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Distributed Data Management

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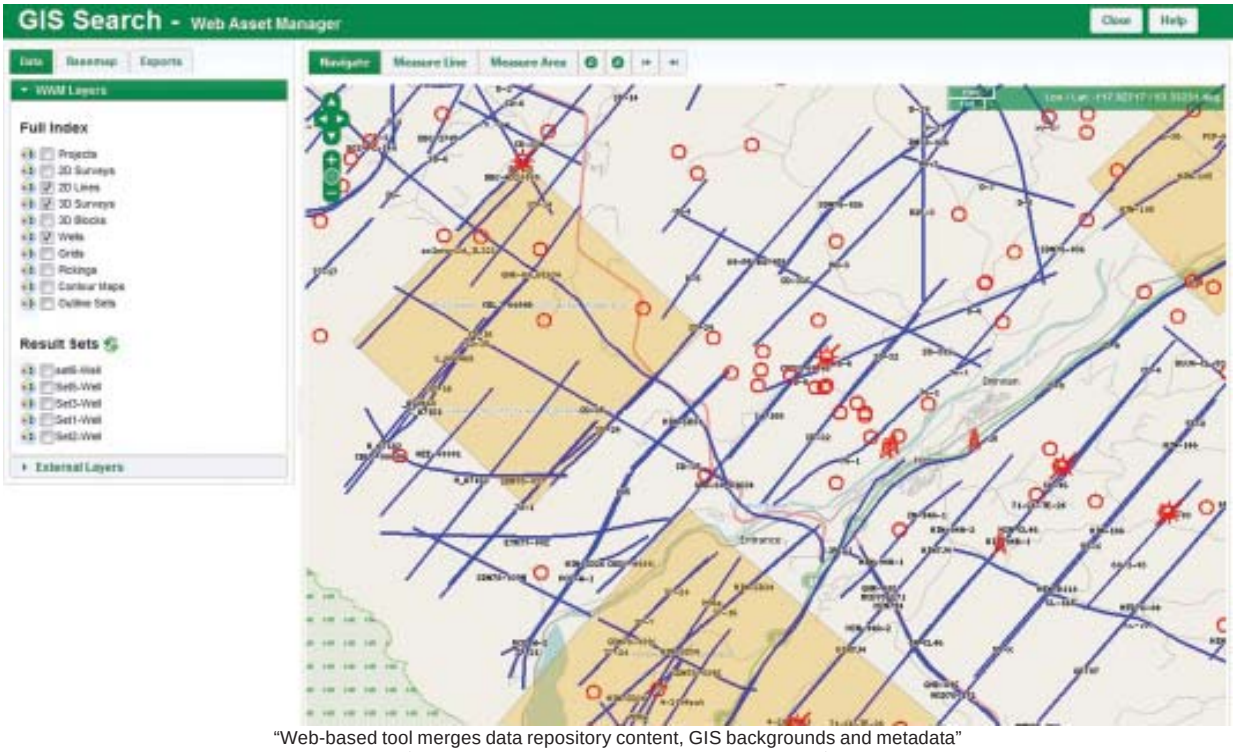
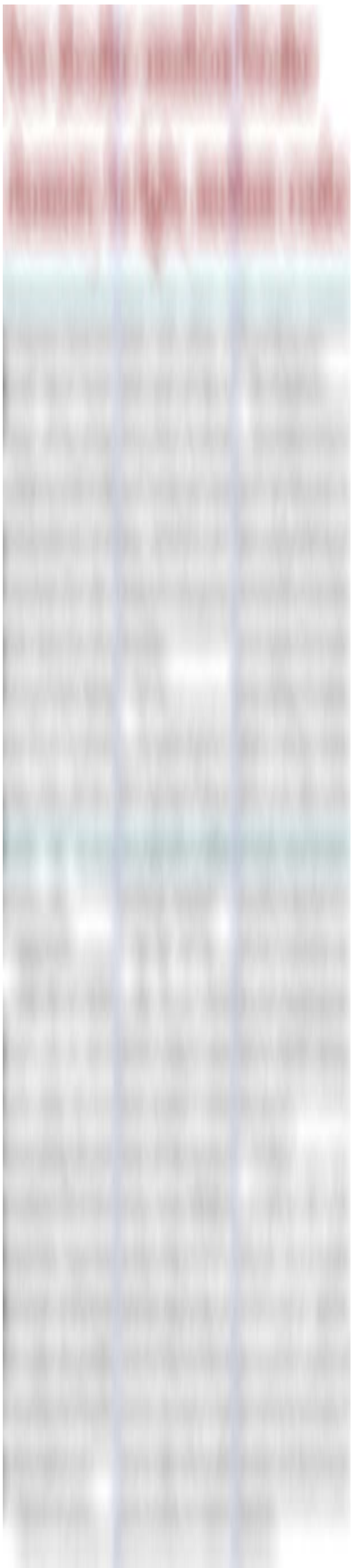
Distributed data management takes a different approach. Individual data repositories are typically smaller, encompassing often just a single seismic survey or a small group of surveys.Users can designate any number of seismic surveys, well databases and other repositories when initiating a project. At any point in time, additional surveys or repositories can be added if the scope of the project changes. Each data entity in the system can be shared among any number of different users, groups of users or business entities, with the ability to set specific access controls for each one. This has two major benefits for both the users and the staff managing the data system: first, there is no need to make choices as to which data is put into which database. Regardless of which repository data gets loaded, it will be possible to make it available to different users or groups with simple access management tools. Secondly, there is no need to replicate data. In the older, multiple monolithic database architecture, if a user needed to access e.g. some seismic data that was not the database, it had to be copied from another one in order to be put to use. The user or support staff are also left with the task of matching any work performed on data that would be replicated in different databases. In a distributed system, users sharing data can see each other's work as it progresses, compare or copy parts of it if needed, and at some point merge work performed on common data using data administration tools.

The architecture of a data management system for subsurface data is crucial to the efficiency of the different teams of professionals. The geoscientists and engineers need to access, store and share both the data that they need to work on, and the knowledge-rich information that is created through their years of work on E&P acreage and assets. The architecture of a data system, which mainly addresses the localization of data for optimal access speeds, and the confinement of data to ensure that information is only shared with other colleagues with appropriate



"Web-based tool merges data repository content, GIS backgrounds and metadata"



level of authorization, typically results in a fragmentation of most data into data silos that are managed for the purpose of a specific business unit or team actively engaged in a particular area or petroleum play. Speed of access, associated to network bandwidth, also drives such design choices for voluminous data such as seismic, where terabytes of information for a single project are commonplace. Some informationsuch as borehole data and logs will be grouped into databases with a broader geographical scope.

Distributed data management takes a different approach. Individual data repositories are typically smaller, encompassing often just a single seismic survey or a small group of surveys. However, users can designate any number of seismic surveys, well databases and other repositories when initiating a project. At any point in time, additional surveys or repositories can be added if the scope of the project changes. Each data entity in the system can be shared among any number of different users, groups of users or business entities, with the ability to set specific access controls for each one. This has two major benefits for both the users and the staff managing the data system: first, there is no need to make choices as to which data is put into which database. Regardless of which repository data gets loaded, it will be possible to make it available to different users or groups with simple access management tools. Secondly, there is no need to replicate data. In the older, multiple monolithic database architecture, if a user needed to access e.g. some seismic data that was not the database, it had to be copied from another one in order to be put to use. The user or support staff are also left with the task of matching any work performed on data that would be replicated in different databases. In a distributed system, users sharing data can see each other's work as it progresses, compare or copy parts of it if needed, and at some point merge work performed on common data using data administration tools.

In addition to the administration tools that allow for an overview of all data instances, web-based applications now complement the distributed architecture, with the ability to discover what data is actually online at any point in time, use criteria-based search tools to locate all the relevant data for a specific purpose, and display previews of data to identify different versions and address issues related to incorrect or incomplete data labeling. dewjournal.com

about the author

Philip Neri is vice president marketing at Paradigm. With more than 30 years of experience in the upstream oil and gas industry, Neri has held a variety of positions at Paradigm in global sales, product management, business development and strategic consulting. He started his petroleum career with Shell in 1979 and worked on exploration prospect generation in Europe and Asia. In 1986, he moved to GECO in Stavanger, working on the Charisma computerized interpretation system. In 1989, he joined Elf Aquitaine (now Total) and worked at their Technology Center in Southern France on projects involving neural networks applied to seismic facies. In 1995 Neri joined the French geophysical contractor CGG's software division to build a new technology product line, later renamed Flagship Geoscience. This included Stratimagic, the first application to enable a geological interpretation of seismic data. The business unit was purchased by Paradigm in 2000. After graduating in classical languages in Geneva, Switzerland, Neri pursued his bachelor degree in earth sciences, and a master in geophysics and computer science.