

Sysdrill® Designer

Well Planning



Interpretation
and Modeling

Embedded Well Design

Paradigm™ Sysdrill® Designer is a powerful well planning tool embedded within the Paradigm SeisEarth® multi-survey interpretation and visualization application. Sysdrill Designer allows geoscientists to quickly produce well designs based on a set of predefined drilling constraints, after targets have been interactively selected in the SeisEarth 3D Canvas. The tight integration enables well designs to be visualized in the SeisEarth 3D window together with regional subsurface data.

Through its integration with SeisEarth, Sysdrill Designer enjoys the advanced data management features of the Epos® 4 infrastructure, including the rapid selection and loading of large data sets.

Target Picking

Geological targets can be defined in time migrated or depth domains by digitizing points in the SeisEarth 3D window. They can then be interactively positioned

relative to geological features. Time-depth conversion references can be specified for the field using a global velocity model, or for an individual well using offset check-shot data. Culture polygons can also be imported for use as targets.

Well Planning

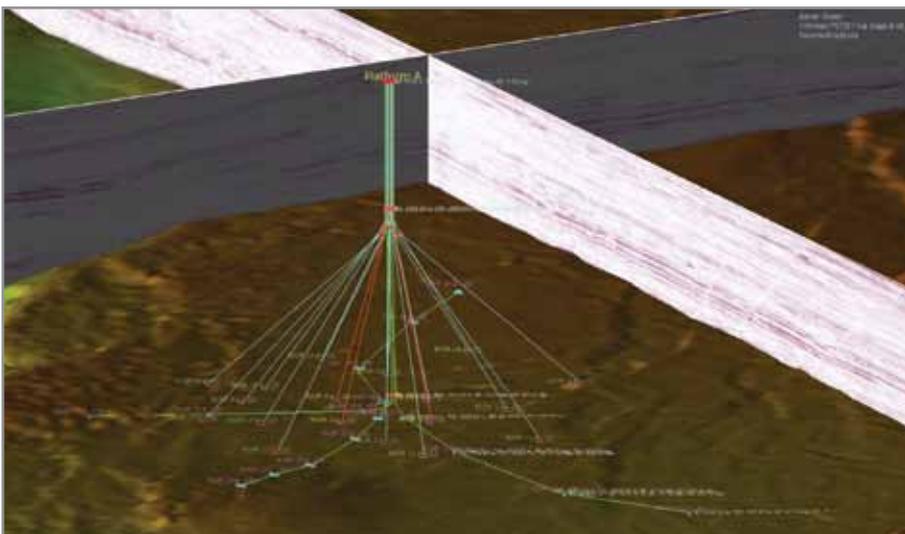
Well designs are automatically calculated from the surface location to any number of targets, using a sequence of well profiles and pre-defined drilling parameters. Vertical, continuous build, J, S and double curve well profiles are all available. Well designs can then be manually edited by constraining KOP, DLS and inclination values. For multi-lateral wells or sidetrack planning, the tie-point can be defined by graphically picking a depth on an offset well in SeisEarth.

Platforms and slots can be defined and assigned to individual wells. If the platform is interactively picked and moved to a new surface location, all well designs assigned to a platform are automatically recalculated and displayed in SeisEarth.

A Collaborative Working Environment

Sysdrill Designer has a new user interface specifically designed for the geoscientist, that provides all of the functionality normally available within a drilling engineer's application.

With a strong emphasis on planning drillable wells, Sysdrill Designer can be used by geoscientists to plan single exploration, multi-well development, or full field development wells in time or depth migrated domains. The result is improved collaboration across disciplines and shorter well planning cycle times.



Multi-well multi-target platform design



Platform/slot allocation

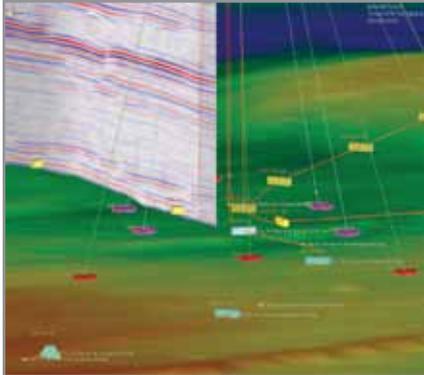
If predefined drilling constraints have been exceeded, these are highlighted so that wells can be re-planned before passing them on to the drilling department for further engineering.

The advanced multi-well picking and target duplication features in Sysdrill Designer enable multiple target sequences to be created quickly. This allows the rapid creation of multiple well designs, for efficient multi-platform field development planning.

Visualization

When well designs are calculated they are immediately displayed in SeisEarth. Wells, targets, slots and platforms can be selected, and display properties can be changed, allowing easy visual identification.

A seismic well traverse can be visualized along the well design, and used for validation of targets picked in the reservoir and for identifying any geological hazards



Horizontal target validation using seismic well traverse

in the overburden, such as faults or shallow gas.

Data Management

Sysdrill Designer wells are stored in the Epos Drilling Data Service (DDS) database, a sophisticated engineering model of the well that allows cross-disciplinary collaboration with engineers using Paradigm's industry leading Sysdrill drilling engineering applications.

Geological targets are stored in the Paradigm Epos Interpretation Data Server, and are accessible by other Epos applications.

Querying and filtering tools allow rapid selection and loading of large data sets based on well parameters. Advanced data management tools provide user access control for individual wells.

Third-party data exchange is enabled via export to .LAS, and OpenWorks® compatible file formats.



Interactive well design spreadsheet

Features

- Global coordinate systems
- Fully interactive well planning and display in SeisEarth 3D Canvas
- Support for time migrated and depth domains
- Graphical interaction and manipulation of targets
- Automatic well path calculation for single or multiple targets
- Easy-to-use, editable well path design
- Validation of well design against predefined drilling constraints
- Support for platforms and slots
- Graphical interaction and manipulation of platforms
- Support for development, appraisal, multi-lateral and sidetrack wells
- Data export in common formats for use by third-party planning solutions
- Connectivity with Epos infrastructure

Interoperability

All Epos-based applications enable interoperability with third-party data stores, including:

- OpenWorks® 2007, R5000
- GeoFrame® 4.5
- OpenSpirit® 3.2.3

System specifications

- All 64-bit, for x64 architecture processors
- Microsoft® Windows® 7
- Red Hat® Enterprise Linux® 5.3 and above, 6.0 and above

The Paradigm Advantage

- + Multiple target picking and automated well planning enable rapid well design.
- + Pre-defined drilling constraints reduce well planning cycle times.
- + Control inclination and direction at target to optimize entry into the reservoir.
- + Co-visualization of drilling and subsurface seismic data helps validate well designs.
- + Platform and slot support enables rapid field development scenario planning.