

IMPLICATIONS IN THE PPDM DATA LOAD PROCESS

Executive Summary

The current release of PPDM; 3.7, is a large E&P data model with over 45 subject areas and 1200 tables. With this richness comes complexity; complexity that is based on E&P business dependencies between business associate(s) and land(s) and contract(s) and well(s) and log(s) and record(s) and the list goes on to include all 45 subject areas. To implement an integrated E&P PPDM based solution, business analyst(s) that know both the E&P business and the data model are required. Quite frankly, there are not a lot of business analysts around that know both. So, which requirement comes in second; the E&P business knowledge or PPDM data model expertise?

Most project managers will choose business knowledge over data model expertise but this does leave a role gap in the project staffing. In fact, it might even cause some hesitation about implementing PPDM in the organization. What if there was a technology aid available that the E&P business analyst could use in unlocking the PPDM E&P data model? In effect, become conversant in the PPDM data model. Suddenly, the project is back on track because knowledge of the data model that is stored in the data model is available for use by project members.

What is the name of technology aid? '*Load of the Rings*'

The paper will detail how to confidently initiate a plan for the process of storing geological picks and to set the stage for implementation of other PPDM subject areas in your organization using '*Load of the Rings*'.

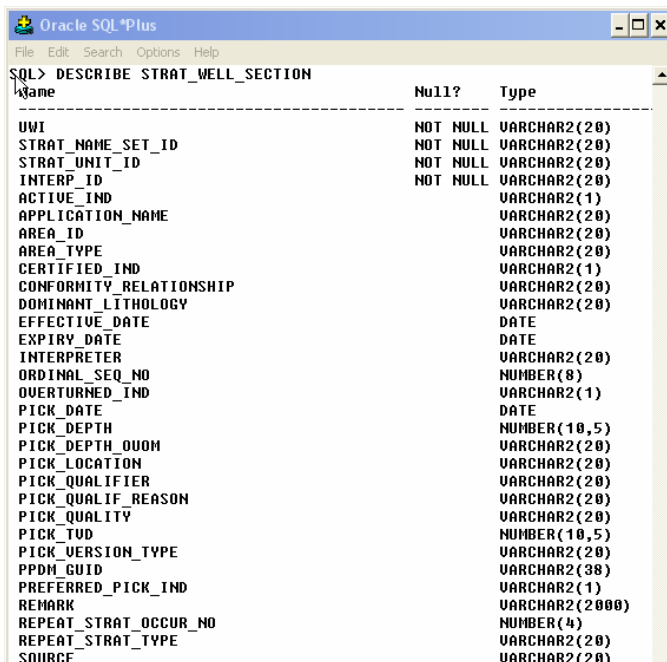
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The place to start any information technology project is always with the business analysis and requirements definition. For this project, the basic IT requirement is storing geological picks in PPDM 3.7 with full referential integrity left on. A meeting with the user community has been set up to define the exact data requirements and layout the project scope. Before this meeting, members of the project team must conduct some background research into where to store this data in PPDM and try to come up with some idea on how much effort it will be to store it.

A quick review of PPDM 3.7 shows that storing geological picks is done in the STRAT_WELL_SECTION table. This table has referential integrity designed into it with such columns as uwi (well location), interpreter (person who authored the pick) and strat_unit (geological marker name). These are expected columns that have referential integrity assigned (and do) but there are sixteen (16) other foreign key columns assigned to that table as well. That makes 19 in total. Who has any idea of what these columns are and the tables that they are associated with? A simple describe on STRAT_WELL_SECTION shows the following columns:



```
Oracle SQL*Plus
File Edit Search Options Help
SQL> DESCRIBE STRAT_WELL_SECTION
-----
Name                               Null?    Type
-----
UWI                                 NOT NULL VARCHAR2(20)
STRAT_NAME_SET_ID                   NOT NULL VARCHAR2(20)
STRAT_UNIT_ID                       NOT NULL VARCHAR2(20)
INTERP_ID                           NOT NULL VARCHAR2(20)
ACTIVE_IND                          VARCHAR2(1)
APPLICATION_NAME                    VARCHAR2(20)
AREA_ID                             VARCHAR2(20)
AREA_TYPE                          VARCHAR2(20)
CERTIFIED_IND                      VARCHAR2(1)
CONFORMITY_RELATIONSHIP             VARCHAR2(20)
DOMINANT_LITHOLOGY                 VARCHAR2(20)
EFFECTIVE_DATE                     DATE
EXPIRY_DATE                       DATE
INTERPRETER                        VARCHAR2(20)
ORDINAL_SEQ_NO                     NUMBER(8)
OVERTURNED_IND                    VARCHAR2(1)
PICK_DATE                          DATE
PICK_DEPTH                         NUMBER(10,5)
PICK_DEPTH_QUOM                   VARCHAR2(20)
PICK_LOCATION                      VARCHAR2(20)
PICK_QUALIFIER                    VARCHAR2(20)
PICK_QUALIF_REASON                VARCHAR2(20)
PICK_QUALITY                      VARCHAR2(20)
PICK_TVD                          NUMBER(10,5)
PICK_VERSION_TYPE                 VARCHAR2(20)
PPDM_GUID                         VARCHAR2(38)
PREFERRED_PICK_IND                VARCHAR2(1)
REMARK                             VARCHAR2(2000)
REPEAT_STRAT_OCCUR_NO              NUMBER(4)
REPEAT_STRAT_TYPE                 VARCHAR2(20)
SOURCE                             VARCHAR2(20)
```

Figure 1 Describe of STRAT_WELL_SECTION

Can you tell which columns have foreign keys? Maybe a few like UWI, Source and Pick_Version_Type. But 19? So, where do we start to gather information? Probably the best place is an explanation of *Load of the Rings* and the theory behind it.



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To illustrate the concept behind *Load of the Rings*, think of all of the tables in PPDM residing in a series of layers or rings.

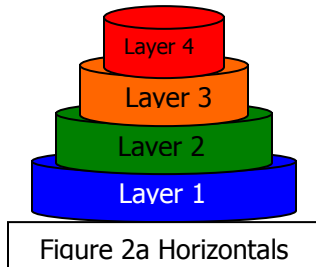


Figure 2a Horizontals

Each successive ring layer can only be populated when all tables in a lower ring have been. These can be thought of as 'horizontals'. These horizontals can be downloaded from the PPDM website and are for a stock implementation of PPDM 3.7. Figure 2a illustrates this.

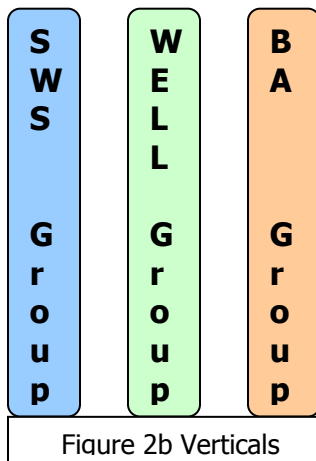


Figure 2b Verticals

This next figure (2b) shows a series of PPDM Groups; the Well, BA and SWS group. These groups have one or more tables assigned to them as 'CORE' or required tables. Think of this grouping of tables as 'verticals'. They can cut across any pre-conceived boundaries and can best group tables by a defined business process.

A vertical can be created at any point in time by simply adding tables to the PPDM_GROUP & PPDM_TABLE_GROUP tables.

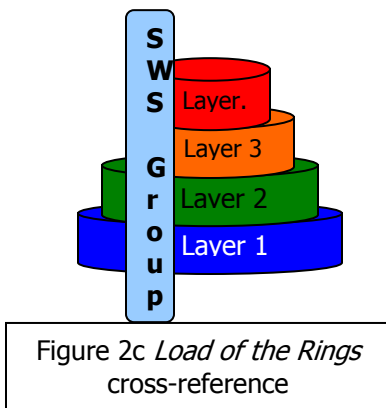


Figure 2c *Load of the Rings* cross-reference

Load of the Rings ties the horizontals with the verticals together as shown in Figure 2c. Only the intersection of tables that are in both the horizontal and the vertical are displayed. This high graded information can then be used to quickly identify what tables will be impacted by the data requirements of STRAT_WELL_SECTION. Couple this with user requirements from the meeting and you have the nucleus of a project implementation plan.

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In starting to use *Load of the Rings*, we see the startup screen (Figure 3) allows selection of PPDM Groups based on the type of group. The group type of 'Technical' was selected and a number of PPDM groups are displayed. For this example, we will work with the group called 'SWS'. This group, SWS; contains the STRAT_WELL_SECTION table.

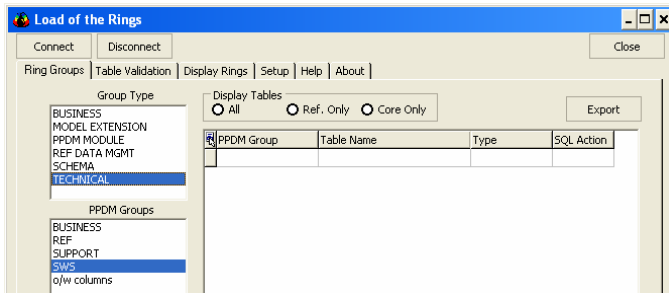


Figure 3 Initial *Load of the Rings* screen

Once a group type & group has been selected, the final decision is what type of display to see. This choice will display tables based on their usage type within the group. Choices include:

- All → all tables in the PPDM Group
- Ref. Only → only 'REFERENCED' tables assigned to the PPDM Group
- Core Only → only 'CORE' tables assigned to the PPDM Group

Figure 4 shows the single 'CORE' table assigned to the SWS group; STRAT_WELL_SECTION. It also displays that STRAT_WELL_SECTION belongs to PPDM Ring 13i. This signifies that STRAT_WELL_SECTION cannot be loaded with our user's data until references that are in the previous 12 rings or levels have been loaded. The simple SQL statement of 'insert into strat_well_section values (...)' will only work when this supporting data has been loaded.

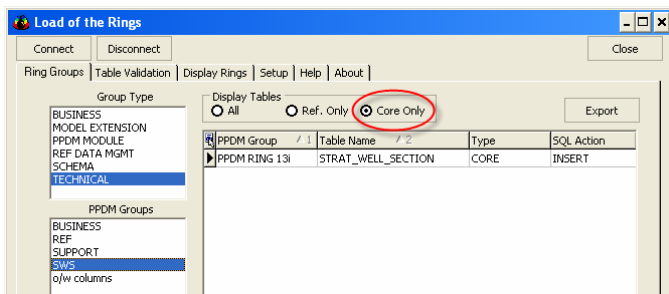


Figure 4 Displaying CORE tables assigned to SWS Group

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The next figure; Figure 5, shows the REFERENCED tables that support the STRAT_WELL_SECTION table. These are the 'verticals' that have a foreign key relationship with STRAT_WELL_SECTION. Again, the PPDM Ring that each individual table belongs to is listed in the correct order.

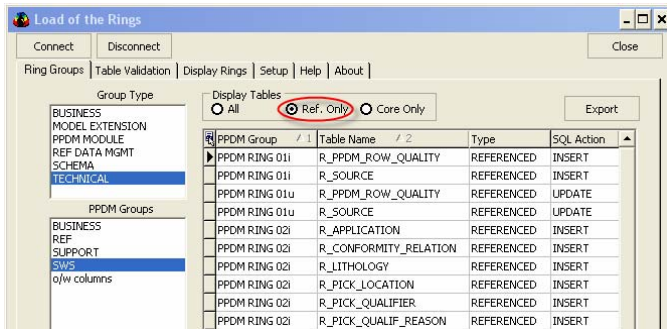


Figure 5 SWS 'Referenced' Tables

The next figure; Figure 6, shows the intersection results of the verticals with the selected horizontal SWS group and displays all in the correct load order.

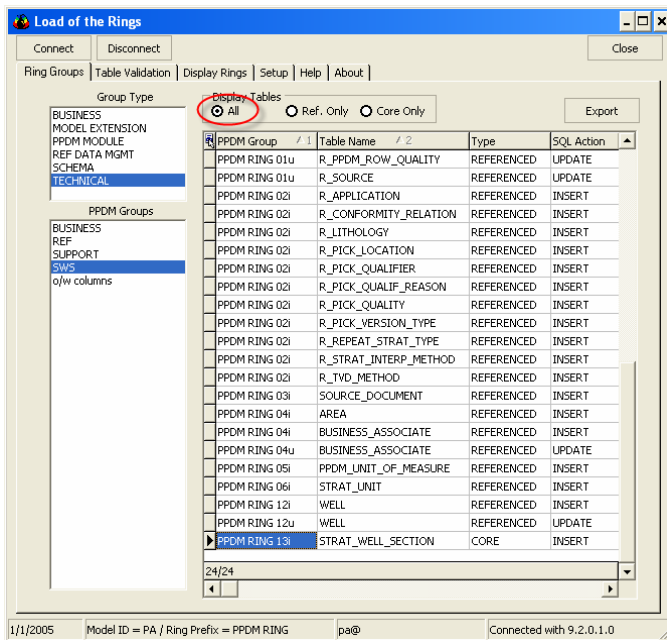


Figure 6 All tables that are in the SWS group

Now the power of *Load of the Rings* comes into play. As stated before, each table in the PPDM data model has some degree of referential integrity designed into it. To load any data into a referential integrity based column, that data column must be loaded in the reference table, first. Supplying the correct load order of these

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tables is what *Load of the Rings* does. From this screen, project team members can quickly create reports that can be used for the meeting with the user community and be given to the developers on the team.

In conclusion, this paper has shown how an E&P business analyst can use *Load of the Rings* to perform a detailed analysis of the table in question; STRAT_WELL_SECTION as well as identify potential tables that, based on their referential integrity constraints must also be populated; in sequence in the project. The business analyst is able to create a report with a minimal amount of effort that details all tables that have a relationship with the target table: STRAT_WELL_SECTION. Armed with this information, the project team is now ready for the user community meeting.

Load of the Rings also provides reports for developers that clearly show the correct load sequence for all tables associated with STRAT_WELL_SECTION. This minimizes the uptake time required by developers to write application code. Developers know the order that the SQL statements must be executed in and armed with this knowledge, it is very easy for them to write the SQL insert, update and delete statements required for the project. All of this information can then be used to start the nucleus of a project implementation plan.

For more information about how to implement *Load of the Rings*, PPDM or to create an implementation plan for any PPDM subject area, contact the author of *Load of the Rings*, Wes Baird at wes@datamatters.com

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