morphing tools are so intuitive to use that most ‘what if’ scenarios can be built within a few hours, and very few take longer than half a day to build.

“In most cases, this means that two ‘what if’ sequences can be run in a single day, putting RTM³ into the class of tools that works on a drilling team’s schedule.”

At the heart of the RTM³ suite is GXT’s proprietary RTM. GXT has built an interface into its RTM software that allows a streamlined production run of the right-sized data volume. It leverages its production experience to get the volumes out quickly. No corners are cut in shot density, frequency, or anisotropy.

Once salt models are modified, the tool uses GXT’s robust RTM engine to migrate the corresponding seismic volume. The model morphing is based upon a starting model that has been built through the standard model-building flow and may include client-supplied horizons, tomography-based model updates, focusing analyses, and alpha scans. In the past, changing the model to rapidly test many different scenarios was not feasible. Now, using RTM³, inclusions can be added, salt wing and keels can be grown and shrunk, and welds can be made thicker or thinner. All the model modification tools



In this image, an elliptical inclusion has been added using RTM³. (Image courtesy of ION)

are true 3-D tools, and the user interface into those tools is easily accessible. In those cases where the velocity issues lie beneath salt, unique 3-D polygon velocity picking tools make short work of an otherwise complex task.

RTM³ allows GXT’s experts to work closely with client geophysicists and geologists through the needed imaging iterations more rapidly than would be possible working in isolation. To this end, RTM³ tools were built with remote use in mind. By working closely with its clients’ IT departments, GXT custom-built an access portal so that clients can use the tool in their own offices. Given the security sensitivities and networking constraints under which its clients operate, GXT provides clients with secure access to both their data and the software. RTM³ allows clients near-instant access to their data without the need for any complex data loading steps or the expense of custom hardware.

Bernitsas said initial feedback from GXT’s clients has been overwhelmingly positive. “Our clients are thrilled to be able to accomplish what used to take days or weeks in just a few hours, without sacrificing image quality,” he said. “At the heart of the RTM³ suite is GXT’s RTM engine, with full frequency and anisotropy options, but we’ve added a simplified user interface that allows them fast and secure access to their data and the software from their desktops. They see RTM³ as a true step-change improvement in velocity model building and subsalt picking.”

For more information on RTM³, visit ION at booth 2028. ■

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Home area. Using these Discussion Forums, eCommunity members may post comments, issues, questions, or assertions publicly (within respective eCommunities) for the rest of the eCommunity members to view and respond to. Members may reply to new forum “threads” (individual online discussions that follow a particular question or topic) as they so desire. Discussion Forums are moderated by community managers and may be searched using the Discussion Forum search functionality.

Whether members simply want to reconnect with former colleagues or are looking for a robust, full-featured online community platform that allows for document-sharing and discussion forums, SEG’s eCommunity tool is the perfect interactive online resource devoted to geosciences professionals. Log on to *Seg.org* today and click “Community” at the top of any SEG webpage to initiate an online collaborative experience with other thought leaders in the geophysical community. ■