PPDM COMPLIANCE

VENDOR NAME: THE INFORMATION STORE
PRODUCT NAME: PDMS
VERSION: 1.0

MEASUREMENT DATE: OCT 9, 2009
PRODUCT DESCRIPTION

INTRODUCTION

The PetroTrek Data Management Solution (PDMS) is a product that has been developed by the Information Store to allow QA/QC management of E&P data on top of the industry standard PPDM data model. PDMS is a data adaptive tool that presents data in a spreadsheet like interface that is easily and quickly understood by anyone in the E&P industry. It incorporates a business transaction oriented approach to managing and displaying data that allows data editing capability against all parts of the data model. Extensions to the data model can be created and made available for data admin staff within the interface in as little as 10 minutes. Integrated into the PDMS interface is the capability to define data validity rules (data business rules) for incoming data so that only properly conditioned data is loaded to the database. In addition, the interface honours all referential integrity in the data model explicitly by providing data filters that are data type aware, pull downs in the edit grid to restrict data edits to foreign key reference tables and by providing an interface for direct edit of reference table information in context to the data tables which point to them. PDMS comes pre-configured with business transactions within the PPDM data model for all the commonly used data types, including Well Header, Directional Survey, Stratigraphy, Cores, Tests, etc.

The target audience for this product is Data Administrators / Data Management staffs.

DATABASE DESIGN

The system is based on the PPDM 3.8 data model. For those data items special to a particular company, the model can be extended locally. A data model enhancement process is published by PPDM for adding extensions for new data types that can be utilized by any company wanting to put their data model into the public domain for comment and support. Within PDMS, the PPDM data model is changed or extended according to the compliance rules of PPDM. Additional data items may be added, as long as the referential integrity rules or constraints of the data model are not comprised. This allows the PDMS database to be accessed by other software that has been written against PPDM with no modification. Further, by understanding the modeling style of PPDM, we will work with clients to extend the model in a form that is more amenable to inclusion in future versions of the model.

PPDM MODEL COVERAGE

PDMS allows management of all data that might be input into a PPDM data model database. In addition, by virtue of its meta-data based design, any client extension that has been modeled into the PPDM database can be addressed via the same UI displayed herein in screen shot form. The iStore follows the referential model of PPDM and uses that part of the model to guide the meta data based UI and business transactions.
META DATA

Information about the business transactions, data validity rules and the layout of the user interface are managed using the PPDM meta data model. The meta data is referenced via an admin interface within PDMS that makes it easy for a client to:

- Define/Edit/Change business transactions
- Define/Edit data load validity rules
- Define/Edit the edit grid layout

Meta data tables utilized are:

- PPDM_COLUMN
- PPDM_CONS_COLUMN
- PPDM_CONSTRAINT
- PPDM_GROUP
- PPDM_GROUP_OBJECT
- PPDM_GROUP_XREF
- PPDM_MAP_DETAIL
- PPDM_MAP_RULE
- PPDM_RULE
- PPDM_RULE_DETAIL
- PPDM_SYSTEM
- PPDM_SYSTEM_MAP
- PPDM_TABLE
- PPDM_TABLE_ALIAS

BUSINESS TRANSACTIONS

Data is viewed and manipulated within PDMS using a business transaction model of data abstraction. Physical data tables in the model are mapped to higher level objects termed “transactions” that are defined as units of work. For example, the PTK_WELL transaction is comprised of the tables in the model that hold information about a well:

- WELL
- WELL_VERSION
- WELL_MISC_DATA
- WELL_XREF
- WELL_ALIAS
- WELL_STATUS
- WELL_REMARK
- WELL_AREA
Transactions

Transactions are defined in the model as tables with a “table_type” of ‘BT’. The columns to these tables are defined in terms of the physical columns to which they refer. Using PPDM_MAP_DETAIL, BT tables/columns are mapped to physical tables/columns. The columns in the BT tables become the input parameters to stored procedures that are defined in terms of the business transaction. One set of stored procedures interpret the meta data and provide data load/delete service according to parameter values passed in the procedure call. Another set of procedures are exposed to the client and are dynamically prepared whenever a business transaction is created or changed. This external procedure set analyzes the parameters against a known set of default values to determine what values need to be sent for loading to the database.

As part of the business transaction edit process, user interface meta data is created to establish a default edit grid for the transaction. This default layout then serves to assist the user in immediately editing data as it is loaded or as a starting point for setting up the desired edit grid.

User Interface

Each business transaction is available for mapping to an edit grid. The mapping is done through a GUI that guides a user in defining how the data will be viewed and edited.
The User Interface meta data hierarchy is:

- Business Object, e.g., “Well”
  - Business Transaction, e.g., PTK_WELL
    - Parameter Set, e.g., “Ids”
    - Business transaction parameters

The UI meta data is modeled into PPDM_GROUP, PPDM_GROUP_OBJECT, and PPDM_GROUP_XREF.

Reference Data

Reference data in PPDM is addressed via a similar edit interface and can be addressed directly through the Reference Table Editor or through the edit grid itself. The Reference Table Editor (see below) allows a user to manage data in the reference table chosen – add/edit/delete values. If delete is required, the user must first determine that no columns are actively referencing the row in the reference table. This is shown in the far right column of the edit grid. If no active foreign keys exist, then a check box is displayed to allow deletion of the row. If foreign keys exist, then a number is shown that is itself a link to further information about the reference table row. Selecting this link displays the tables/columns that are referring to this row.
# PDMS Reference Table Editor

## References to R_WELL_CLASS

<table>
<thead>
<tr>
<th>Table</th>
<th>Referenced WELL_CLASS</th>
<th>Number of References To This Row of R_WELL_CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELL</td>
<td>INITIAL_CLASS: DEV</td>
<td>2</td>
</tr>
<tr>
<td>WELL</td>
<td>INITIAL_CLASS: DEV</td>
<td>4</td>
</tr>
<tr>
<td>WELL_VERSION</td>
<td>CURRENT_CLASS: DEV</td>
<td>1</td>
</tr>
</tbody>
</table>

## PDMS Reference Table Editor: Foreign Key Display

The PPDM Association

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Phone: 1 403-660-7817 Fax: 1 403-660-0540
Email: info@ppdm.org Web: www.ppdm.org
PDMS Main Edit Grid
PDMS Reference Table Editor: via Edit Screen

When activated from the edit grid, the reference tables that are in effect against tables within a Business Transaction are populated into the pull down list for the user. Choosing a table, the user sees the same display as available through the reference table edit screen. At this point the function is the same. By providing this link in the Edit grid, a user can quickly see and manage any foreign key reference tables that are pertinent to a Business Transaction. Within the reference editor, a reference value can be changed as needed. If there are active foreign keys, the data in the child tables are updated to match the change in reference value.
**DATA EDIT GRID**

All data within PPDM is available in the edit grid (with the exception of 2 BLOB columns and reference data that is handled separately). The edit grid, configured in the UI Meta Data Editor, displays information by row according to the parameter set defined. Within the grid, each data item is editable. Columns that have a foreign key to another column and table will display a popup menu derived from the target foreign key table. The filter rows menu is dynamically generated from the business transaction parameters displayed and is data type aware (see below example). In general, all displays and controls are generated from meta data, making the product completely configurable to any data model configuration desired.

While saving data, any defined data validity rules are processed and feedback supplied via popup dialog in the event a row violated a data load rule.
Data Export / Upload

Data is unloaded and uploaded to the PPDM database via the transaction API based on business transactions. Shown below is an example excel sheet showing the mappings from the business transactions (row 7) to the tables/columns in PPDM. This sheet is copied/pasted to an upload form that is then processed into the database.

PDMS Excel Export / Upload Spreadsheet

UNDERLYING TECHNOLOGY

Database and version supported: Oracle 10 and above

Operating System supported: Windows XP, Internet Explorer 6 and 7

Other as appropriate: .NET Framework 2.0, EXT JS, iStore PTKPSL Toolkit

COMPLIANCE TYPE

☑ This product connects directly to the tables and columns in a physical PPDM database via SQL (Gold Compliance)

☐ This product connects to a PPDM database by views or other connecting technology (Silver Compliance)

PRODUCT COMPLIANCE DETAILS

<table>
<thead>
<tr>
<th>Version of PPDM supported</th>
<th>3.8</th>
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</thead>
<tbody>
<tr>
<td>Footprint: Which PPDM modules does your product reference?</td>
<td>All.</td>
</tr>
<tr>
<td><strong>Product Scope:</strong></td>
<td>Number of tables or views implemented or referenced in the product, including tables that are not included in the PPDM data model.</td>
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<tr>
<td><strong>Footprint:</strong></td>
<td>Number of tables or views that map to PPDM table definitions. On a separate document (using the DETAIL template provided), please list the names of the tables used.</td>
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<tr>
<td><strong>Compliance:</strong></td>
<td>Have the Primary Keys of any PPDM tables been modified or dropped? If any, indicate on the DETAIL document.</td>
</tr>
<tr>
<td><strong>Compliance:</strong></td>
<td>Have any columns from any PPDM tables been removed or modified in any way? If any, indicate on the DETAIL document.</td>
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<tr>
<td><strong>Compliance:</strong></td>
<td>Have parent tables for any tables used by your product been dropped from your footprint? Please list if yes.</td>
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<tr>
<td><strong>Compliance:</strong></td>
<td>Do any additional tables or columns created for your product affect the PK of an existing PPDM Table?</td>
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<td><strong>Compliance:</strong></td>
<td>Do any additional tables or columns created for your product create mandatory relationships in PPDM tables?</td>
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## Product Details

<table>
<thead>
<tr>
<th>TABLE NAME</th>
<th>COLUMN NAME</th>
<th>PK ALTERED</th>
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COMPANY VERIFICATION

I, Brian Richardson, hereby verify that the information provided in this document provides a true and complete representation of the information required for a PPDM Compliance Measurement, has been created by persons with sufficient technical knowledge, and has been verified and authorized by an officer or appointed designate of the Company.

CREATED BY

Name: Brian Richardson
Position: Technical Principal
Date: October 9, 2009

VERIFIED AND AUTHORIZED BY

Name: Oscar Teoh
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Date: October 9, 2009

PPDM COMPLIANCE SCORE

SCORE: PDMS PPDM V3.8: 1765: 1710:FULL: 1710:GOLD:100%

CREATED BY

Name: Geordie Sinclair
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