



PIDX SPRING CONFERENCE APRIL 2013 MATERIALS MANAGEMENT PROGRAMME IN SHELL



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AGENDA

- About Shell
- Where were we 2 years ago?
- Materials Management Programme
- Where is our focus now
- Why is Data so important to us

ABOUT SHELL

- Active in more than 70 countries and territories
- Worldwide, more than 87,000 employees
- Produce around 3.3 million barrels of oil equivalent per day
- 44,000 Shell service stations worldwide
- Shell transports fuel to some 10 million customers a day

In 2012...

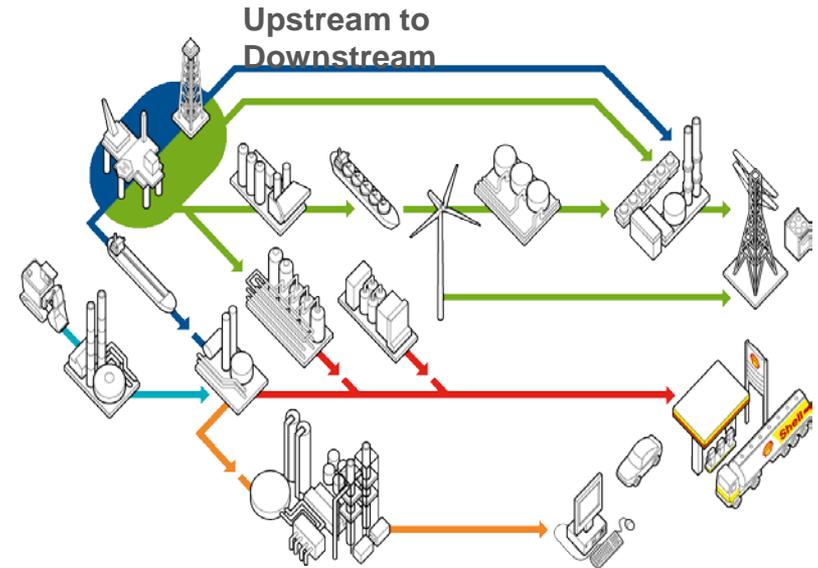
- We generated an income of \$26.8 billion;
- Invested \$29.8 billion in capital; and
- Spent over \$1.3 billion on R&D.



CONTRACTING & PROCUREMENT

C&P supports the entire Shell Group

- Approximately 2500 staff
- Managing some 30,000 Contracts
- 1 Million Purchase Orders
- 5 Million Invoices
- 120,000 Suppliers each year
- ~\$65 billion in 3rd party annual spend



The C&P team is responsible for everything that Shell buys with the exception of hydrocarbons, but including the hydrocarbons for own use

2010 - THE IDEAL WORLD – MATERIALS ARE DELIVERED ON TIME

- If value necessitates then workflow sends to Requisition Approver
- System automatically chooses 'Stock' or 'Procure' route
- 'Stock' materials are available for issue
- 'Procure' materials - system finds Outline Agreement and automatically creates PO without need for approvals
- Materials arrive at Work-site – fully Inspected and fit for purpose
- Downtime of facilities are minimized and production shut-ins are avoided
- Any used materials are returned through the appropriate investment recovery channels



2010 - THE IDEAL WORLD – MATERIALS ARE DELIVERED ON TIME

- Technician plans Work Order within realistic timing window
- Equipment has fully structured Bill of Materials attached with accurate overhaul quantities
- Technician selects spare parts from BoM
- Low value consumables are available as free issue or from vending machines and do not require planning
- Technician selects higher value consumables from Task List or ...
- Technician selects higher value consumables from system catalogue - standardized easily understood material specs



RIGHT KIT, RIGHT PLACE, RIGHT TIME

How much time do you lose locating the right materials?

How often do you pay extra for a rush order to meet ROS date?

How confident are you that your materials are of the right quality?

How much time do you spend waiting for materials?

Has inadequate attention to stock preservation caused shortage of critical spares?

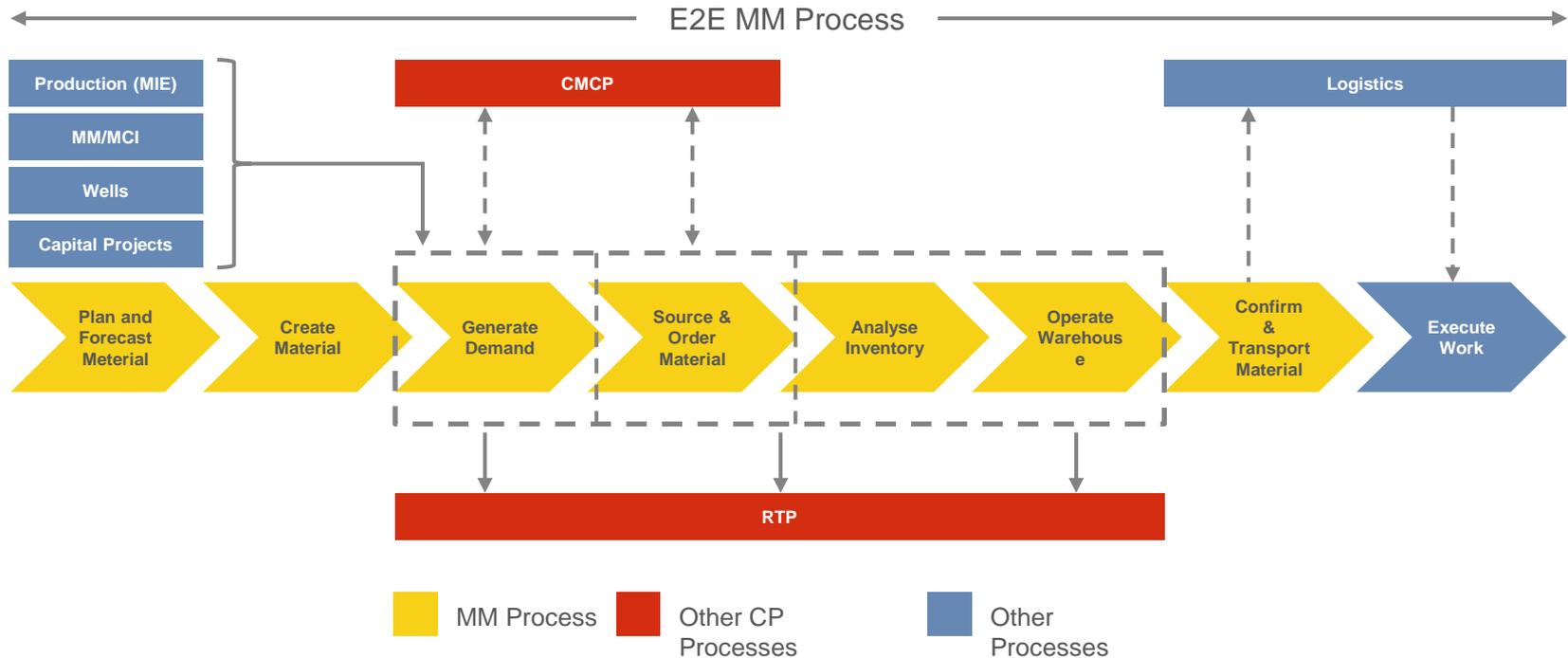


How often do you have to deal with wrong materials, condition or inadequate documentation?

How much more would you produce and/or save if you had the **right kit in the right place at the right time**?

SCOPE OF MATERIALS MANAGEMENT PROGRAMME

- Materials Management involves delivering the right kit, at the right place, at the right time to improve site/asset uptime, optimise inventories, whilst supporting safe operations (Goal Zero).



VISION

Focused development of current assets to provide fit-for-purpose, easy to use systems which give users the confidence that the right kit will be delivered, at the right place and at the right time



MM VALUE LEVRS

When the business & CP are planning collaboratively together with clear data and specifications...



And we have the right materials in stock or timely and effective delivery from suppliers...



Then Business Benefits Result



HOW WILL WE GET THERE?

Right Specifications & Data

- Standardisation/Variety Control Increased Standardisation
- Material Catalogues Zero Generics, QA/QC flagged
- Critical Spares Tagged, preserved, protected
- Bill of Materials (BoMs) Improved BoM quality and coverage
- Lead Times Accurate, available lead times

Planning & Performance Management

- Joined-up Planning Integration of Technical, CP, Logistics planning
- Integrated Scheduling Materials available before work order released
- MM Big Rules Common rules to drive performance
- KPIs Use of common KPIs and targets

Right Buying

- Sourcing Strategy Greater use of Enterprise Framework Agreements (EFAs)
- Manage Supplier Delivery New expediting strategies
- Supplier Managed Inventory Leveraging Suppliers to hold and manage physical stocks, delivering just in time
- Stocking vs Vendor Managed Inventory Supplier performance measures, adequate controls

Right Inventory

- Inventory Management (min/max) Stock linked to contracts / Right levels of inventory
- Stock Replenishment Move to automation/replenishment planning
- Preservation & Certificates Common policies followed
- Surplus Disposition Implement reuse, scrapping, selling
- Warehouse Operations Improved storage and handling; stock checking and accuracy; receiving, transfers, and returns

OVERVIEW OF CURRENT MATERIAL MASTER DATA OPPORTUNITIES

Master Data Focus Areas

- BoM coverage to support maintenance
- Creation and handover of BoMs into Operations
- Multiple and complex templates used to request Material master data
- Material Master data roles and ownership
- Duplicate Material master records
- Effective search capabilities to locate Materials

CRITICAL SUCCESS FACTORS

- Data definition, data value owners and accountability for data integrity clearly defined
- Effective change management of new processes and proactive early end user feedback incorporated into final communications
- Prioritisation and implementation of business aligned master data cleansing initiatives
- Updated governance model which redefines master data management processes and policies
- Leverage existing and newly cleansed and codified Master data back into ERPs
- Selection of new technology solution for master data management





PIDX INT'L EU SPRING CONFERENCE APRIL 30, 2013 LONDON

Material Master
Management

Authors: Bouwe de Boer & Eva Laine Mar (Finance Operations Data)

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AGENDA

- Material Master Management
- Need for Open Content
- Classification & Attribute Management
- Cleanse Material Master
- Catalogue Search

MATERIAL MASTER MANAGEMENT: SHELL CATALOGUE MILESTONES

- 1914** ¹⁾ Initiative was taken by some material experts to set up the BPM (Bataafsche Petroleum Maatschappij) Materials Catalogue, in order to provide guidance for all staff anywhere in the world involved in the procurement and management of materials.
- 1932** ¹⁾ Material and Equipment Standards and Code - MESOC coding with unique 7-digit number made it possible to communicate more efficiently with telex from overseas operations with the head-office.
- 1946** ¹⁾ MESOC number extended to 10-digit number to support the increase of Catalogue items.
- 1985** ¹⁾ MESOC on Compact Disk implemented, which simplified distribution. Gradual decrease in central coding and increase in local coding.
- 1995 - todote** Converted Legacy ERP's to Global ERP's. Conversions do not include complete cleanse.
- 2005** Start transition program to hand-over Master Data Management to Shell Business Service Centre's. Implemented KPI's for process and Data Quality.
- 2010** Group Big Rules for Material Masters introduced. Initiative taken for overall cleanse Strategy & Tool.
- 2011** Group Data Quality Standards implemented. LAKE & RIVER check implementation per ERP started.
- 2012** ¹⁾ Source: Koninklijke Olie 1890 – 1990 Plan launched for new system Landscape that enables central Material Master Management.

MATERIAL MASTER MANAGEMENT: MISSION & VISION

Mission

- Fit for purpose, readily available set of Master data in line with Laws & Regulations, Technical Integrity, HSSE, Standardisation & Variety Control and Group Data Quality Standards to support the Businesses/Functions and to enable Contracting & Procurement to achieve Top Quartile.

Vision

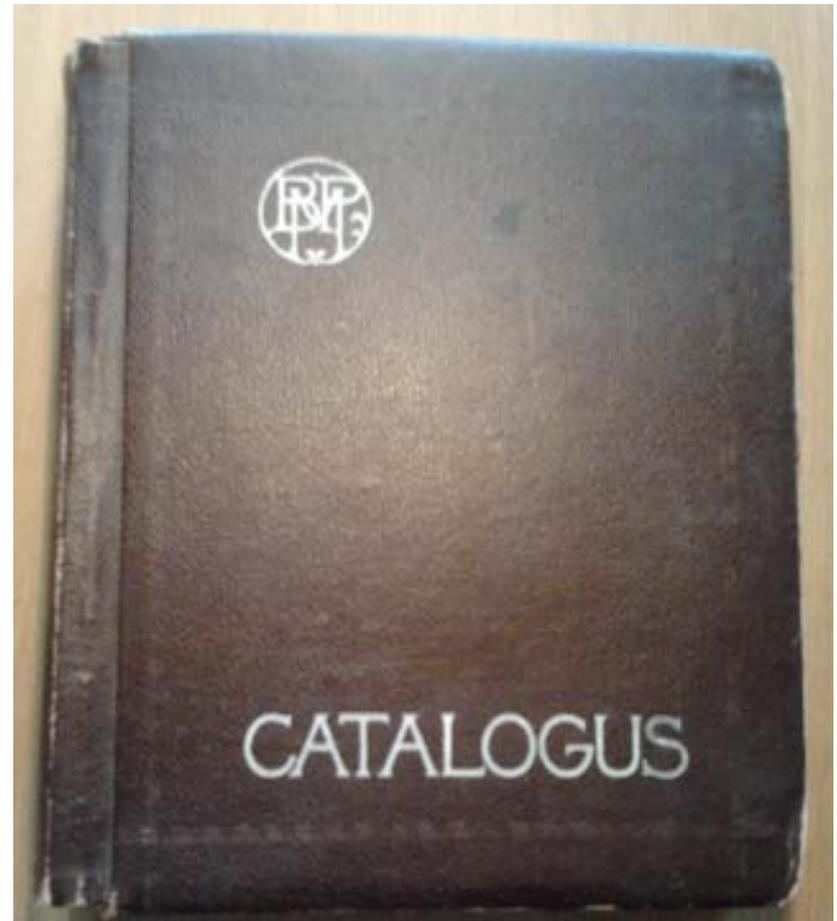
- Fit for Purpose Material Masters and Bills of Materials are readily available and easily identifiable for the Business User.
- Material specifications in accordance to latest Industrial standards.
- Material specifications maintained by Shell are managed/coordinated centrally in one MASTER system. One Standard suite of tools allows to handle requests, cleansing and Material Masters centrally.
- Bills of Materials are maintained during the life cycle of an equipment.
- Material specifications permit flawless execution of RtP process.

MATERIAL MASTER MANAGEMENT: CATALOGUE STRATEGY 1914 «-» 2013

In 1914 ¹⁾ with the issue of the first B.P.M. Catalogue aiming at following three goals:

1. To bring uniformity amongst the materials used in the different operations.
2. To make a connection between those staff who use the materials, and those who purchase materials.
3. To bring under attention of all parties concerned, in a concise way the materials used in the B.P.M., enabling independency from Supplier Catalogue's for the majority of the materials in the Catalogue.

After almost 100 years Shell is following the same strategy. The only difference is that more and smart use of Vendor managed data is aimed for.



NEED FOR OPEN CONTENT

Shell uses data across a wide variance of commodities:

- Data supporting different processes with own formats and requirements
- Source data in different formats/standards
- Interfaced systems use different formats/standards
- Cannot ignore end-user needs
 - (US Customary Units/Metric/imperial, Native Languages, etc)
- Improvement effectiveness & reliability catalogue search
- Limited resources in budget and staff
- Short implementation time
- Ongoing changes in formats/standards

Therefore it is important that key content is open and easily can be mapped despite the format!

CLASSIFICATION & ATTRIBUTE MANAGEMENT: KEY CLASSIFICATIONS IN USE

- Supporting Material Specification:
 - Shell MESCS (Material and Equipment Standards and Code) (more than 80 years in use!),
 - Shell Schema (CMT= Catalogue Management Tool),
 - TradeRanger TROCS (TradeRanger Open Content Standard) (phased out) ,
 - External; e.g. PIDX, eCLASS (in 2013 investigation for smart use of Vendor managed data!).
- Supporting Spend reporting & Category Management:
 - Shell Product & Service Group Codes (PSGC),
 - Shell Business Workstreams.
- Supporting Financial Accounting & TAX Reporting:
 - Shell General ledger via Shell Valuation Class and Shell PSGC,
 - Capital Projects (NORSOK),
 - UNSPSC.

BACKGROUND ON CATALOGUE VERSIONING

VERSIONING TRIGGERS

Alignment to International Industry Standards

Shell Technical Standards (DEP) Updates

Minimized additional company requirements

Standardisation Efforts

Reassessment of Variations

Attributes needed in Engineering tools (3D-modeling)

Continuous Improvement

Version 12

Version 13

Version 13a

Catalogue Management Tool

DELIVERIES

Shell Internal Schema

Also called 'Classifications' or 'Schema Templates'

Provides a structure format for the specifications

MESC Specifications

Contains approx 140K formatted Piping Class ¹⁾ related material specifications

Supplemented by buying descriptions and other reference documents

1) Piping class is a collection of most compatible components considering dimensional and material properties for the intended service over a range on pressure and temperature specified.

CLASSIFICATION & ATTRIBUTE MANAGEMENT: PAIN POINTS

- CMT new releases uploaded annually, but separately for each ERP system.
- Functionality to synchronize Classification/Characteristics from the CMT MASTER system with tables and Material Masters linked in SLAVE ERP systems;
 - only feasible for the creation/introduction of new attributes,
 - no multiple classifications (versions and or external) next to each other integral connected,
 - labor intensive and delay.
- Overlap of identical material crosses many categories in major ERP systems.
- Because of the different landscapes, the Classification/Attribute Management Process is not standard across each ERP system. Therefore there are differences in functionality and set-up of Material Masters, which causes differences in way MM's are maintained, searched, how we measure the data quality > resulting in separate Operating Procedures, separate Reports, separate Training for staff and less flexibility to work cross border.
- Global specification usage also becomes less viable when upload is delayed or partial.

CLASSIFICATION & ATTRIBUTE MANAGEMENT: NEW CONCEPT

- Classifications will be centrally maintained on the One Master System.
- Schema/Attribute mapping will enable the system to recognize identical items.
- Catalog format changes can be easily reviewed by the end-users.
- Attribute data belonging to a different Attribute Code but similar content will be recognized.
- Possibility to accept supplier provided content based on other classification standard.
- Dynamic search functionality empowers indexed search for flat text content descriptions on ERP.
- Further integration to other Enterprise Tools for Detailed Engineering and Spares –handling becomes viable.

FEASIBILITY OF ATTRIBUTE MAPPING

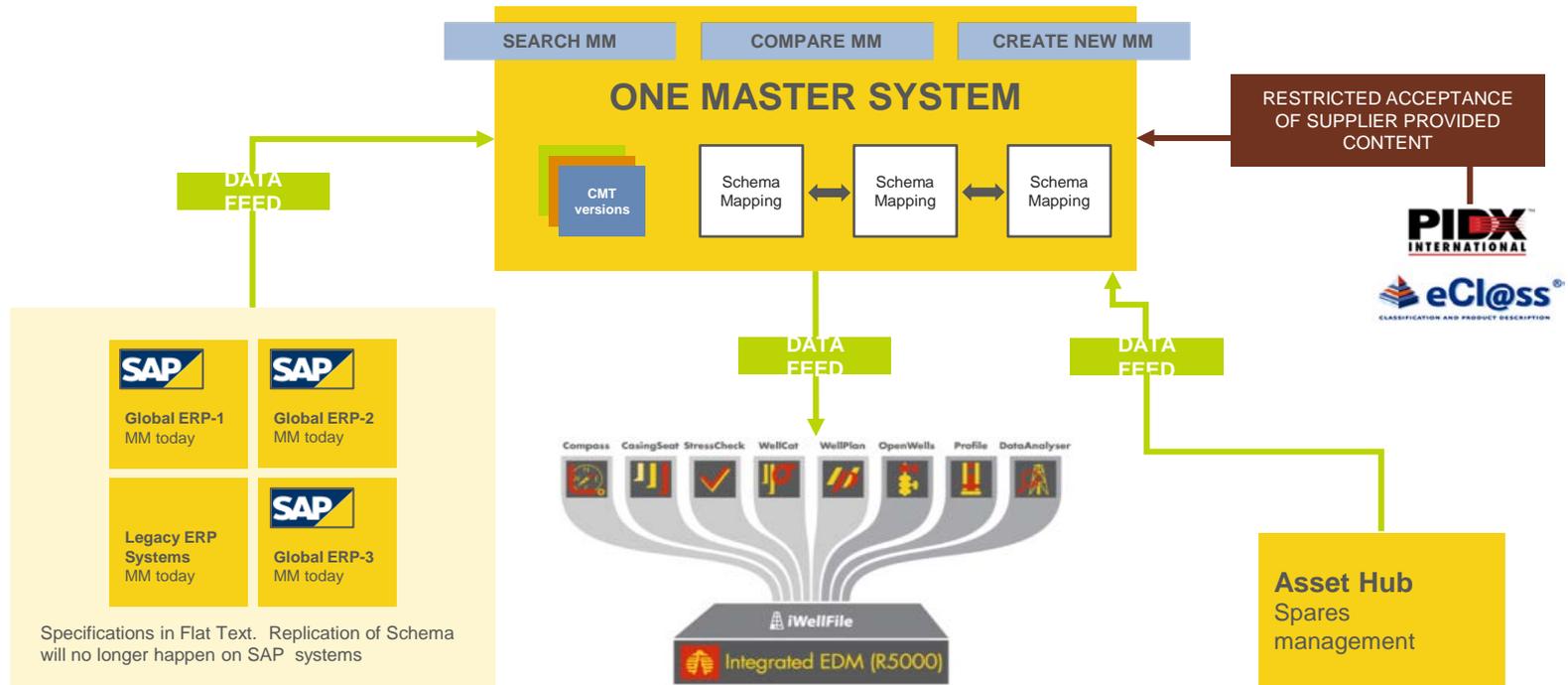
Catalogue update triggers effect the following changes on the attribute level:

- (1) Lack of control on identifying similar attributes
- (2) Rationalization of attributes
- (3) Removal of attributes supporting negligible design specs
- (4) Removal of specifications not supporting purchasing but should be indicated

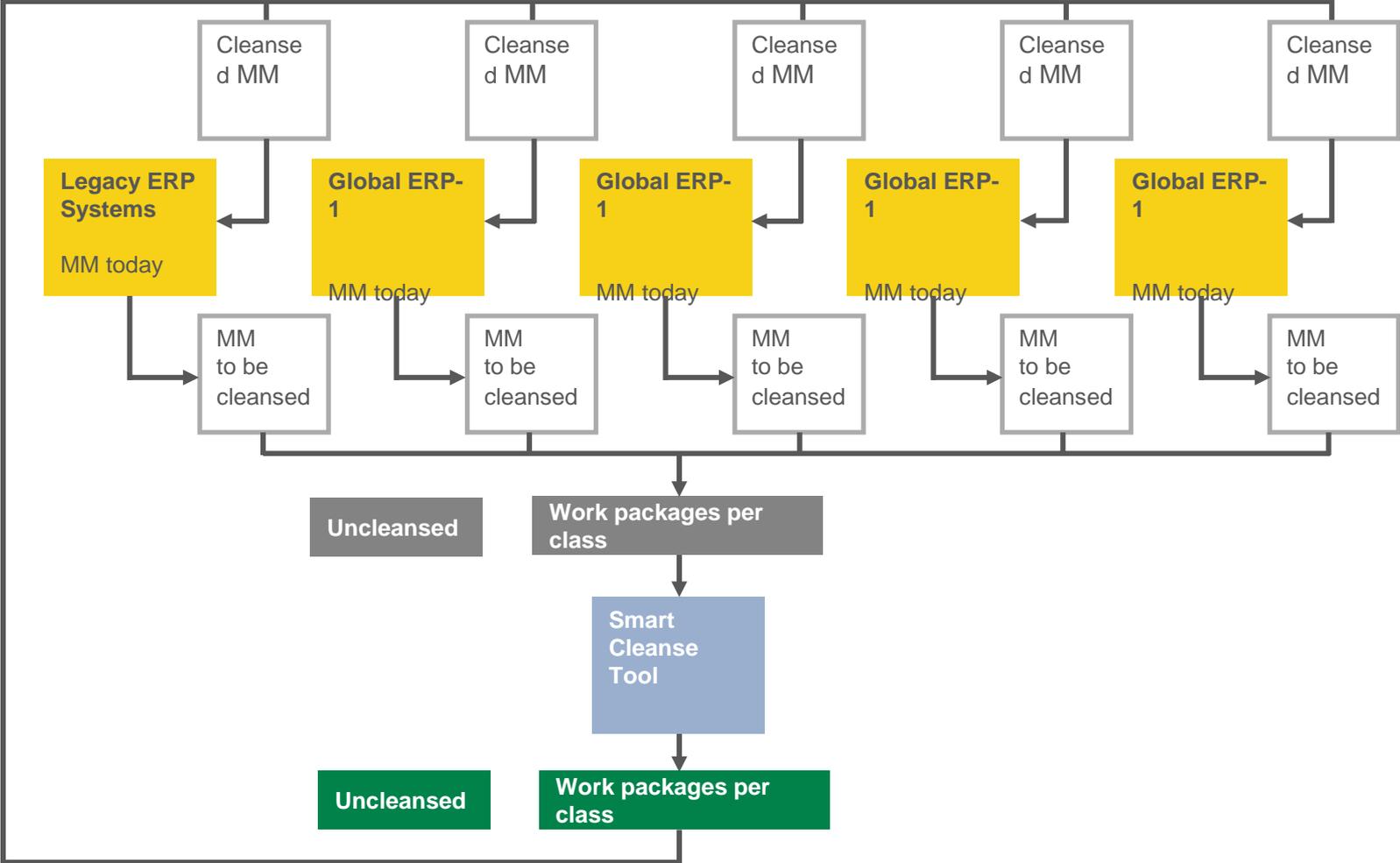
CMT version 7 <i>2003 Released</i>			CMT version 13 <i>2016 Released</i>	
BAFLSF CL300 RB CS 316 DN150			VBA DN150 CL300 FL RB CS 316/PTFE	
Attribute	Value Unit	Value	Attribute	Value
Size	DN	150	Nominal size	DN 150
Length, f to f	mm	403	Length, f to f (e to e)	403 mm
Pressure designation	ASME CL	300	Design spec, pressure rating	ASME CL 300
Design spec, face to face		ASME B16.10	Design spec, f to f (e to e)	ASME B16.10
Temperature range	deg C	MINUS 29 TO PLUS 200	Temperature, min	MINUS 20 deg C
			Temperature, max	PLUS 150 deg C
Mat, gsk gti, layers		EXFOLIATED GRAPHITE	Mat spec, dynamic sec seal(s)	BRAIDED GRAPHITE + PTFE LUB
Mat, gasket spwnd, filler		EXFOLIATED GRAPHITE		BRAIDED GRAPHITE
Mat, packing, stem, gland		SPE 85/200 EXP. GRAPH. TP 3D		DIE FORMED GRAPHITE + PTFE LUB
		SPE 85/200 EXP. GRAPH. TP 3A		DIE FORMED GRAPHITE
		SPE 85/200 PTFE, TP 1C		
Finish, flange facing		RA=3.2-6.4 MICRON		
Fugitive emission endurance		CO-QT-SS-AL		
Fugitive emission temp class		T8		

MULTIPLE CATALOGUE VERSION CAPABILITY

- ✓ No need to go through the labour intensive process of upgrading the different ERP systems
- ✓ Seamless execution of the latest catalog versions
- ✓ Empowered usage of the globally identified specifications
- ✓ Efficient Master Data Management enabled through supplier catalog integration (via PIDX, eClass)
- ✓ More feasible integration between internal and critical applications



CLEANSE MATERIAL MASTERS: CATALOGUES ACROSS ALL ERP'S



CLEANSE DELIVERABLES: CONTENT & ENABLERS

- Quality Material Masters that meet the Shell Group Data Quality Standards, Group Big Rules and support Detailed Engineering, Maintenance, Logistics, Contracting & Procurement and Finance processes and help the Business to achieve Top Quartile.
- Structured clean and unique short-descriptions for logic sorting in search result lists.
- Reviewed Classification/Characteristics supporting searching, detailed engineering and procurement.
- Standardized Characteristic Value's for reliable search and feeding engineering systems.
- Dictionaries with synonyms support ongoing cleanse, searching and “GATE KEEPING” when new items are created.
- Identification of duplicate Material Masters within the same ERP as well identical Materials across ERPs.
- “One time” opportunity to review PSGC assignment for similar materials across ERPs.

CATALOGUE SEARCH: PAIN POINTS

- Multiple solutions across Shell
 - training,
 - differences in search functions, some ERP advanced, others very basic,
 - differences in search results.
- ERP systems with only standard SAP search functionality may limit results for end users.
- No integral solution whereby end-users can access direct Third-Party Catalogues.
- New requests are raised for MM's for items that already are coded in one or more of the ERP-systems, but could not be found by the (end) user, because of missing integration and/or limited access.
- Impossible to further narrow search result.

CATALOGUE SEARCH: EXAMPLE ACTIVE GUIDANCE DURING SEARCH

ONE MASTER
HOME | PIPING CLASSES | STANDARDS | OTHER

Piping Class

- > [GLOBAL](#)
- > [DEP 31.38.01.12](#)
 - > [Class Selection](#)
 - Class 11000
 - Class 11001
 - Class 11003
 - Class 11005
 - Class 11007
 - Class 11009
 - (Show more results)
 - > [DEP 31.38.01.15](#)
 - > [DEP 31.38.01.84](#)
- > [LOCAL](#)

Class / Classification

- > [FITTINGS AND FLANGE](#)

Attributes

Search Options

All
▼

ELBOW 45 DEG
🔍

DEP 31.38.01.12-Gen Class 11009

PIPING COMPONENTS

	Nominal pipe size	15	20	24
Welding neck flange				
Fittings				
Cap bw		5721	5781	582
Elbow 45 deg		5721	5781	582
Elbow 90 deg		5721	5781	582
Tee equal bw		5721	5781	582
Valves				
Ball valve f		5531	5541	555
Ball valve f				
Ball valve t				
Butterfly va				
Check valve				
Check valve	5531	5541	555	
Globe valve ffgd	773005	5531	5541	5551
Miscellaneous				
Gasket spiral wound	854136	4041	4061	4081
Meterrun	766596	2621	2641	2661

P0 Text

Elbow, Pipe, Butt-weld	
Design spec	ASME B16.9
Dimensional spec	ASME B36.10M
Material	CARBON STEEL
Mat spec, fitting	ASTM A234 WPB
Manufacturing process	SEAMLESS
Service(s)	SOUR
Angle	45 deg
Type	LONG RADIUS
Mandatory requirements	MESC SPE 76/200 2012
Inspection, certif	ISO 10474 -3.1B
Caps code	E45B CS11
Schedule number	80
Size	DN 50

Step 1; search criteria inserted

Step 2; for Piping Class related materials as first option Piping Class Standards are offered for further search guidance

Step 3; select item in Piping Class Matrix. Specification will be presented.

