

MASTERING DATA MANAGEMENT AND CODE LISTS WITH PIDX



CHRIS WELSH

PIDX BOARD MEMBER

PIDX'S HISTORY AND VISION FOR MASTER DATA & AI INTEGRATION

PIDX BACKGROUND

PIDX has a rich history of managing master data and code lists

CATALOG & CLASSIFICATION WORKGROUP

EXAMPLES OF PIDX PROJECTS

- Petroleum Industry Data Dictionary (PIDD)
- Catalogs and Transactions
- Downstream Product and Terminal Codes
- Product and Services Classifications (UNSPSC, Segment 71 managed by PIDX)

TODAY'S PRESENTATION FOCUS

Today, you will hear from Marty and Zack on how this new project will enhance master data use and how AI will transform category code assignment in supply chains.



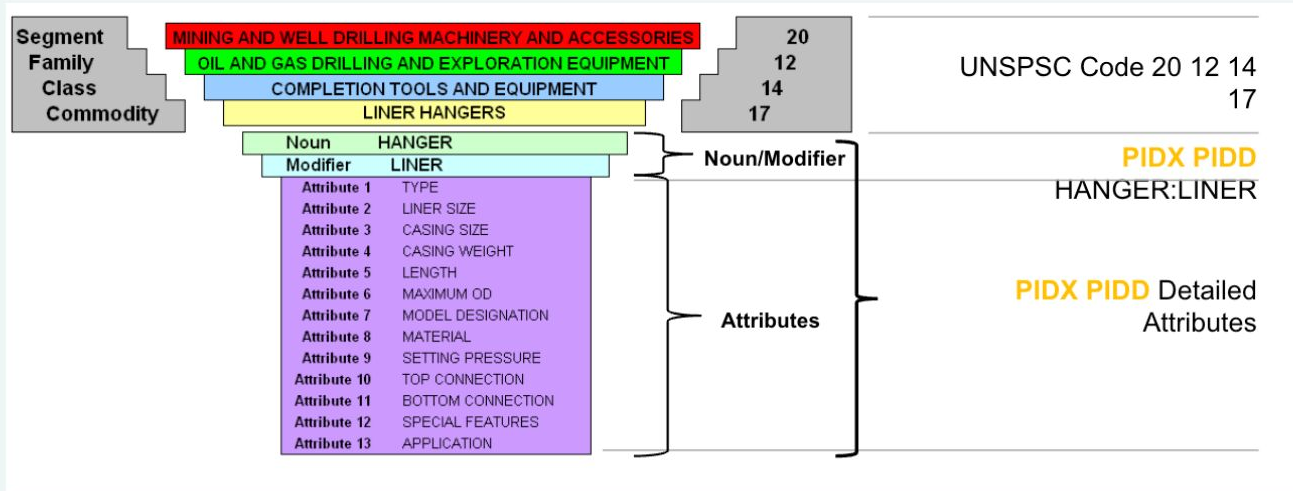
PETROLEUM INDUSTRY DATA DICTIONARY - PIDD

Over 4000 Templates used to describe Materials and Services for categorization in ERPs

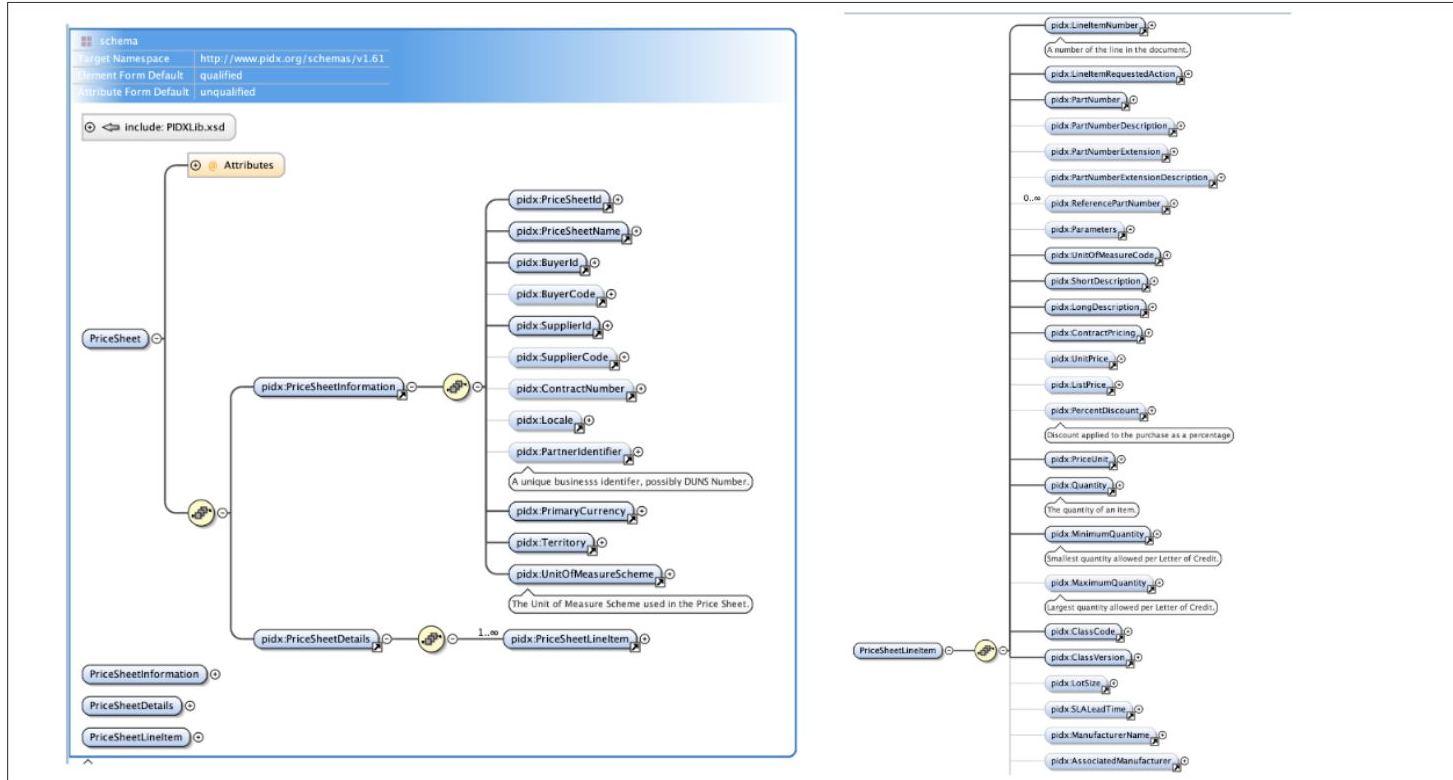
- Nouns
- Modifiers
- Characteristics
- Sequence
- Units of Measure
- Classification to UNSPSC
- The PIDD captures an array of industry specific terms, over 7000

PETROLEUM INDUSTRY DATA DICTIONARY - PIDD

Aligning the PIDD Definitions for Materials and Services NOUN:MODIFIER with UNSPSC



PRICE SHEET SCHEMA - CATALOG



XML TRANSACTIONS

```

<pidx:OrderCreateDetails>
  <pidx:OrderCreateLineItem>
    <pidx:LineItemNumber>00010#0000000010</pidx:LineItemNumber>
    <pidx:LineItemInformation>
      <pidx:LineItemIdentifier identifierIndicator="AssignedByBuyer">6403705</pidx:LineItemIdentifier>
      <pidx:LineItemIdentifier identifierIndicator="AssignedBySeller">NA</pidx:LineItemIdentifier>
      <pidx:LineItemDescription>24/12-B-,13 1/ Cement HTGSC (HighTemp gastight shrink compensator)</pidx:LineItemDescription>
    </pidx:LineItemInformation>
    <pidx:OrderQuantity>
      <pidx:Quantity>35</pidx:Quantity>
      <pidx:UnitOfMeasureCode>MTQ</pidx:UnitOfMeasureCode>
    </pidx:OrderQuantity>
  </pidx:OrderCreateLineItem>

```

Rich collection of machine-readable transaction data collected over 25 years

Used as a feeder to train AI to match similar data automatically

PETROLEUM INDUSTRY DATA DICTIONARY - PIDD

Noun	Modifier	Unique ID	Category	Code	1	2	3	4	5	6	7	8	9	10	11
WRENCH		113135	COMPLETION TOOLS	27111700	TYPE	SIZE	LENGTH	MATERIAL	PARENT FIGURE/MODEL NUMBER	APPLICATION					
WRENCH	ADJUSTABLE	105447	MAINTENANCE, REPAIR & OPERATIONS	27111707	SIZE	CONSTRUCTION	JAW SIZE	LENGTH	MATERIAL	STANDARD	APPLICATION	TYPE	HANDLE LENGTH	RATING	
WRENCH	ALLEN	113142	MAINTENANCE, REPAIR & OPERATIONS	27111710	APPLICATION	TYPE	SIZE	MATERIAL							
WRENCH	BOX END	106805	MAINTENANCE, REPAIR & OPERATIONS	27111705	APPLICATION	FINISH	MATERIAL	SPECIFICATION	LENGTH	SIZE	STYLE	TYPE	ANGLE		
WRENCH	BREAK-OUT	100146	SURFACE TOOLS	27111708	CONSTRUCTION	HANDLE LENGTH	LENGTH	MATERIAL	RATING	SIZE	STANDARD	TYPE			
WRENCH	COMBINATION	105590	MAINTENANCE, REPAIR & OPERATIONS	27111713	SPECIFICATION	MATERIAL TYPE	ANGLE	LENGTH	TYPE	APPLICATION	JAW SIZE	SERIES	SHANK DIAMETER	SIZE	STANDARD
WRENCH	HYDRAULIC	100267	MAINTENANCE, REPAIR & OPERATIONS	27111714	CONSTRUCTION	DRIVE SIZE	MATERIAL	PSI MINIMUM / MAXIMUM	RPM	SIZE	STANDARD	TORQUE RATING	TYPE		
WRENCH	IMPACT	100276	MAINTENANCE, REPAIR & OPERATIONS	27112713	SPECIAL APPLICATION	CFM	CONSTRUCTION	DRIVE SIZE	MAXIMUM TORQUE	PSI MINIMUM / MAXIMUM	RPM	TYPE			
WRENCH	OPEN END	108226	MAINTENANCE, REPAIR & OPERATIONS	27111706	SPECIFICATION	TYPE	SIZE	LENGTH	STYLE	MATERIAL	ANGLE	FINISH			
WRENCH	PIPE	100349	MAINTENANCE, REPAIR & OPERATIONS	27111708	SPECIAL FEATURES	APPLICATION	CAPACITY	CONSTRUCTION	JAW MATERIAL	LENGTH	MATERIAL	TYPE			
WRENCH	RATCHET	106336	MAINTENANCE, REPAIR & OPERATIONS	27111711	MATERIAL	TYPE	DRIVE SIZE	LENGTH	APPLICATION	NUMBER OF TEETH	RPM				
WRENCH	SET	107488	MAINTENANCE, REPAIR & OPERATIONS	27111729	SIZE	FINISH	MATERIAL	APPLICATION	ACCESSORIES	TYPE	SPECIAL FEATURES				
WRENCH	SPANNER	106480	MAINTENANCE, REPAIR & OPERATIONS	27111726	TYPE	SIZE	MATERIAL	LENGTH	APPLICATION	PACKAGING UNIT					
WRENCH	SPINNER	100751	MAINTENANCE, REPAIR & OPERATIONS	27111714	TYPE	RANGE SIZE	MATERIAL	LENGTH							
WRENCH	STRAP	108218	MAINTENANCE, REPAIR & OPERATIONS	27112127	SIZE	TYPE	CAPACITY	LENGTH	MATERIAL						
WRENCH	STRIKING	106814	MAINTENANCE, REPAIR & OPERATIONS	27112713	TYPE	SIZE	LENGTH	STYLE	MATERIAL	ANGLE	FINISH	APPLICATION	WEIGHT		
WRENCH	SUCKER ROD	100466	MAINTENANCE, REPAIR & OPERATIONS	27111714	CONSTRUCTION	JAW OPENING	LENGTH	MATERIAL	RATING	SIZE	TYPE				
WRENCH	TAP	100472	MAINTENANCE, REPAIR & OPERATIONS	27111720	HANDLE TYPE	LENGTH	MATERIAL	NUMBER	SIZE	TYPE					
WRENCH	TORQUE	100483	MAINTENANCE, REPAIR & OPERATIONS	27111715	SIZE	FEATURES	APPLICATION	MATERIAL	CONSTRUCTION	DRIVE SIZE	GRADUATIONS	LENGTH	RANGE	STANDARD	TYPE
WRENCH	VALVE	100535	ARTIFICIAL LIFT EQUIPMENT	27111700	SIZE	WEIGHT	APPLICATION	OPENING	LENGTH	MANUFACTURE R FIGURE/MODEL NUMBER	MATERIAL	NOMINAL PIPE SIZE	TYPE		
WRITING INSTRUMENT	CRAYON	105867	MAINTENANCE, REPAIR & OPERATIONS	44121709	SIZE	TYPE	FEATURES	PACKAGING UNIT	SHAPE	COLOR	MATERIAL				
WYE	PIPE	100368	PIPE, VALVES AND FITTINGS	40142308	TYPE	APPLICATION	DIMENSIONAL STANDARD	END PREPARATION	FACING TYPE	INSPECTION CERTIFICATION	MATERIAL	MATERIAL CLASS	MATERIAL GRADE	MATERIAL STANDARD	METHOD OF MANUFACTURE
WYE	PIPE REDUCING	100367	PIPE, VALVES AND FITTINGS	40142308	APPLICATION	APPLICATION	DIMENSIONAL STANDARD	END PREPARATION	FACING TYPE	INSPECTION CERTIFICATION	MATERIAL	MATERIAL CLASS	MATERIAL GRADE	MATERIAL STANDARD	METHOD OF MANUFACTURE
YOKE		113147	MAINTENANCE, REPAIR & OPERATIONS	23153100	APPLICATION	TYPE	SIZE	MATERIAL	PARENT FIGURE/MODEL NUMBER						
YOKE	VALVE	108211	ARTIFICIAL LIFT EQUIPMENT	40141616	TYPE	SIZE	MATERIAL	PARENT FIGURE/MODEL NUMBER	APPLICATION						

DOWNSTREAM MASTER DATA CODES

DOWNSTREAM

PRODUCT CODES

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COMPANY CODES

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WHITE PAPERS

Mapping UNSPSC Codes to Emissions Scope 3 Categories

Chris Welsh, Chair Emissions Transparency Date Exchange workgroup, July 2022

UNSPSC Explained

UNSPSC Coding has a 5 level hierarchy of twin digits. It is uncommon to use the fifth level of the code and so most industry uses of UNSPSC coding sticks to the first four level. The chart below shows the UNSPSC hierarchy, it's five levels and the four common ones in use:

For all PIDX projects we are going to use the first four levels: Segment, Family, Class, and Commodity. We will not be using the Business function level. Each level contains a two-character numerical value and a textual description as follows:



The majority of Oil & Gas Products and Services are clustered in two specific Segments, segment 20 for products and materials and segment 71 for services. PIDX is the custodian of Segment 71 and is responsible to the UNSPSC committee for its maintenance. Examples of current codes are shown here:

Segment 20 Examples

Segment	20 00 00 00	Mining Machinery and Accessories
Family	20 11 00 00	Well drilling and operation equipment
Class	20 11 15 00	Drilling and exploration equipment
Commodity	20 11 15 01	Gas well drilling equipment
"	20 11 15 02	Oil well drilling equipment
"	20 11 15 03	Subsea system equipment

Segment 71 Examples

Segment	71 00 00 00	Mining and Oil and Gas Services
Family	71 11 00 00	Oil and gas exploration services
Class	71 11 20 00	Cased hole well logging services
Commodity	71 11 20 01	Cased hole formation sampling testing services
"	71 11 20 02	Casing thickness measurement services
"	71 11 20 03	Chemical cutters services

Other codes are also relevant from different segments of UNSPSC within Oil & Gas such as Earth Moving Scrapers used in clearing a well site. In this case the UNSPSC code for this equipment is 22 10 15 06 as shown below. Oil & Gas is not strictly limited to segments 20 and 71 but the majority of bespoke products and services will fall into these two segments.

Segment	22 00 00 00	Building and Construction Machinery and Accessories
Family	22 10 00 00	Heavy construction machinery and equipment
Class	22 10 15 00	Earth moving machinery
Commodity	22 10 15 06	Earthmoving scrapers

Spend management systems often use the UNSPSC codes to tag procured items within an ERP. An Operator may assign UNSPSC codes to all Well Logging services across multiple suppliers and then report spend against the UNSPSC code so it can be categorized and managed.

Many Operators have their own spend management or materials and services classification hierarchies, often grown up over many years. It is common to map this internal topology to the UNSPSC to make the spend reporting universal across the industry and not Operator specific.

Scope 3 Categories Overview

There are 15 categories of Scope 3 Emissions reporting defined by the GHG Protocol as shown in the table below:

Scope 3 Emissions Categories

Upstream Emissions	Downstream Emissions
1 Purchased good and services	9 Downstream transportation & distribution
2 Capital goods	11 Use of sold products
3 Fuel and energy-related activities	12 End of life treatment of sold products
4 Upstream transport & distribution	14 Franchises
5 Waste generated in operations	15 Investments
6 Business travel	
7 Employee commuting	
8 Upstream leased assets	