



# PPDM Data Model 3.9 Roadmaps

The PPDM Association is a not-for-profit professional society for data managers.

The PPDM Data Model is a relational model specification used by the Oil and Gas industry as the foundation for effective management and stewardship of data related to Upstream Exploration and Production.

PPDM 3.9 was built by industry subject matter experts who have worked cooperatively over 24 years to develop an open data specification that is practical and useful for companies of all sizes.



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## Support Modules

- 9 **Additives Catalogue:** Describes drilling additives used during field operations.
- 9 **Areas:** Areas of any type, such as geographic, jurisdictional or project.
- 9 **Entitlements:** Describes the rights you have to data and information.
- 9 **Equipment:** Describes equipment used in the field, lab or office.
- 9 **Finances:** Summarize cost information from your accounting systems.
- 9 **Rate Schedules:** Outline fee schedules for functions and services.
- 9 **Source Documents and Bibliographies:** Bibliographic reference for source documents.
- 9 **Spatial Parcels:** Geographic and other location information for business objects.
- 10 **Business Associates:** Companies, people or organizations you do business with.
- 10 **Coordinate Systems:** Geographic and cartographic spatial reference systems.
- 10 **Products and Substances:** Composition of hydrocarbons and other substances.
- 10 **Projects:** Capture and track task lists for operational activities.
- 10 **Work Orders and Requests:** Tracks work orders that support business operations.

## Data Management & Units of Measure

- 11 **Data Management:** Business rules, mappings, audit histories, QC history, metrics and more.
- 12 **Unit of Measure:** Supports measured values in PPDM and conversions between unit systems.
- 12 **Volume Conversions:** Hydrocarbon volumes by temperature and pressure regimes.
- 12 **Reference Table Management:** Track software applications.

## Stratigraphy, Lithology & Sample Analysis

- 13 **Ecozones and Environments:** Paleontological ecozones or environment definitions.
- 13 **Lithology:** Lithologic characteristics from rock analysis, such as color, porosity, grain size, etc.
- 13 **Paleontology:** Results of a paleontological study of fossils found in lithologic samples.
- 13 **Interpretation:** This set of table captures information about the fossils identified during study, and the resulting implications about a biostratigraphic unit.
- 13 **Fossils:** Describes fossils and their discovery during analysis.
- 13 **Sample Management:** Sample collection, preparation and usage summaries.
- 14 **Sample Analysis:** Sample preparation and results such as geochemistry, water, oil and gas analysis.

## Production & Reserves

- 15 **Fields:** Summary information about fields.
- 15 **Pools:** Summary information about geologic or regulatory pools.



- 15 **Production Lease Units:** A scaled-down land reporting subject suitable for production reporting.
- 15 **Production Reporting:** Volumes reporting for all products, time periods, activities or methods.
- 15 **Production Strings:** Describes the conduit between a hydrocarbon source and the surface.
- 15 **Spacing Units:** Describes regulatory spacing unit specifications where applicable.

## Production & Reserves

- 16 **Production-Related Facilities:** Describes facilities such as pipelines, storage tanks or batteries.
- 16 **Reporting Hierarchies:** Aggregated reporting, such as production reporting or reserves forecasts.
- 16 **Reserves Reporting:** Summarizes reserves information, including forecasts.

## Wells

- 17 **Wells:** Detailed life cycle information about wells and well bores.
- 19 **Well Logs:** Describes acquisition, digital and raster logs. Describes standard log dictionaries.

## Product Management & Classifications

- 19 **Classification Systems (Taxonomies):** Faceted taxonomies for classifying records.
- 20 **Product and Information Management:** Fully functional librarian module.

## Seismic

- 21 **Seismic:** Life cycle management for seismic, from acquisition to divestment.

## Support Facilities

- 22 **Support Facilities:** Descriptive information about support facilities such as rigs, roads or vessels.

## Operations Support

- 23 **Applications:** Requests to obtain authorization to do work or complete an operation.
- 23 **Consents:** Non-regulatory agreements between parties to conduct operations.
- 23 **Consultations & Negotiations:** Discussions between various parties.
- 23 **Contests and Disputes:** Summary information about legal disputes and their outcomes.
- 23 **Notifications:** Details about notifications to partners or other parties.
- 23 **Health, Safety and Environment:** Incident reporting summaries.

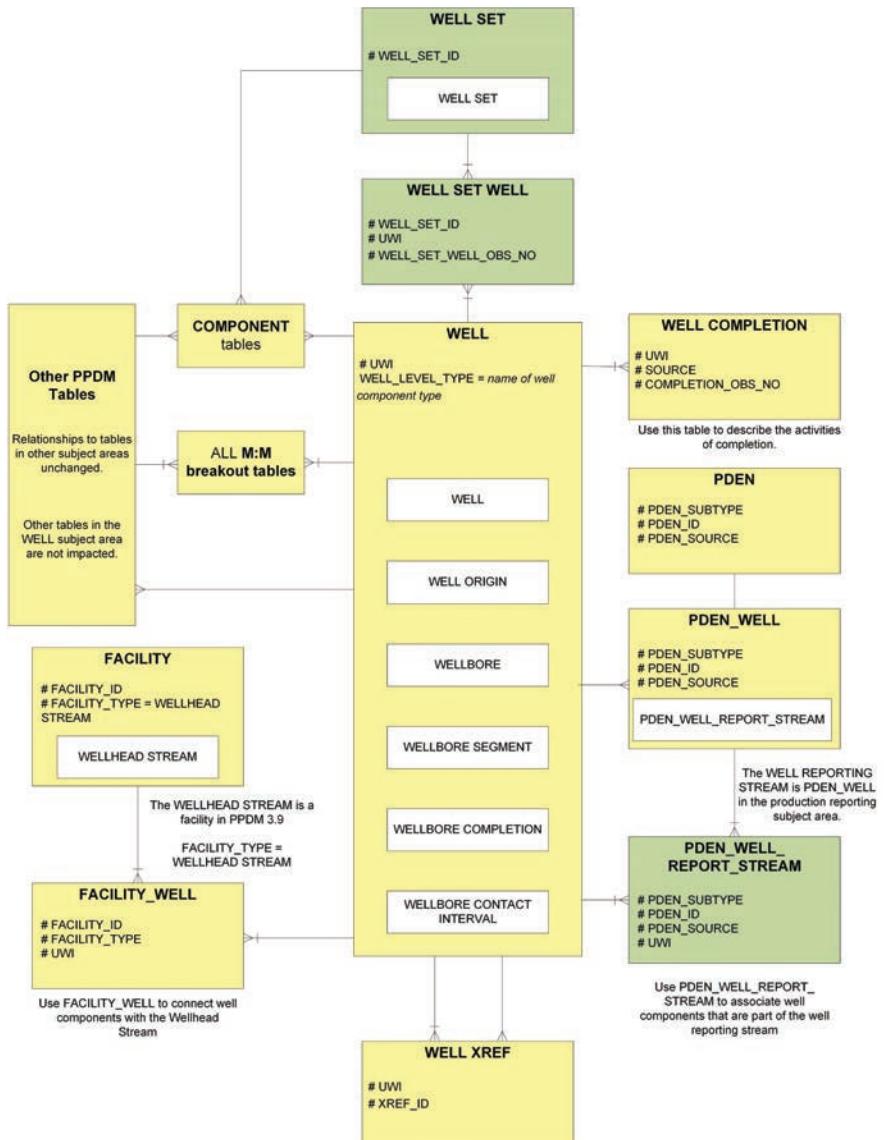
## Paleontology & Biostratigraphy

- 24 **Stratigraphy:** Detailed descriptive information about stratigraphic units, such as formations.

## Land & Legal Management

- 25 **Contracts and Legal Agreements:** Legal documents that govern operations.
- 25 **Obligations:** Conditions that must be fulfilled, such as fees to be paid or work to be done.
- 25 **Instruments:** Documents that physically document an interest or describe a legal entity.
- 25 **Interest Sets and Division of Interests:** Partnerships and division of interests.
- 25 **Restrictions:** Environmental or operational limitations on operations.
- 26 **Land Rights:** Rights held to an area of the earth, onshore or offshore, surface or mineral.

# WHAT IS A WELL





Success up here

depends  
on what you know  
down here.

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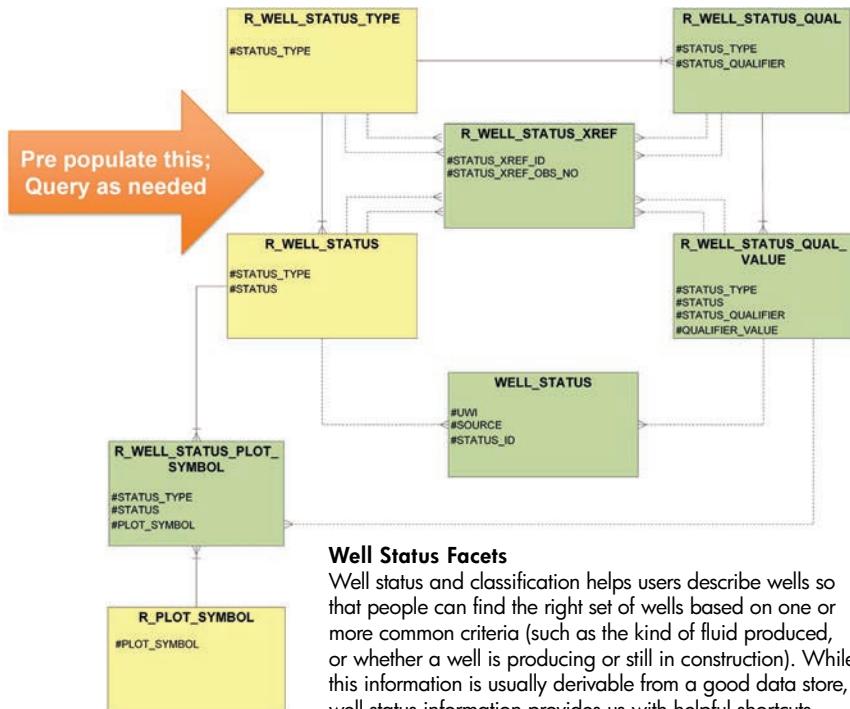


## The PPDM Association Offers Online Learning!

Visit the PPDM Association website to explore our online classroom! The first course developed is U.S. Land – Survey Systems. The course will appeal to those of you who work in data or records management and work with U.S. well location and land data. Gain a competitive edge by accessing this comprehensive intro to the U.S. land survey systems.

**For more details on education please visit our website at [www.pppdm.org](http://www.pppdm.org)**

# WELL STATUSES



## Well Status Facets

Well status and classification helps users describe wells so that people can find the right set of wells based on one or more common criteria (such as the kind of fluid produced, or whether a well is producing or still in construction). While this information is usually derivable from a good data store, well status information provides us with helpful shortcuts.

In PPDM 3.9, users may decompose complex well status values into their constituent facets using **R\_WELL\_STATUS\_XREF**. When this is complete, the complex values obtained from regulators or data vendors can be stored with each well or well component and decomposed as needed through query into **R\_WELL\_STATUS\_XREF**.

Well status values often contain more than one kind of information. These complex values can be broken down into atomic, well defined specific information facets. Each facet contains values that are standardized, defined and queryable.

- Each facet describes one property of an object
- Facets contain values that are mutually exclusive with values in other facets
- Facets may be hierarchical in nature (they may be granular)
- By combining information from many facets, users can group wells for many key functions
- Facets can be represented on a map through standard symbol sets



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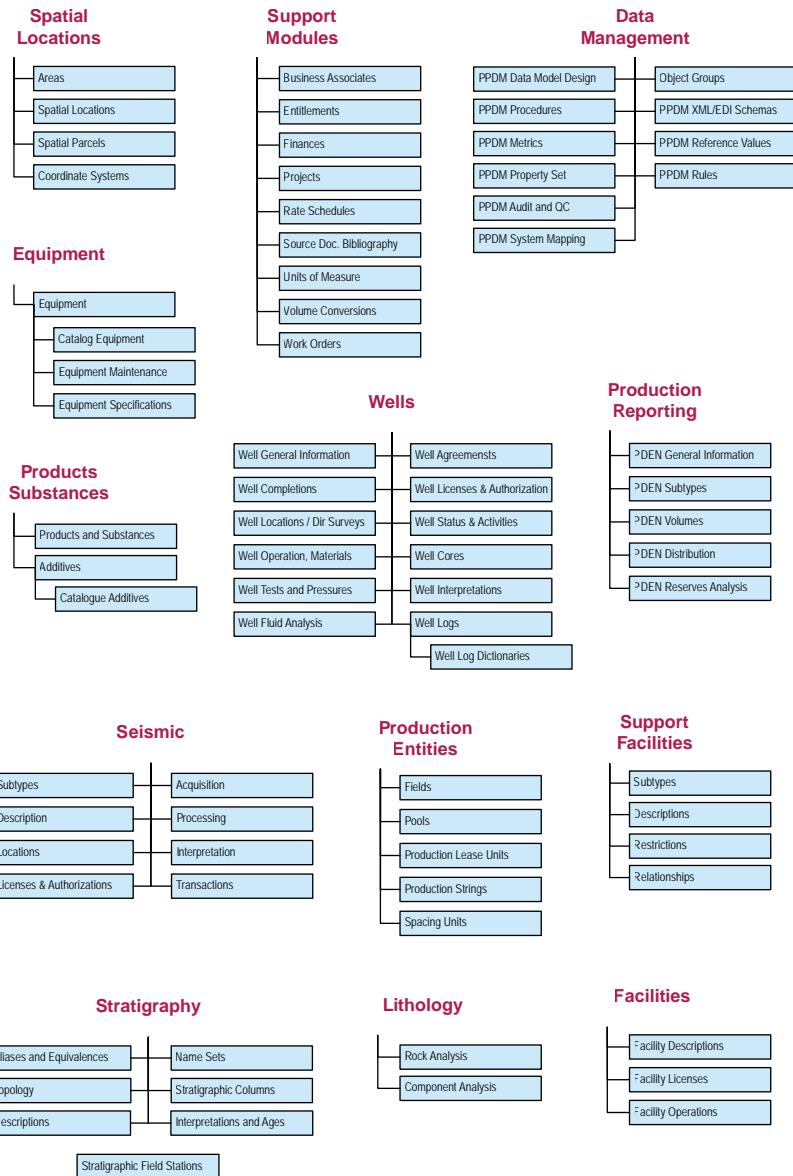
- Consultancy
- Solution Delivery
- Technical Support
- Managed Services

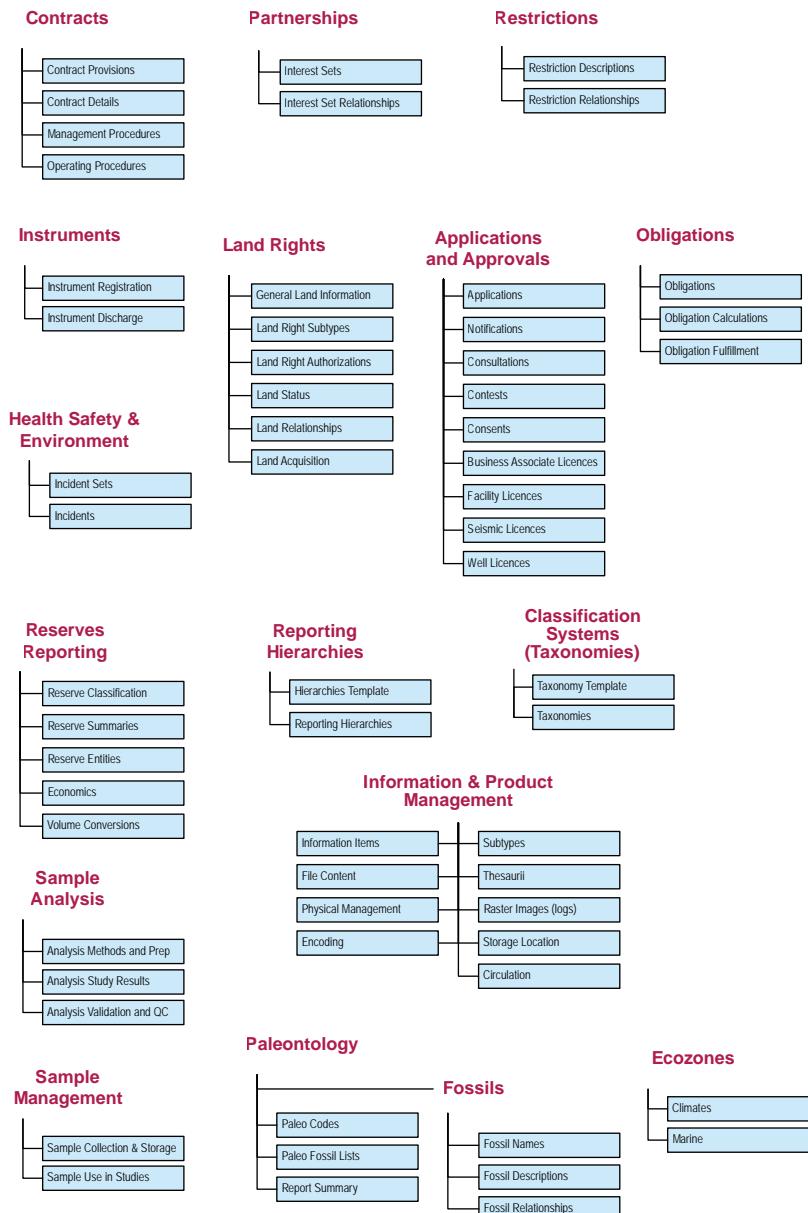
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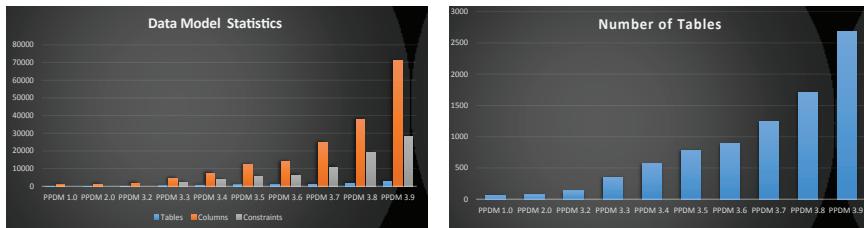


# CONCEPTUAL DIAGRAM





# DATA MODEL STATISTICS & KEY CHANGES IN PPDM 3.9



## Key Changes in 3.9

**What is a Well concepts now supported**  
(see page 1 for details)

**Well Status and Classification concepts now supported**  
(see page 2 for details)

### Software Application subject expanded

- Includes information about the functions and uses of software applications
- Supports relationships between software applications and data stores or data sources

### Directional Surveys subject expanded

- Supports location versions
- Supports more information about each survey station
- Supports the definition of composite directional surveys.

## Other changes

### IDENTIFIER columns

- Changed from varchar2(20) to varchar2(40)

### TYPE columns

- Changed from varchar2(20) to varchar2(40)

### DATES are defined using these rules:

- XXX\_DATE is a native database DATE data type
- XXX\_DATE\_DESC is a varchar2 (8) that indicates the degree of precision in the associated date, such as YYYY, YYYYMM, YYYYMMDD, YYYYQQ
- XXX\_DATE\_STRING is a varchar2 that is used rarely, and allows dates to be stored as a text string. This is not recommended best practice.

### PDEN subject

- Add new columns for date descriptions as XXX\_DATE\_DESC
- Remove DATES from PK and change to DATE data type.
- Created New PK component PERIOD\_ID

### TIME values are defined using these rules:

- XXX\_TIME\_ELAPSED: to indicate that the value represents a total amount of elapsed time (and OUOM).
- XXX\_TIME: Time of Day. Use of this column must be accompanied by TIMEZONE (and foreign key).

## New Subject Areas

### Sample Management (SAMPLE\_%)

This subject area allows you to create a sample master that describes all samples of all kinds (rock, drill cuttings, core samples, mud samples, water samples, etc). You can describe how the sample was collected and where it came from, including relationships



to the relevant well or wellbore, land right, measured section, etc). You can describe how and where the sample is stored, and what studies have been conducted using portions of each sample. You can also manage information about the creation of composite samples and details about standard samples (these are samples whose characteristics are known and documented in scientific literature).

#### **Sample Analysis (ANL\_%)**

This subject manages information about the analysis of samples. There are four key sub-subjects in this module.

1. Information about the preparation or treatment of a sample can be described. This can also include specific steps such as crushing, slicing, heating, dissolving, etc.
2. Information about measurements taken before, during or after any preparation/treatment step can be stored. It may also be used to store calculated values; these values are often supplied by laboratories instead of, or in addition to, raw measurements. This subject area is divided into table sets for each of the major kinds of analysis, such as Pyrolysis or Chromatography. The most common values measured are stored in horizontal tables, while detailed vertical tables are supplied for less common measurements. Users are encouraged to use the horizontal tables as much as possible.
3. Additional meta information about each measurement or calculation can also be stored as needed. Typically, this information would describe any problems that were encountered with the analysis, including specifics about the kind and source of the problem and any remedial steps that were made to resolve the problem. Each row in these tables is referenced back to the analysis value they refer to through a pointer that consists of the system identifier, table name, column name and PPDM\_GUID (which references

the row in the table). This critical information helps scientists determine whether the measured or calculated value can be trusted.

4. Foundational information can also be stored for the purpose of validating or verifying data as it is loaded into analysis tables. These tables store information about various kinds of equipment, including the kinds of analysis that this equipment is able to do, its accuracy and tolerances. Use these tables to capture procedural details for various kinds of analysis. These procedures are generally found in a lab's reference guides, and only need to be stored once. These tables also manage the kinds of problems a scientist might encounter and appropriate resolutions for each problem. In addition, calculation formulas can be stored, as can reverse calculations (some scientists have developed methods for reversing calculated values supplied by a lab back to their original raw values).

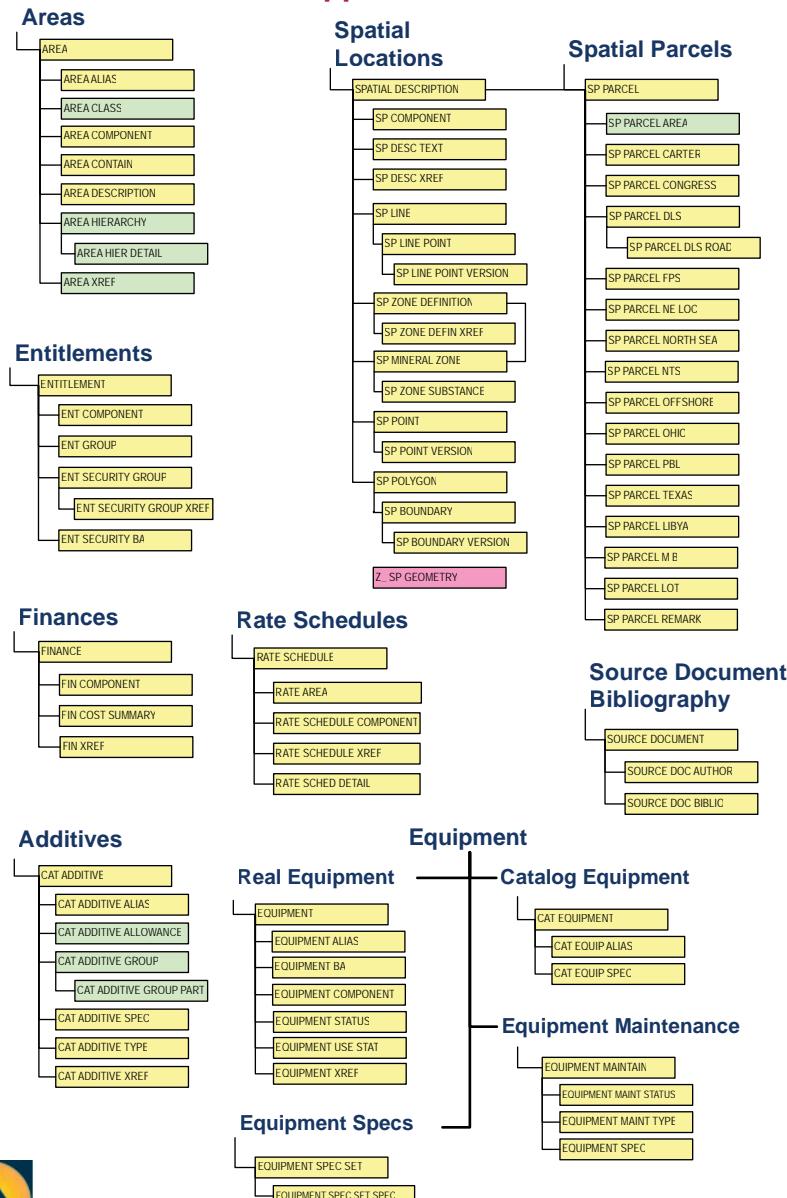
#### **Products and Substances Expanded and Integrated (SUBSTANCE\_%)**

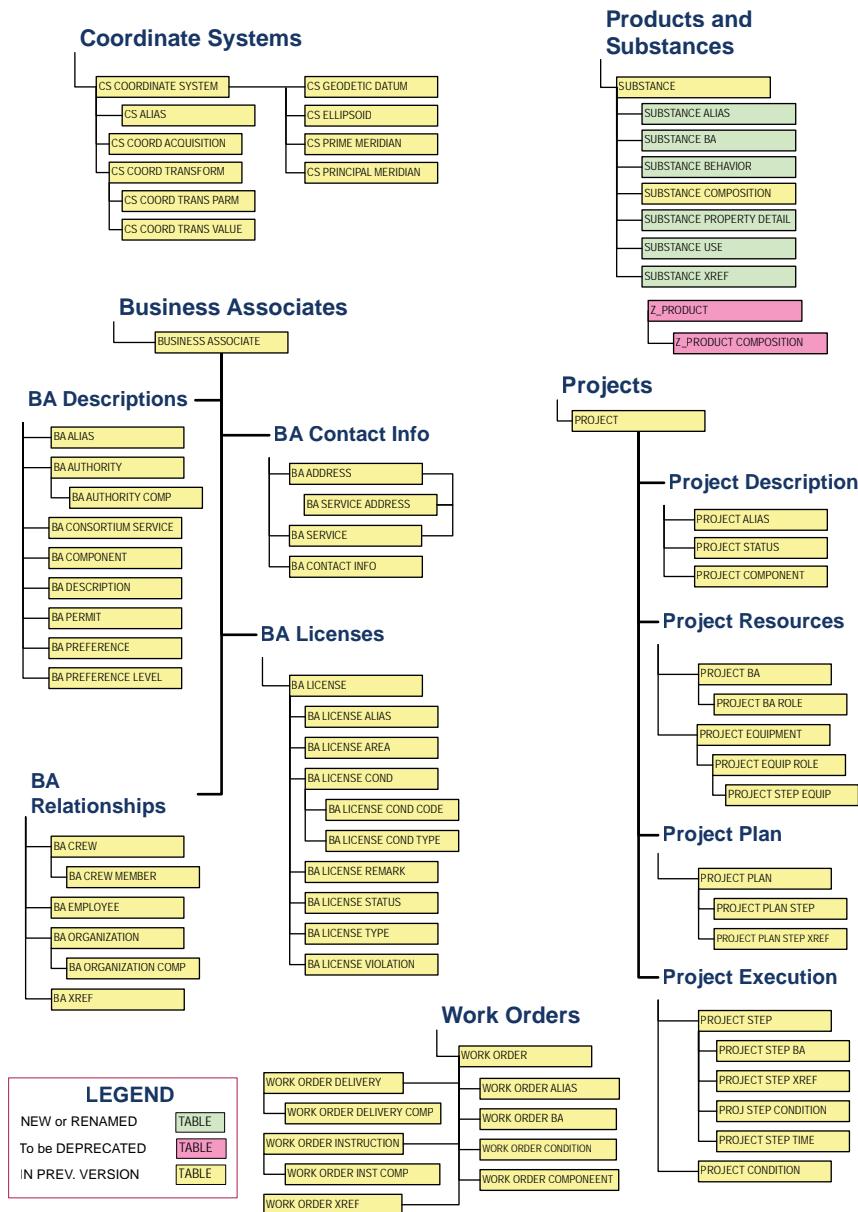
The updated substances subject area allows users to include more detailed descriptions about substances, including:

1. Chemical characteristics of substances, such as molecular formulas, atomic weights, valences etc.
2. Substance behavior or functions, to indicate substances used for production volumes, as solvents, as reagents etc. Every substance may have one or more behaviors.
3. Specify where and how substance definitions should be used such as the regions in which a definition applies, or an agency that uses this definition for reporting. For example, this allows the definition of oil in one region to be different than the definition in another region.

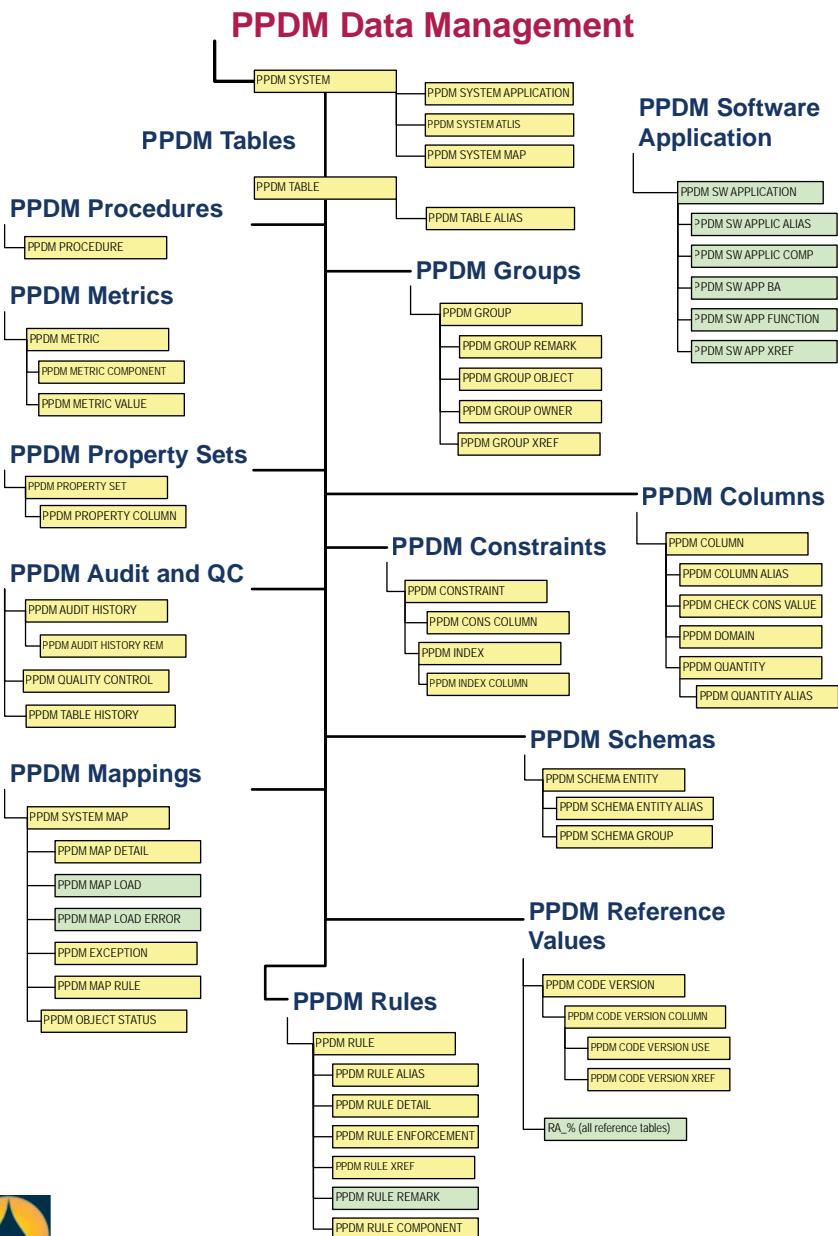
# PPDM 3.9 ROADMAPS

## Support Modules





# PPDM 3.9 ROADMAPS



## Units of Measure      Volume Conversions



## Reference Table Management

### 1. Referential Integrity:

The values in each reference table (named R\_%) contain the preferred values that are wanted in your data tables. Foreign keys in other tables reference these tables.



Beware of reference table validations that contain indirect FK relationships to the reference table. The values in the indirect reference are not directly constrained by the reference table, but by the parent table in the foreign key, such as shown in this example:



### 2. Manage alternate spellings or codes

Alternate codes, versions, spellings and so on are managed in the ALIAS table attached to every reference table; these contain information to associate each version with the software or company that it came from. If desired, convert back to the appropriate alias on output.



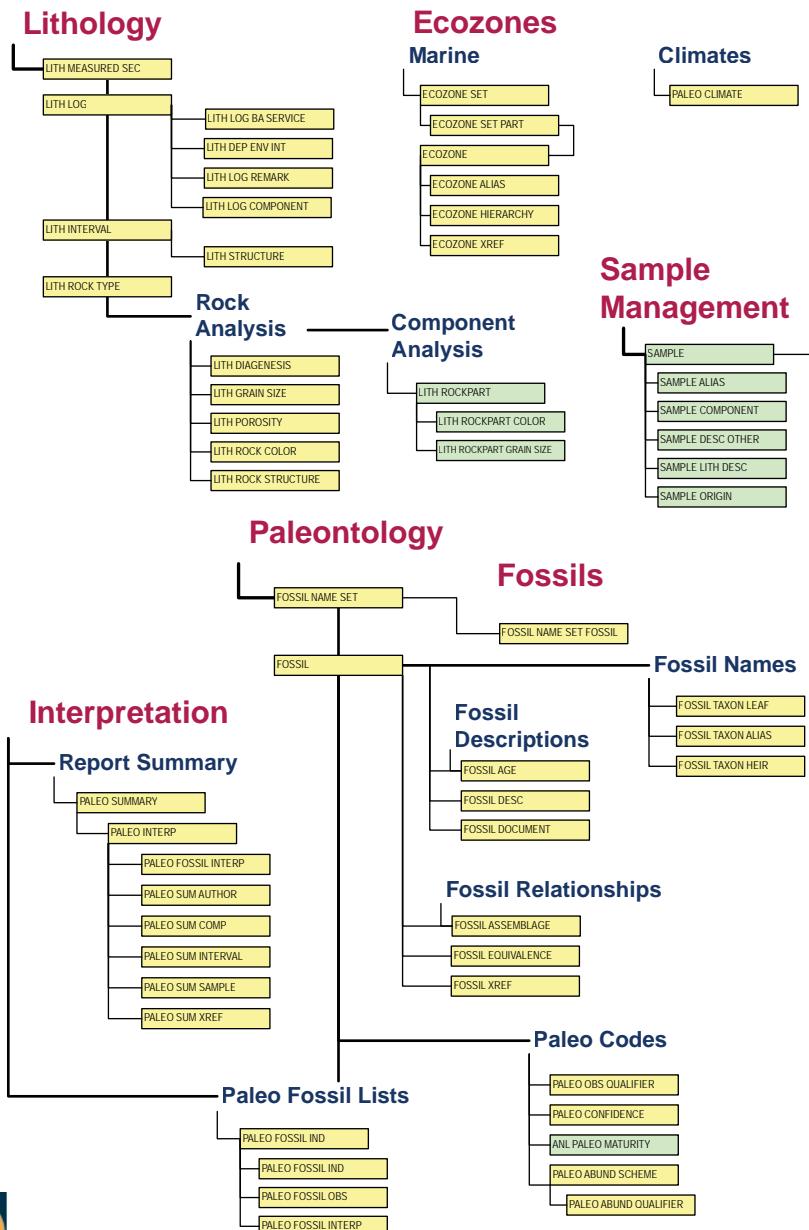
### 3. Manage hierarchies or granularities

Some reference lists contain natural hierarchies or levels of granularity (one value is contained by or a more specific type of another value). Manage these hierarchies in the Classification Subject. Query from this decomposition if necessary.

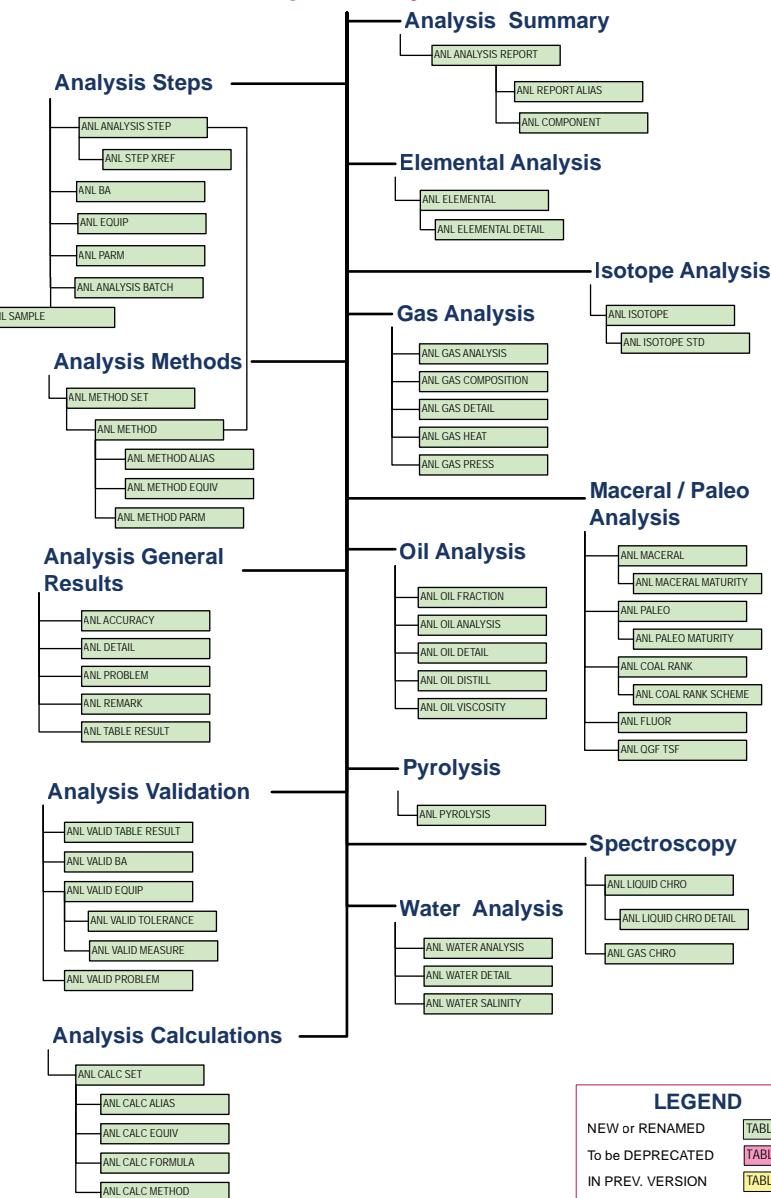


LEGEND	
NEW or RENAMED	TABLE
To be DEPRECATED	TABLE
IN PREV. VERSION	TABLE

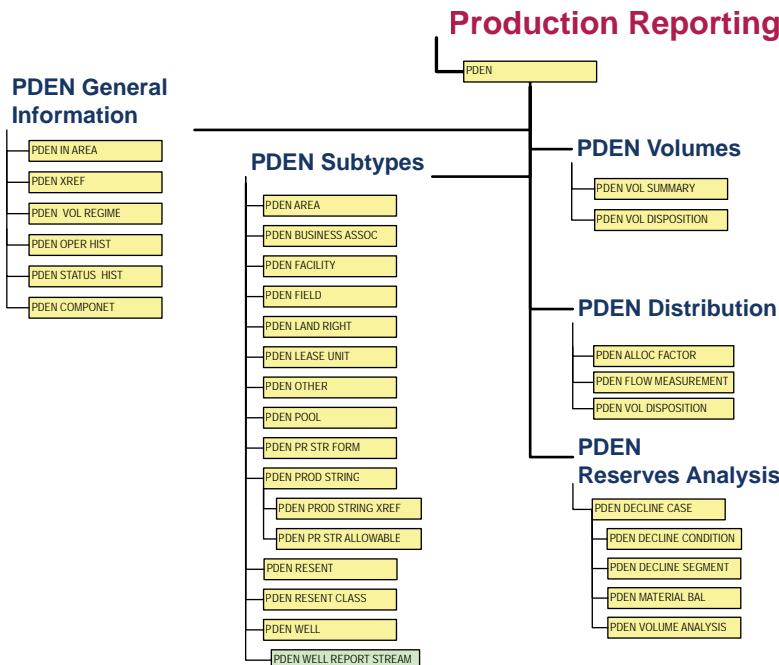
# PPDM 3.9 ROADMAPS



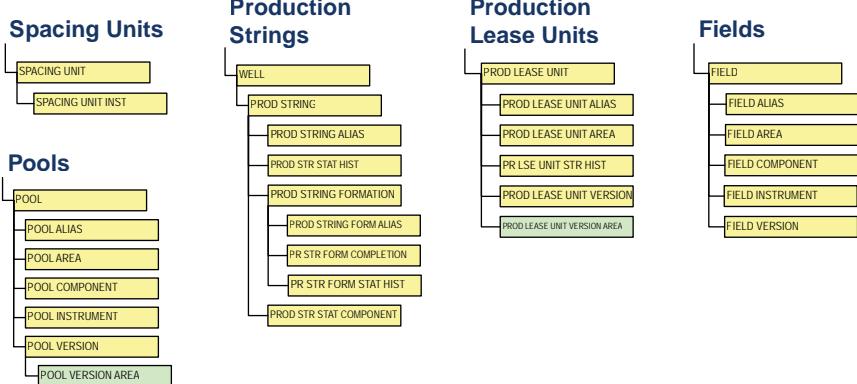
# Sample Analysis



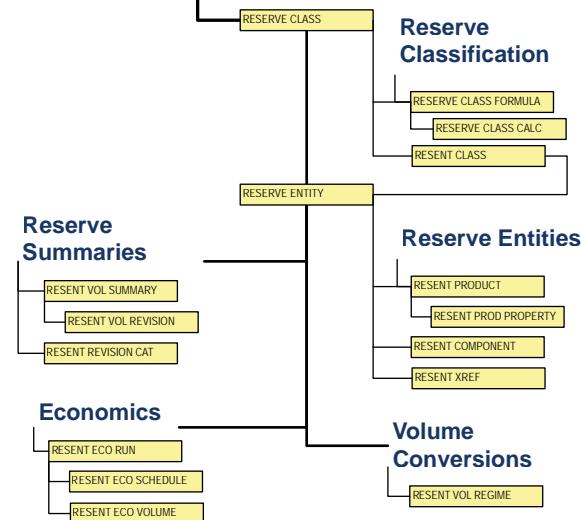
# PPDM 3.9 ROADMAPS



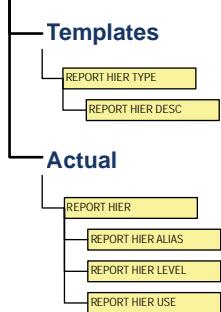
## Production Entities



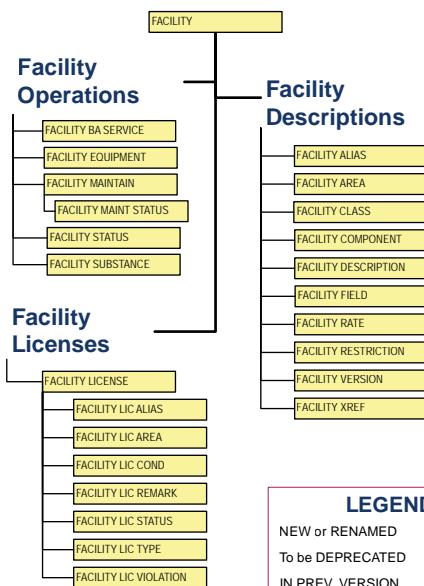
## Reserves Reporting



## Reporting Hierarchies



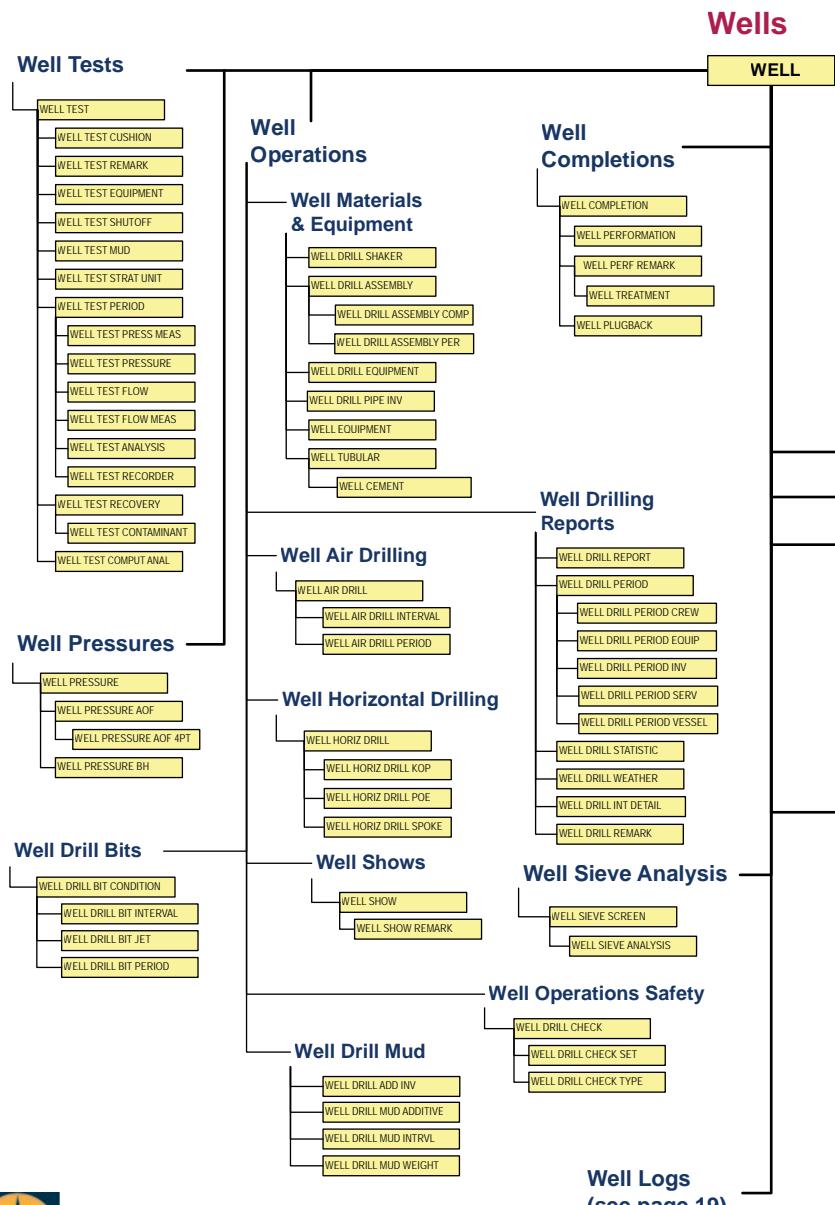
## Production Facilities

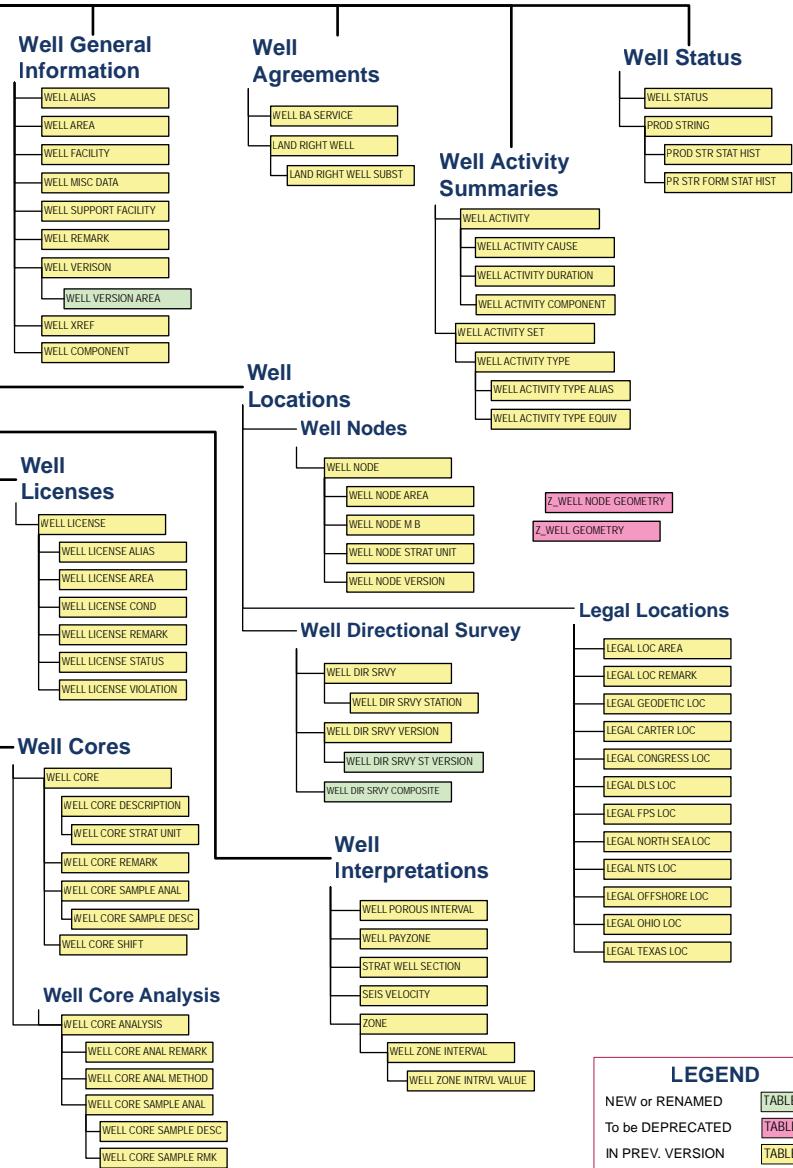


### LEGEND

NEW or RENAMED	TABLE
To be DEPRECATED	TABLE
IN PREV. VERSION	TABLE

# PPDM 3.9 ROADMAPS





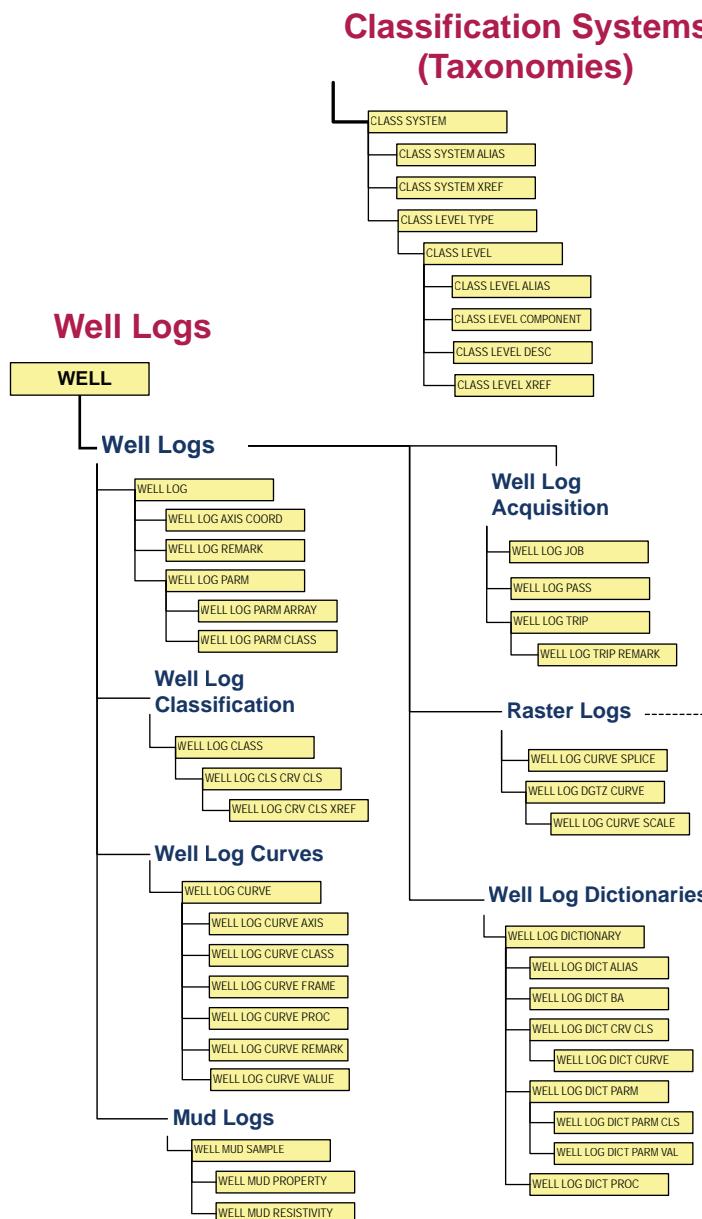
### LEGEND

NEW or RENAMED TABLE

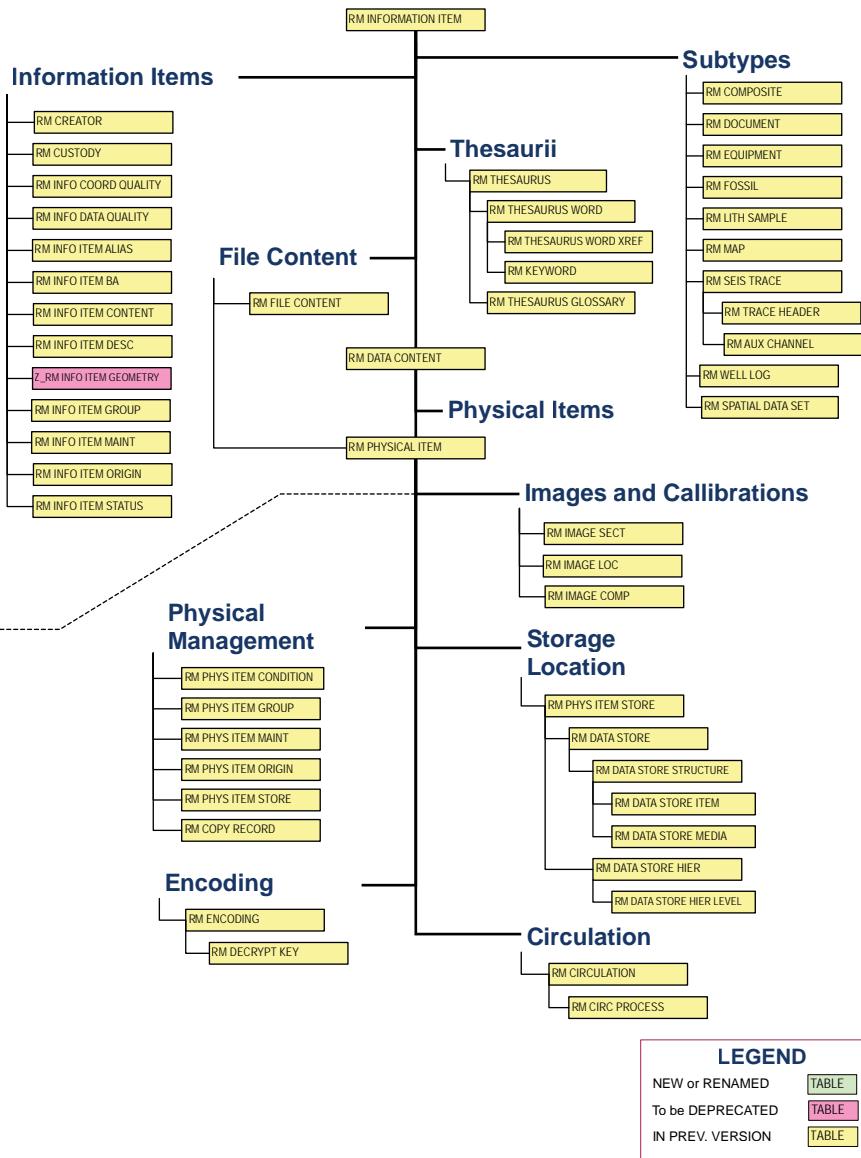
To be DEPRECATED TABLE

IN PREV. VERSION TABLE

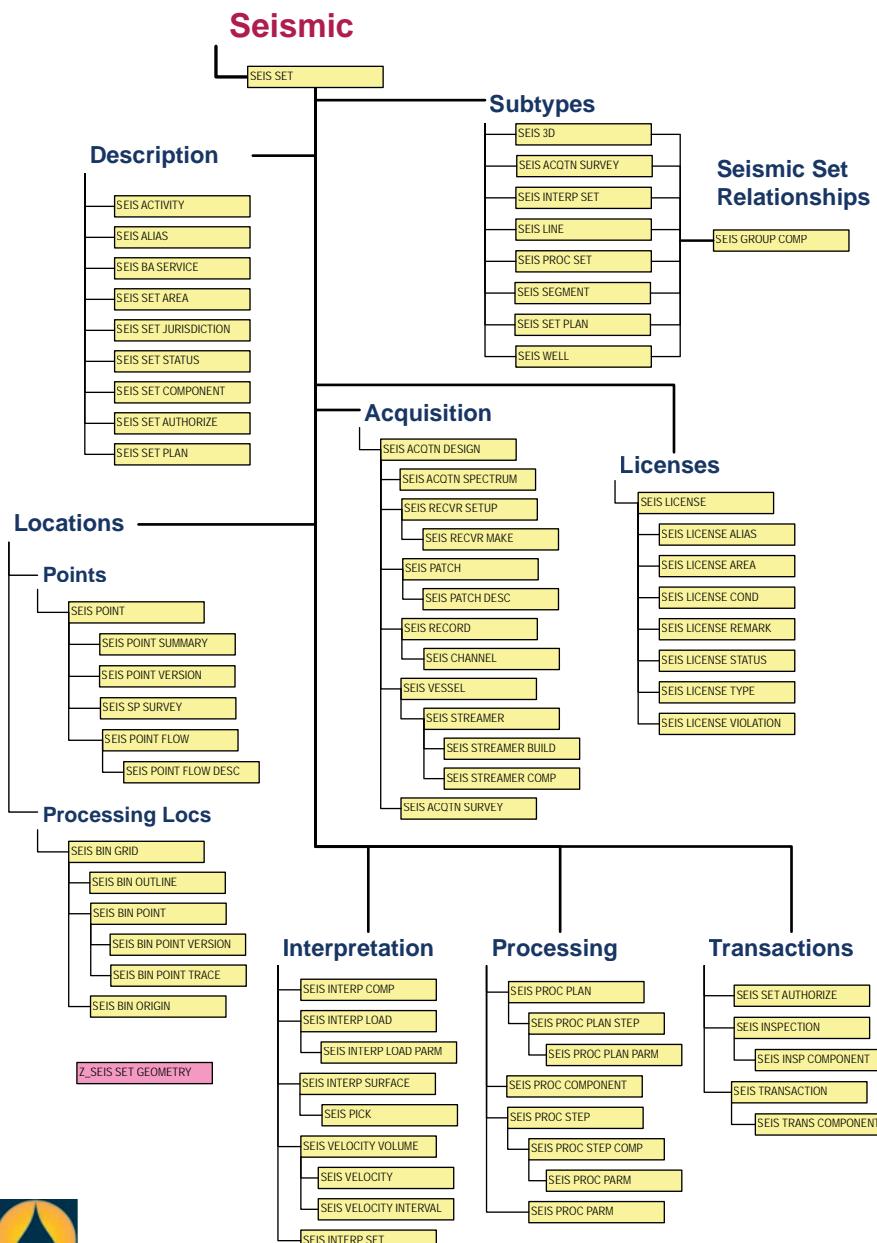
# PPDM 3.9 ROADMAPS

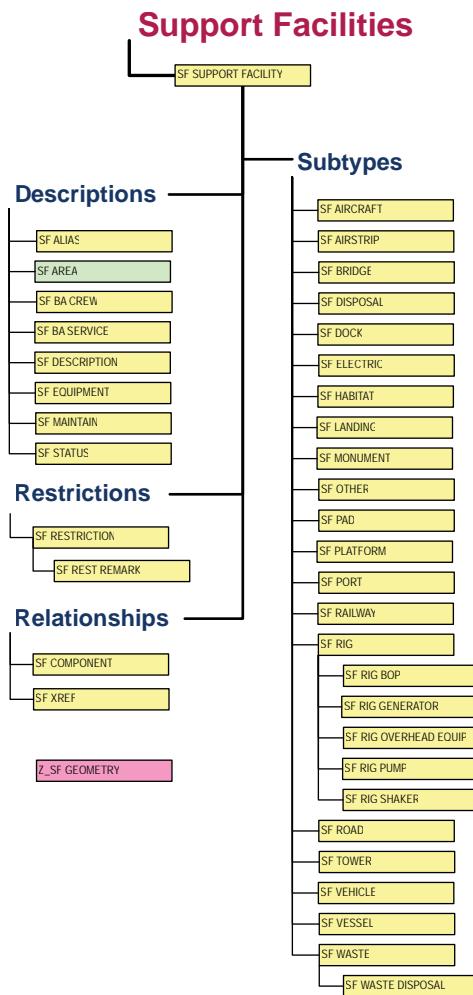


# Records, Product and Information Management



# PPDM 3.9 ROADMAPS



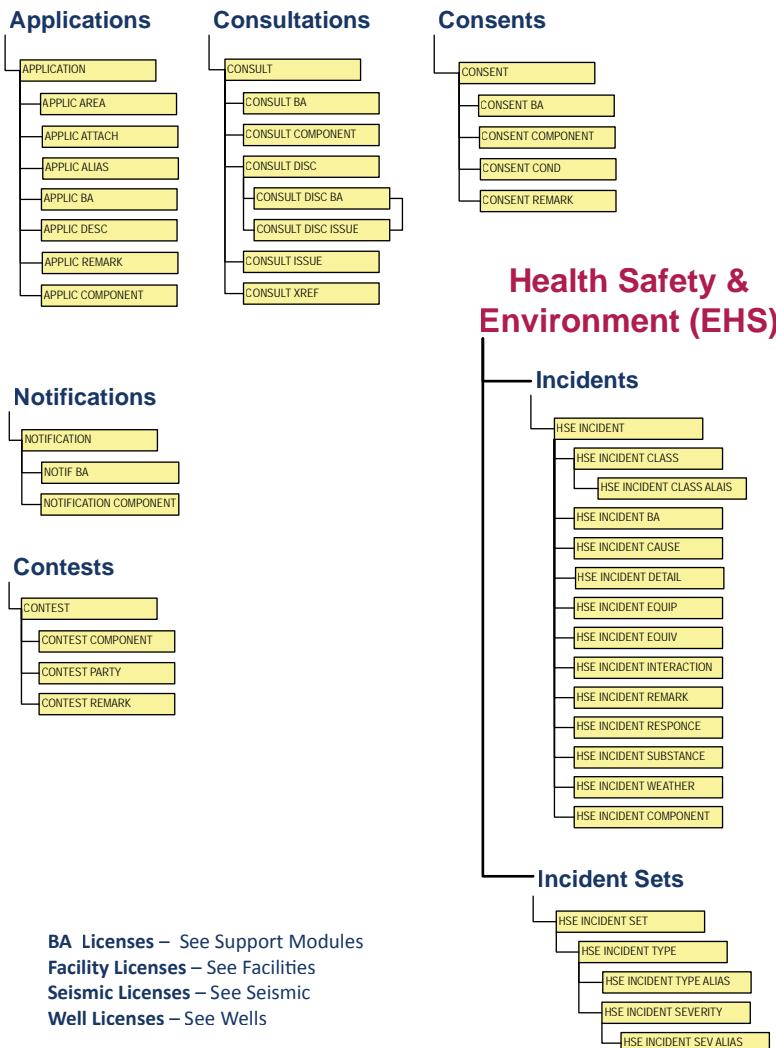


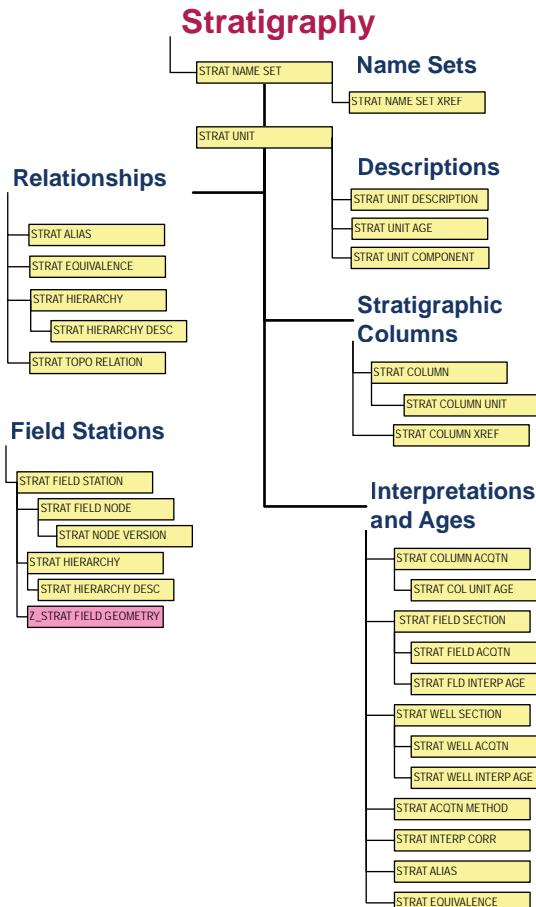
**LEGEND**

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To be DEPRECATED	[TABLE]
IN PREV. VERSION	[TABLE]

# PPDM 3.9 ROADMAPS

## Applications and Approvals

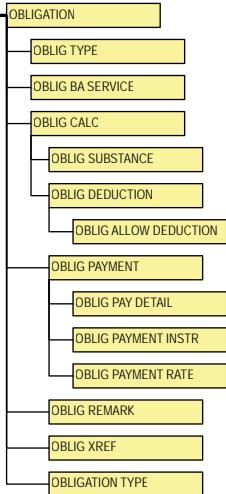




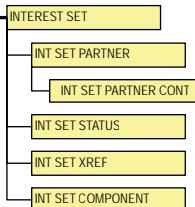
LEGEND	
NEW or RENAMED	TABLE
To be DEPRECATED	TABLE
IN PREV. VERSION	TABLE

# PPDM 3.9 ROADMAPS

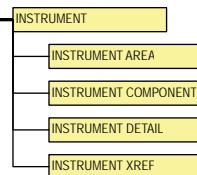
## Obligations



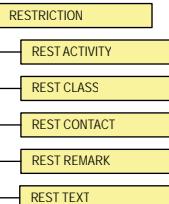
## Partnerships & Interest Sets



## Instruments

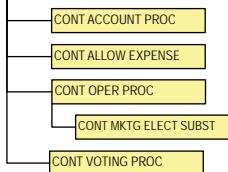


## Restrictions

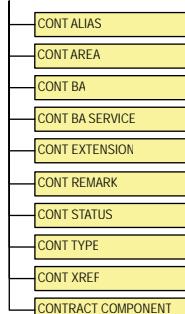


## Contracts

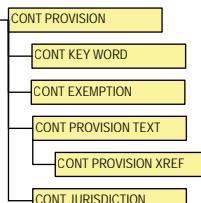
### Management Procedures



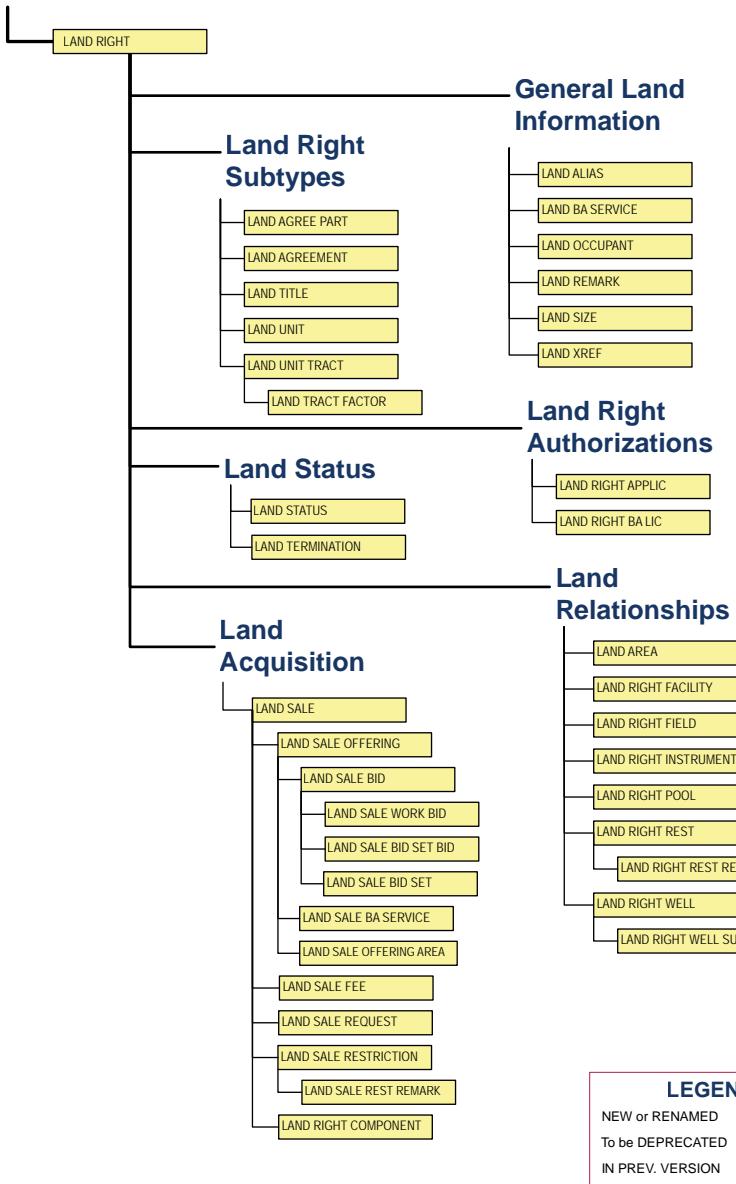
### Contract Details



### Contract Provisions



# Land Rights



## LEGEND

NEW or RENAMED

To be DEPRECATED

IN PREV. VERSION

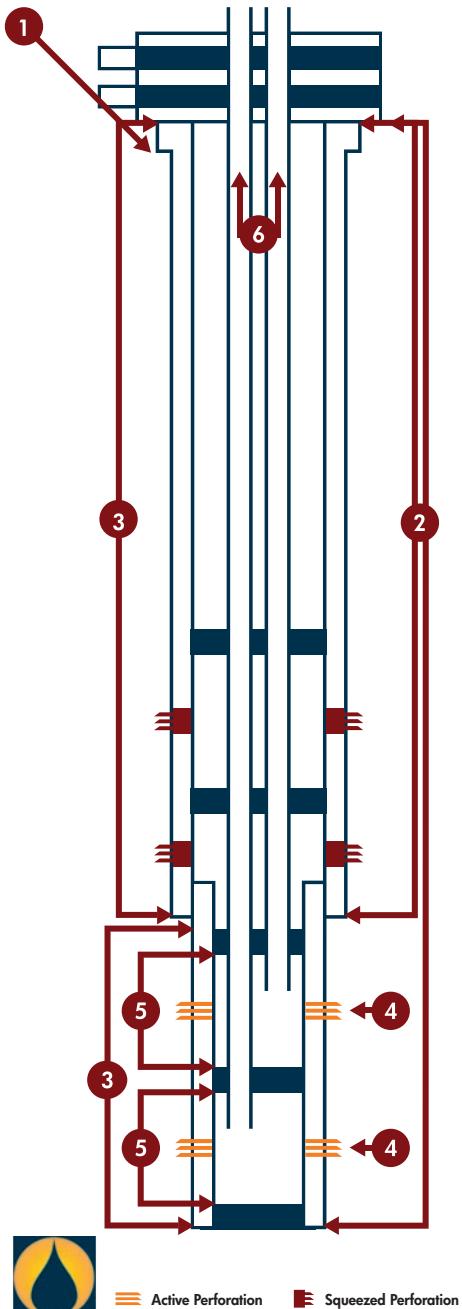
[TABLE]

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The PPDM Association was formed in 1989 by a consortium of industry companies and incorporated as a Not-for-Profit-Society in 1991.

Visit us at [www.ppdm.org](http://www.ppdm.org) for information about joining our community.



## 1. Well Origin (WO)

A Well Origin is the location on the surface of the earth or sea bed where the drill bit is planned to penetrate or does penetrate the earth to establish or rework a Well.

## 2. Wellbore (WB)

A Wellbore is a path of drilled footage, from the Well Origin (top/start) to a terminating point (bottom/end).

## 3. Wellbore Segment (WS)

A Wellbore Segment is a unique drilled interval within the Well, either the original Wellbore from the Well Origin to the terminating point, or additional footage from a point in an existing Wellbore to a new terminating point.

## 4. Wellbore Contact Interval (CI)

A Wellbore Contact Interval is a measured depth range within a Wellbore that is intended to put the Wellbore into contact with one or more stratigraphic zones for the purpose of production, injection or service.

## 5. Wellbore Completion (C)

A Wellbore Completion is a set of one or more Wellbore Contact Intervals that function as a unit to produce or inject fluids.

## 6. Wellhead Stream (WHS)

A Wellhead Stream is a flow of fluids through a conduit determined by an installed wellhead configuration.

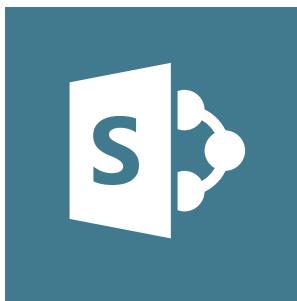


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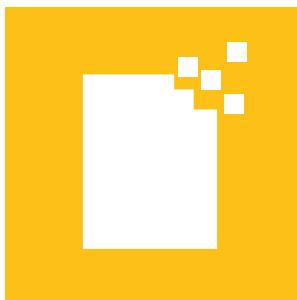
SharePoint



Data Management



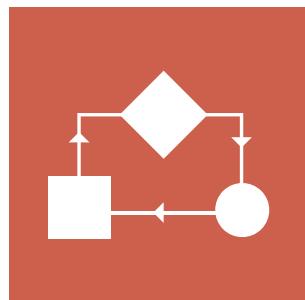
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