

B2|OpenWorks Well Planning Integration Module

Functional description

The **B2|OpenWorks WellPlanning Integration Module (IM)** supports connection to Well Planning Projects (WPPs) in Landmark OpenWorks databases via the Openworks system developer kit API. The primary functionality of the **B2|OpenWorks WellPlanning IM** is to:

- register interest in (subscribe to) specific OW Well Planning Projects (WPPs), typically connected to target development for a planned well. These WPPs are then subscribed within the context of B2 projects so that they are visible.
- read and inspect the content of WPPs as created and updated by Petec in the Openworks database (the IM does not support disk-based wellplanning projects).
- construct a meta-representation of the subscribed WPPs including wellplans and targets in the B2 database for visual inspection by the clients in the subscribing B2 project.
- utilize the Openworks developer kit API to reproduce (copy) surveys from the EDM data domain as new wellplans within a subscribed WPP in the Openworks domain. Geologic targets from EDM may also be copied to the WPP when desired, however it is understood that EDM primarily produces surveys, while Openworks produces targets.
- utilize the EDM JDataServices API to reproduce targets in EDM which have been modelled in Openworks (PrecisionTarget).
- monitor subscribed OpenWorks WPPs for changes and updates. All additions, deletions, and changes to elements within the WPP of interest are monitored and reported to clients within the B2 project. Additionally, logging is done when “significant” changes occur. (TVD changes, etc)
- Note that instances of this IM are called OWIM_SID_PROJECT in the **B2|Project Administration** application, where SID and project refer to the actual openworks database name and project corresponding to the field. Read and inspect the content of CSD database
- Read the data and store it in the B2 Model
- Monitors the OpenWorks database for changes (24x7)

General technical considerations

In the well planning process there are certain data entities, specifically - wellplans (surveys) and targets, which exist logically as a single entity, yet are simultaneously shared and concurrently modified (or versioned) by several applications which have these databases as their storage medium, including Compass, DecisionSpace, WellborePlanner, and others. The primary roles (or swimlanes) in this process include the Drilling Engineer who develops the survey/trajectory and uses Compass (or another directional well planning software) and the Geologist/Geophysicists who use Openworks / DecisionSpace PrecisionTarget) and specify the target location and form.

Common data types – all clients

The **B2|OpenWorks Well Planning IM** supports the following data types:

Geologic Target

The current complete list of targets for a given WPP is of interest to all clients and is extracted to the B2 metadata set. As usual, the targets are extracted via the API using the standard

`gdiReadSubset(WELLPLANNINGPROJECT,wpp, gdiTarget_t)` call to the API. Geometry for non-point targets is obtained first determining whether the target has geometry, then attempting to extract the regular geometry (`gdiRGeometry`) which includes circle, ellipse, and rectangle geometries, if not found then a polygon target is assumed and the irregular geometry (`gdiIGeometry`) is read for the target with the corresponding pointset then attached to the target in the B2 heirarchy as an ordinary ordered list.

Drillers Target

When an ordinary target reaches full maturity it takes on the additional drillers information, including geometry and likelihood. Precision Target, after close coordination with Statoil in the development, stores Drillers information for an advanced target in the Application Data table within the Openworks database.

Extracting drillers target information requires the use of the `gdiStream` in the Openworks SDK, with the resulting XML file which has been stored for the drillers target then being parsed in this IM and having its corresponding drillers geometry and likelihood attached to the geologic target metadata within the B2|SCT database. In this metadata form all necessary information for a final copying process from Openworks/PrecisionTarget to EDM for the RTD completion is simple and easy utilizing the SCT|Wellplanning client facility.

Additional information related to copying targets from the Openworks domain to EDM can be obtained by contacting The BB Visual Group AS.

Wellplan

The current complete list of wellplans (surveys in EDM) for a given WPP is of interest to all clients and is extracted to to treemap in the B2 metadata set. Wellplans are also extracted via the API using the standard

`gdiReadSubset(WELLPLANNINGPROJECT,wpp, gdiTarget_t)` call to the API.

Command Interface for the IM

Command	Function	Datatype TX	Datatype RX
SYNC	Resync against OW db	String	String OK
PING	Respond only with simple ACK	String	String OK
TRANSFER_WELLPLAN	Receive a geologists target extracted from EDM and save to the WPP	EDM Target	Success / failure msg
TRANSFER_TARGET	Receive a survey extracted from EDM and save to the WPP as WellPlan	EDM Survey with all stations	Success / failure msg

The TRANSFER_TARGET and TRANSFER_WELLPLAN command in particular are among the few instances where SCT creates data in the OW database. As with all other data-creation cases in use with the SCT Suite, the data types (target, wellplan) are created with the system user's ownership (`vdb2` in Statoil). These commands require only simple write access to the OW database, not manager or interpreter access.

It's important to note additionally that the wellplan and target creation code within B2

uses only `gdiAdd()` and `gdiCommit()`.

Targets and/or wellplans cannot be changed via any B2 implementation.

- Requires a system user with “Interpreter” access to the relevant data in OW

Supported data types

The **B2|OpenWorks Well Planning IM** supports the following data types:

Datatype	Comments	Read	Write
WellPlanning projects	R2003+R5000	Y	N
Well plans (surveys) + turnpoints	R2003+R5000	Y	Y
Geologic targets + geologic geometru	R2003+R5000	Y	Y
Drillers Targets + Drillers Geometry	R2003+R5000	Y	Y
Wellplanning targets	R2003+R5000	Y	Y

B2 infrastructure

The **B2|Integration Modules** are components in the B2 suite. The B2 suite also contains the required server and integration components, such as the **B2|Collaboration and Integration Server**, **B2|Meta Model** and **B2|Web Service**.

This common infrastructure serves end-user application clients such as the **B2|Integrated Well Planning**, **B2|Integrated Operations**, **B2|Virtual View** and **B2|Virtual Arena**.

Released versions

The following table lists the released versions of **B2|OpenWorks Well Planning IM**:

Version	Supported B2 Collaboration Server	Supported OW version
V3.2	V3.2 and v4.0	OW R2003
V4.0	V4.0	OW R2003, R5000
V4.1	V4.0, V4.1	OW R2003, R5000

Technical requirements

Operating system: Linux (RHEL) 64-bit

Software requirements: Requires Oracle Java

Other requirements:

- Requires a running instance of **B2|Collaboration and Integration Server**.
- Requires OpenWorks license and OW SDK (but this is shared between all OpenWorks IMs for each field / OW server)