

Digisite WITSML Product Suite

Digisite Systems Inc. is a leading developer of innovative and cost effective well site information delivery solutions for operators, service companies and software vendors. Digisite WITSML product suite collects and delivers critical well site information from well sites to rig network as well as remote offices in real time, leaving the clients free to concentrate on the value of the services built for themselves and their customers: Monitoring, optimization, and analysis.

The product suite is the enabler to establish the OSCs (Operation Support Centers), which offers drilling engineers, geologists and geophysicists an innovative way to work together in a centralized location on making the critical decision, and tackling the challenges that could rise any minutes on the remote well sites.

Digisite product suite provides secure and real-time data standardization and delivery capability, enables the data sharing and consuming by authenticating users regardless of location.

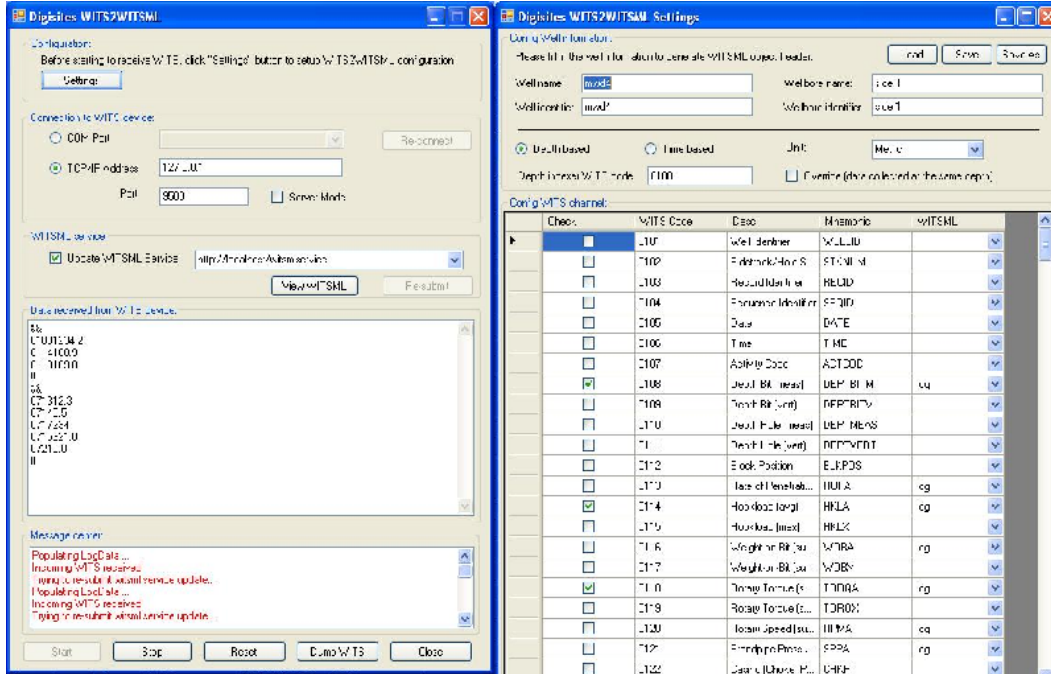
Digisite offers a wide spectrum of applications ranging from data collection, conversion, storage, to well data displaying, analyzing and modeling. Digisite WITSML product suite consists of Aggregator such as LAS2WITSML, WITS2WITSML and Lithology & Comments editor, WITSML Server, RTexplorer, and Analyzer. The flagship product WITSML Server is loosely coupled with other products, and can also provide real-time data access to 3rd party applications such as Petrel, Smart4D and etc as long as they are compatible with WITSML standards.

1. Data Aggregators

The key to quickly respond to the constantly changing environment on the rig is to collect rig data in real time and move it to engineers on the rig and at the remote offices. Engineers can monitor, optimize and analyze the data and provide support back to the rig crews. Digisite offers various aggregators to make the data collection tasks easy and effective.

1.1 WITS2WITSML

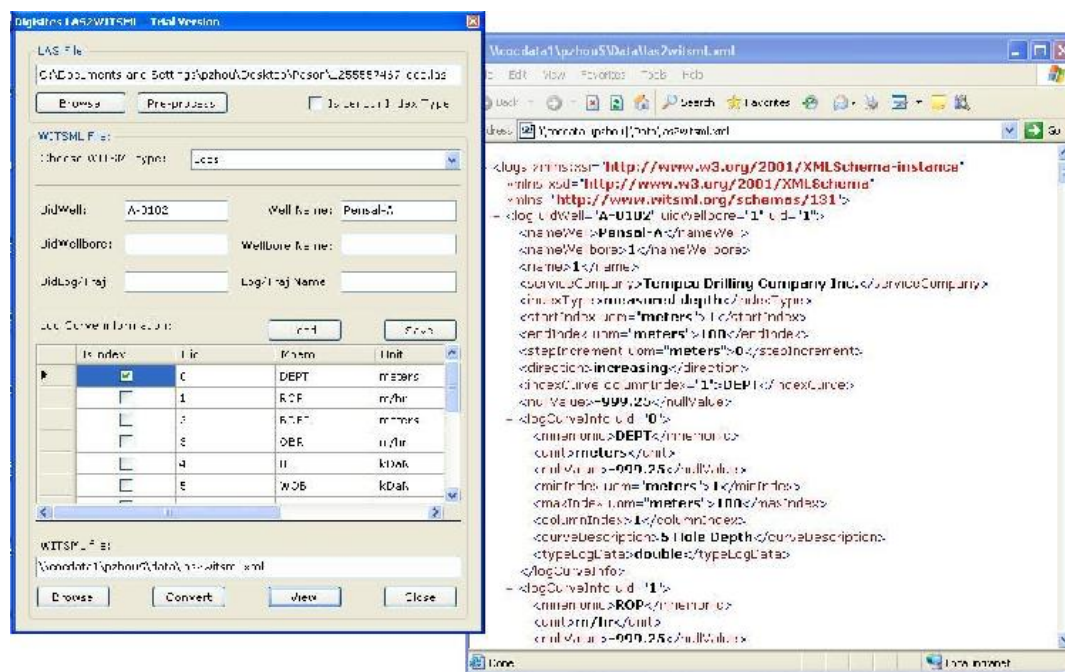
WITS format has been adopted by the industry many years to collect and exchange well site information. To date, it's still widely used by mud logging companies, drilling companies. For example, some EDR providers built their systems based on WITS. WITS2WITSML is a tool to connect WITS devices in TCP mode or Serial mode, convert the WITS data to WITSML data on the fly, and update the designated WITSML server in real time. When the network to the WITSML server is disconnected, data will be cached and WITSML server update will be resumed automatically when the network is reconnected. On the other end, the system keeps monitoring the connection to WITS device and tries to re-connect the WITS device once the connection drop is detected. The system can be configured in a minute and the data collection can be started right away and it won't end until being told so. Pre-configurations can be saved and loaded to connect the WITS device quickly for lower technical support on the rig site.



1.2 LAS2WITSML

Las2Witsml is a handy tool to convert LAS files to WITSML format. The utility supports LAS version 2.0 and 3.0. Historical data can be loaded into WITSML servers simply by clicks using this tool. It is quite

often utilized as the bridge between a system generating LAS format files and a WITSML service supporting STORE interface. The tool is designed to accommodate the discrepancies from the LAS standards that can be found in many LAS files provided by various vendors. The tool also offers the capability to make changes to Mnemonics, Units and Descriptions before converting to WITSML format which is very useful to correct data without re-sending the LAS file back to the providers. A web version is also available for enterprise deployment and usage.



1.3 Lithology & Comments editor

Lithology & comments editor allows the rig site geologist to enter cuttings and interpreted lithology information. Lithology data will be converted to mudlog WITSML object, and then sent to the WITSML server for consuming. Comments and images can also be edited in this tool and uploaded to WITMSL servers.

1.4 ODBC2WITSML

Dealing with many mudlogging companies' proprietary databases, ODBC2WITSML can be easily set up to map mud logger's database into corresponding WITS/WITSML format. Without any change to the service provider's system, the tool makes the job to create a WITSML data stream from a legacy system a breeze.

2. WITSML Server

Digisite WITSML Servers are the core systems in the product suite. With our state-of-art XML database technology they fully support WITSML 1.3.1 API standard and data types. They are flexible enough to be deployed on a rig, at the remote offices or combined together in order to support data synchronization among multiple servers seamlessly.

2.1 Site WITSML Server & Enterprise WITSML Server

With enterprise and site versions, Digisite WITSML servers comply with WITSML 1.3.1 data and API standards. Usually the Site WITSML server is deployed on the Rig site, and the Enterprise WITSML server is deployed in the data center environment to serve the WITSML data consumptions for the entire corporation.

With the outstanding capability to provide real-time data, Digisite WITSML server allows any application supporting WITSML interfaces to utilize the live data feed to facilitate real-time modeling and analyzing.

Digisite WITSML Servers support SSL (Secure Socket Layer) as the standard communication protocol to secure the data delivery. Leveraging Activate Directory service, Digisite WITSML Servers ensure the data can be accessed by the authorized users only. The user manager console allows the administrator to set up right access for each user and group. Only authorized user will be able to access the data.

Many commercial off-the-shelf applications developed by Oil & Gas software vendors are embracing the latest WITSML standards, such as Petrel, Smart4D, etc. Real-time data severed by Digisite WITSML servers can be consumed directly by these products, thus maximizes the technical investments by reducing the lengthy and complex data conversion/loading process and adding values to their analysis routines.

Available in Digisite Enterprise WITSML server, Active directory integrated security model reduces administering effort to grant right privileges to right person at the object level. Only authorized users are allowed to upload, change and view data.

Digisite WITSML Service Admin Console Current logon: **DSSVRGREEN**

User management | Group management | Access management | Data management | Transfer management | **Replication management** | Audit management

Search

Well UID	Wellbore UID			Status
demowell	wb	Start Synch	Stop Synch	demowell wb timelog Job status: Stopped Index type: Index: Message: Unable to connect to the remote server
ax-134	wb	Start Synch	Stop Synch	
dp-5	wb	Start Synch	Stop Synch	
x325	wb	Start Synch	Stop Synch	x325 wb log Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb log_depth Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb wl-hrid-gr Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb wlbcsgr1 Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb sdlre Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb image Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb image2 Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb image3 Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb traj Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found. x325 wb plannedTraj Job status: Stopped Index type: Index: Message: The request failed with HTTP status 404: Not Found.
nov11	wb	Start Synch	Stop Synch	
sample	wb	Start Synch	Stop Synch	
TOPKHANA-1	1	Start Synch	Stop Synch	
oilserv	wb	Start Synch	Stop Synch	
zhu38	wb	Start Synch	Stop Synch	
digisite	wb	Start Synch	Stop Synch	

2.2 Digisite Synch Service

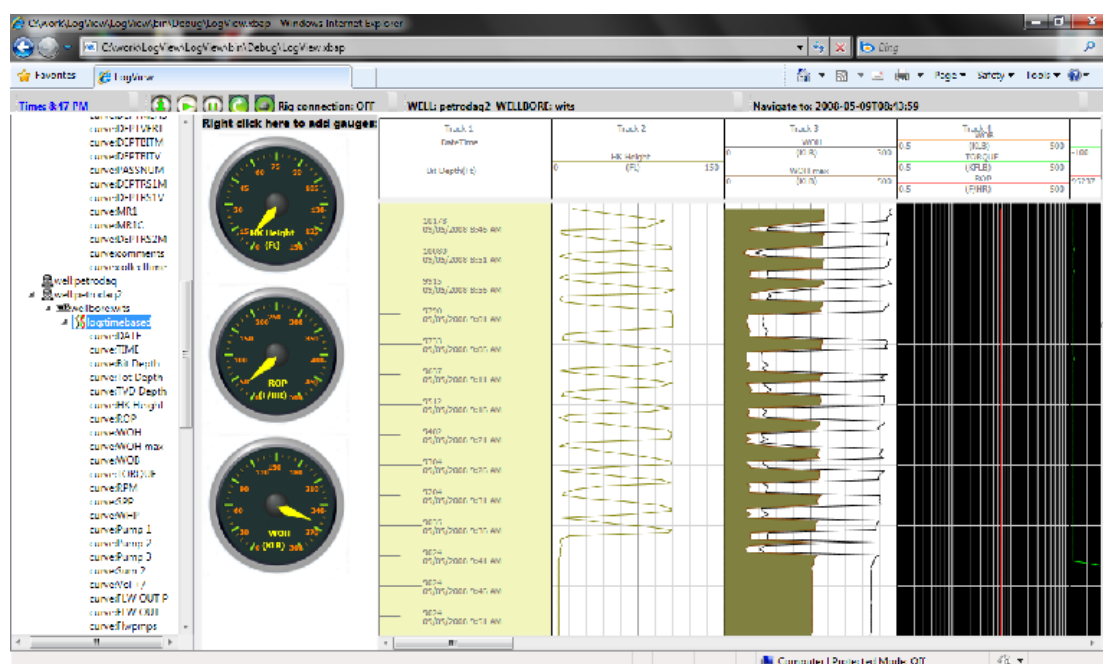
Digisite Synch Service offers data synchronization mechanism among multiple WITSML sources and destinations. Administrators can schedule multiple synchronization jobs to move data from one WITSML server to another; a web based console application makes the synchronization scheduling and monitoring much easier. While working seamlessly with Digisite Site WITSML sever (rig site) and Digisite Enterprise WITSML server (remote office site), It also provides an easy way to migrate data to any other WITSML 1.3.1 compatible servers.

3. WITSML Applications

WITSML is the latest industry standard for well site data transfer, more and more applications have adopted the standard to provide real-time capabilities. Monitoring the drilling conditions, evaluating and analyzing the underground oil and gas reservoir, WITSML data consuming API plays the key role to make this happen, as long as the applications support the WITSML interfaces, it will be able to consume any WITSML data from any WITSML service providers, and truly share the data between services and operators.

3.1 Digisite RExplorer

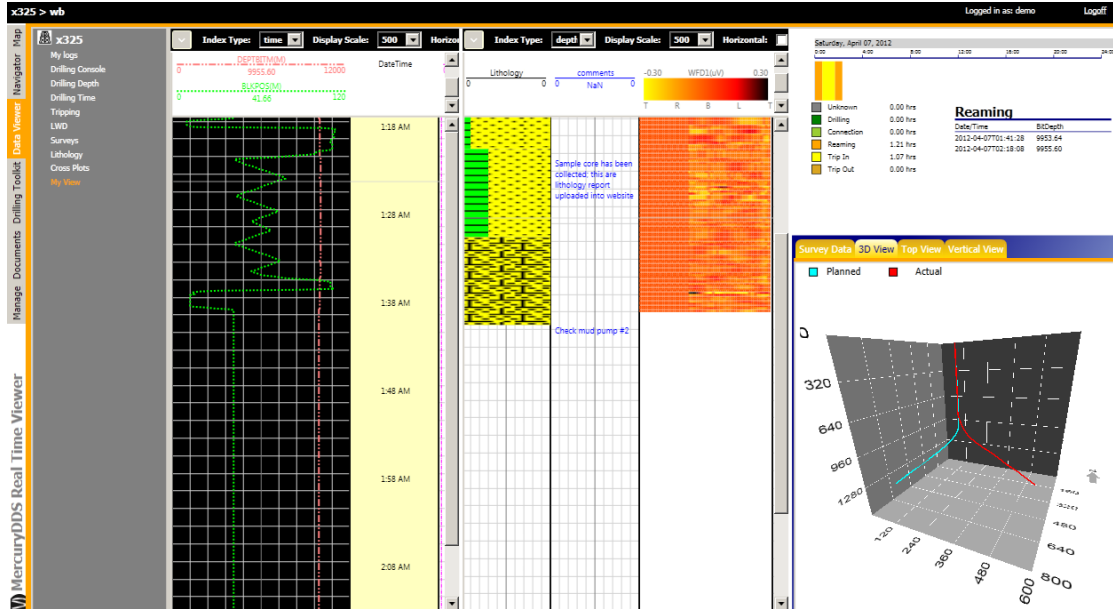
Using the comprehensive web-based Digisite RExplorer system, authorized users are able to gain access to drilling parameters, survey, MWD/LWD, mud logging, and any other supported WITMSL data in a web browser no matter where the WITSML servers are located, leaving the users to focus on the constantly changing conditions on the remote well site in real-time. While serving the purpose as the real-time data monitoring tool, RExplorer system could be deployed as the historical data viewer to the enterprise users as well.



A rich set of features are available to the enterprises users through RExplorer:

- User templates management
- Free scale, zoom and scroll
- Linear, logarithmic, and smart indexers
- Optimized massive time based data retrieval
- Vertical and horizontal display
- Log, gauge, and text data views
- Comprehensive mathematical functions on raw data

- Rosebud display
- 3D trajectory view, horizontal and vertical view
- Plotting to printers, XPS documents
- Alarms system



3.2 Digisite Analyzer

Digisite Analyzer provides data intelligences built on top of the real-time WITMSL data, adding values to the data collected from the well site. The following functions are available through Digisite Analyzer:

- Activity code calculation
- Fracture gradient calculations
- Pore pressure calculations
- D-exponent
- ECD

4 Digisite WITSML Development Kit

It is also worth mentioning that Digisite has a very strong and enthusiastic professional service team running in the global supporting model. Digisite WITSML SDK is a development platform and service library for WITSML application development and customization. It allows our professional service to tailor our products and service just for our client in a timely fashion without compromising the quality.

4.1 Development SDK

For your special requirements, Digisite is available to help you customize your applications using our .NET based controls and libraries. Digisite provides the following .NET based controls and libraries (APIs) that can be built into your applications to communicate with our WITSML server or servers provided by other vendors as long as WITMSL standard is followed.

- Digisite WITSML Server Web Services
- Digisite WITSML Aggregator API
- Digisite WITSML Subscriber API
- Well data standardization tools/utilities API