

5 Steps To Get Your Data Ready for SAP S/4 HANA

March 8, 2022



PROMETHEUS GROUP

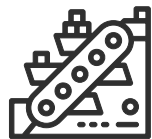
Prometheus Group

- Founded in 1998
- Headquartered in Raleigh, NC, USA
- 13 global offices
- Integrated and intuitive software
- Partnerships with industry leading companies



TOP 8

Oil & Gas



TOP 7

Mining & Metals



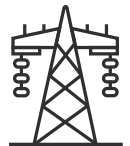
TOP 7

Pulp & Paper



TOP 6

Chemical



TOP 6

Utilities



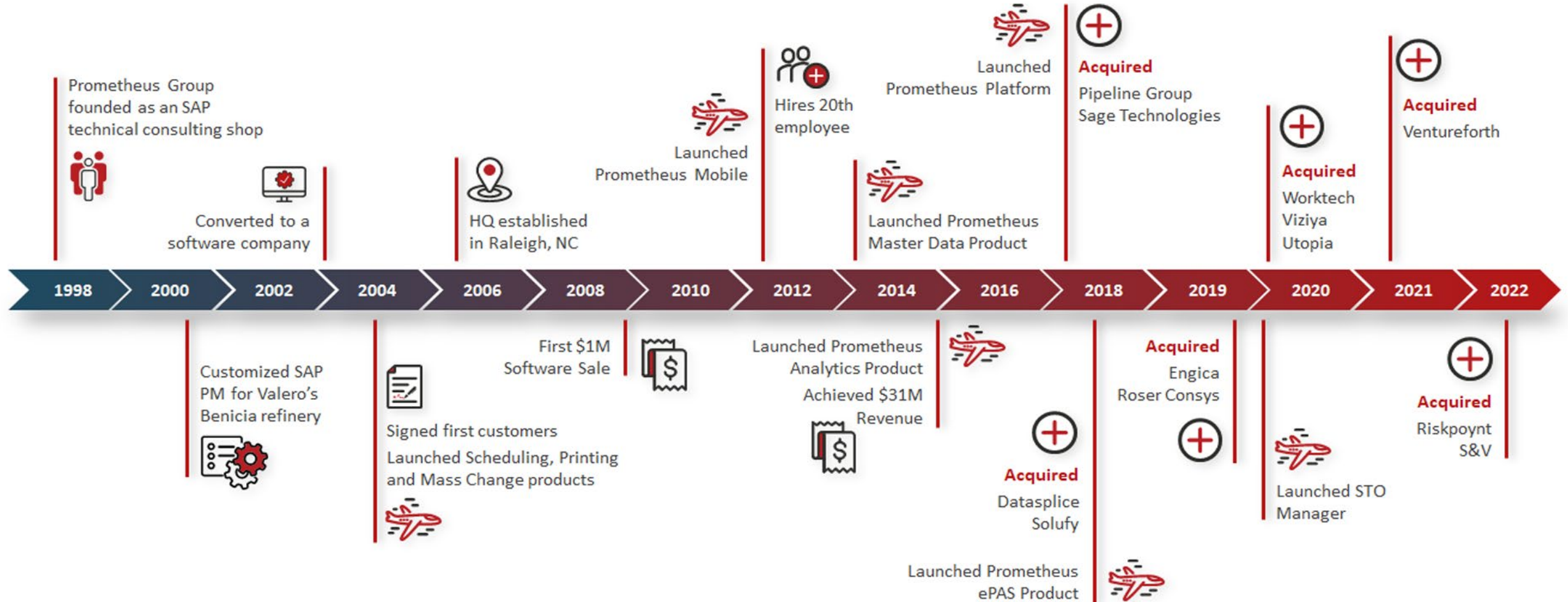
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The Prometheus Journey



S&V – A Prometheus Group Company

Focus on data supporting Digital Transformation

- Data Governance
- Data Migration
- Data Quality
- Data Insights

Expertise

- 15 years of innovation and expertise in data related services
- Experienced team focused on building smarter data management solutions
- Leveraging state of the art technologies like machine learning and artificial intelligence

SAP's official partner for the Middle-East region



A PROMETHEUS GROUP COMPANY

While good data can be your most strategic asset...

Bad Data Can Be Catastrophic!



Data you don't trust
Isn't data.



56%

of CEOs are concerned about the quality of their data.



8%

of organizations have reached “transformational” levels of maturity in data and analytics.



3%

of company data meets a minimum threshold for data quality.



Sources

KPMG, 2017 Global CEO Outlook

Gartner, Survey Analysis: Traditional Approaches Dominate Data and Analytics Initiatives, Feb 5, 2018,

Harvard Business Review, Only 3% of Companies' Data Meets Basic Quality Standards, Sept 11, 2017

“

“If you don't have your data under control, you don't need SAP S/4HANA...You would just be analyzing wrong data faster.”

-Dr. Jürgen Sturm, former CIO at Siemens BSH group



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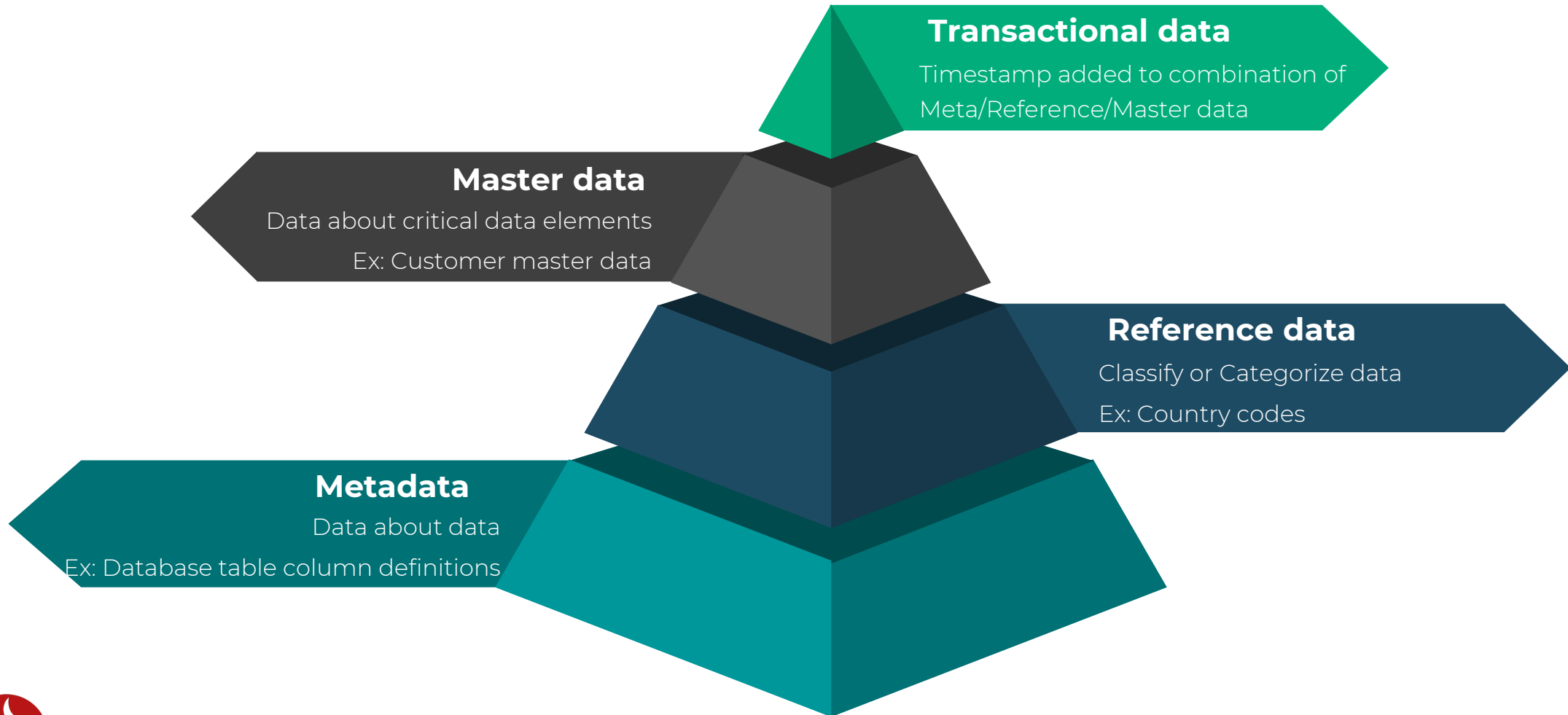
Step 1

Agree upon a 'definition of success'

.... What is 'good' data?

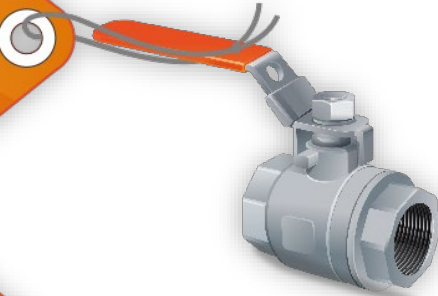


Data

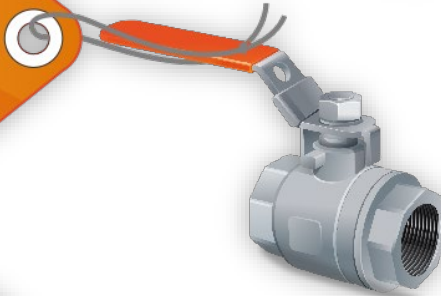


Real Life Examples

260893
MINI BALL VALVE, TWO WAY
TUBE SIZE 1/4 COMP, BRASS,
2500 LB, PARKER
4AMB4LPFABP



176011
VALVE, BALL, 1/4 IN
TUBING CONN, 2500 PSIG,
LEVER HANDLE



420224 VLV, .25" BALL,
2WAY, BRS, HANDLE OP,
FERRULE, 172 BAR,
GRAINGER 1RAF8



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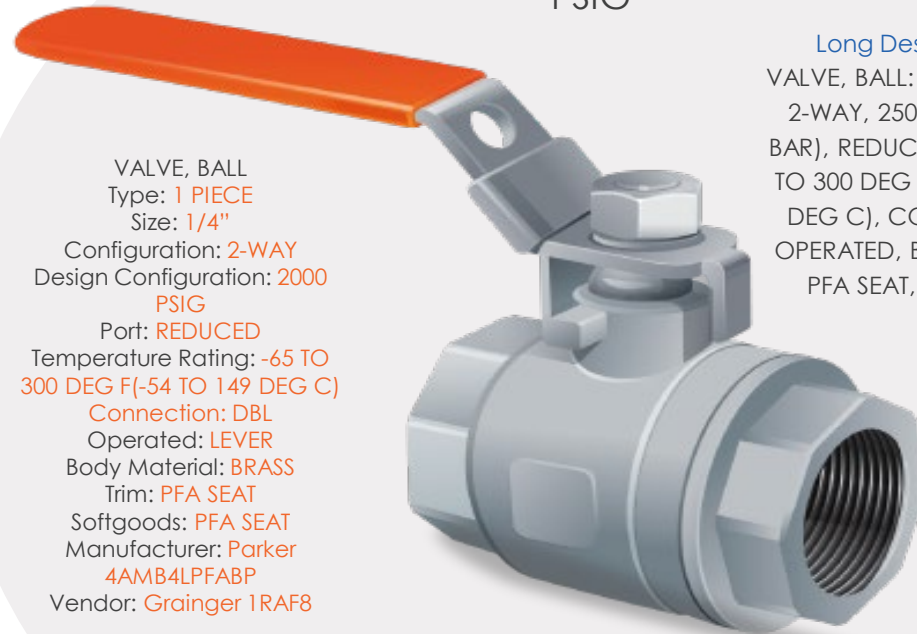
Short Description:

VLV,BALL:1 PIECE,1/4",2VVVY,2500
PSIG

Long Description:

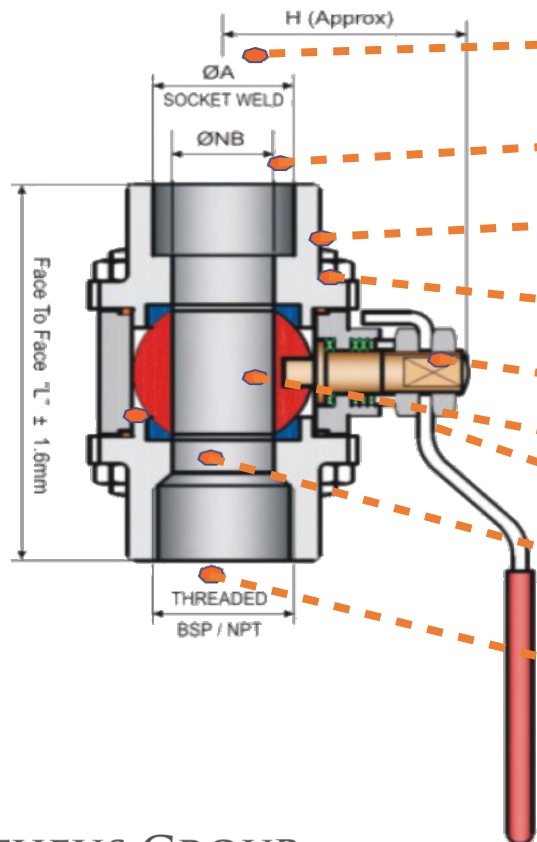
VALVE, BALL: 1 PIECE, 1/4",
2-WAY, 2500 PSIG (172
BAR), REDUCED PORT, -65
TO 300 DEG F (-54 TO 149
DEG C), COMP, LEVER
OPERATED, BRASS BODY,
PFA SEAT, PFA SEAL

VALVE, BALL
Type: 1 PIECE
Size: 1/4"
Configuration: 2-WAY
Design Configuration: 2000
PSIG
Port: REDUCED
Temperature Rating: -65 TO
300 DEG F (-54 TO 149 DEG C)
Connection: DBL
Operated: LEVER
Body Material: BRASS
Trim: PFA SEAT
Softgoods: PFA SEAT
Manufacturer: Parker
4AMB4LPFABP
Vendor: Grainger 1RAF8



Engineering Example: "VALVE, BALL"

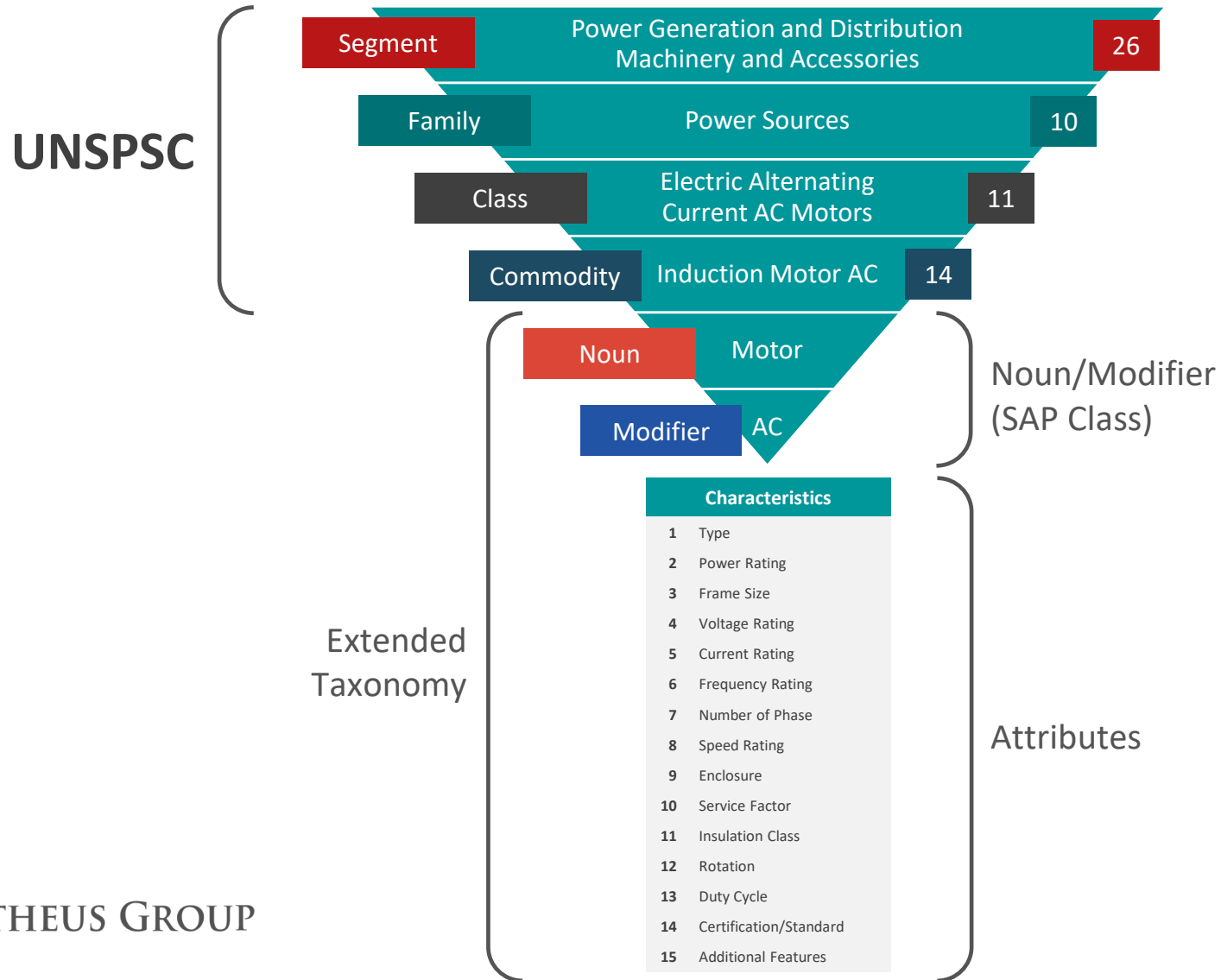
Valve



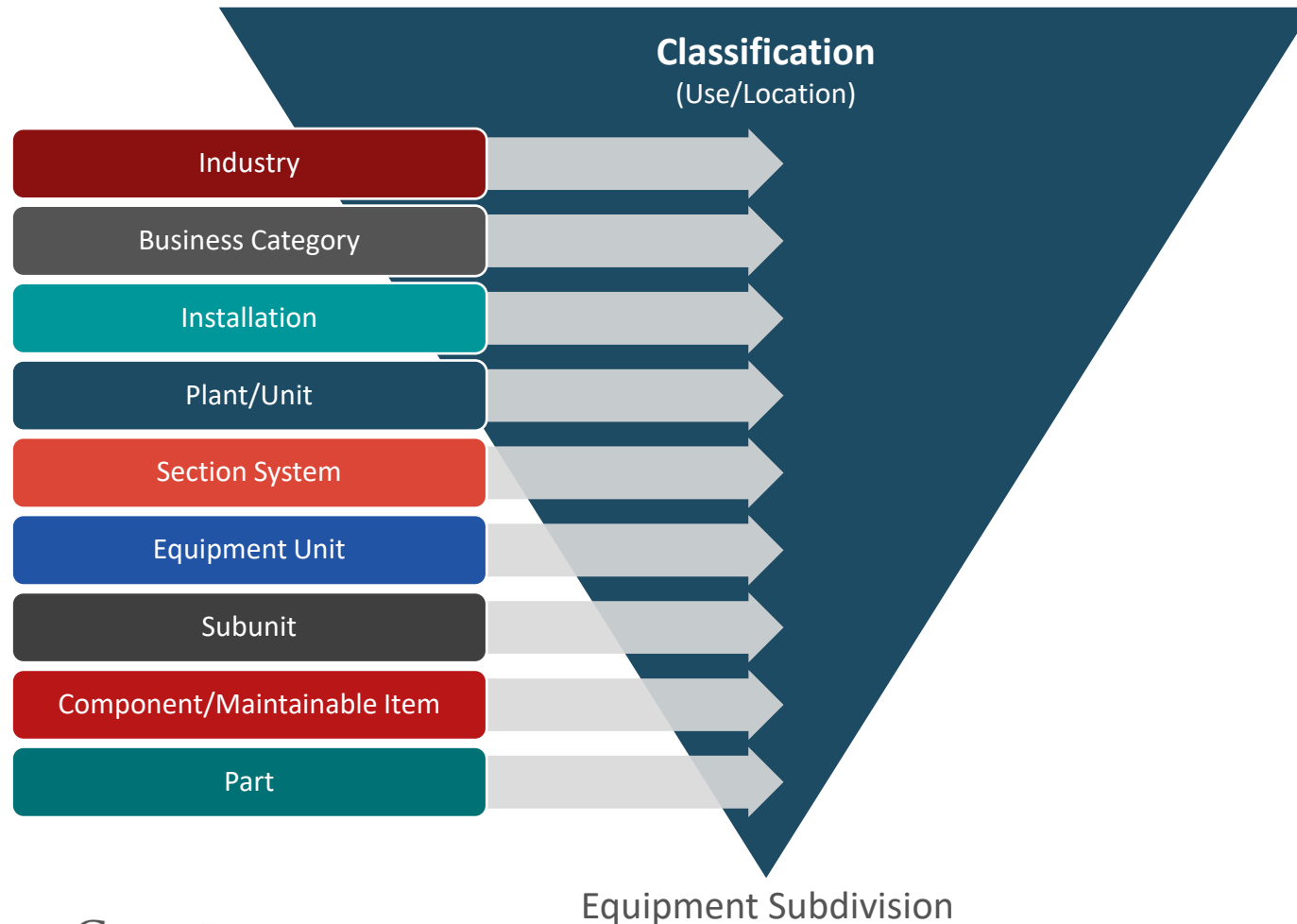
Attributes

SIZE	3/4"
DESIGN RATING	300LB
CONNECTION A	SOCKET WELD
BODY MATERIAL	BRZ
CONFIGURATION	2 WAY
OPERATED	LEVER
PORT	FULL
TYPE	TRUE UNION
FACE TO FACE DISTANCE	1.6MM
CONNECTION B	THREADED

Establishing the Foundation with a Sound Taxonomy



ISO 14224 defines the industry best practice for describing assets (digital twins)



Establishing the Foundation with a Sound Taxonomy

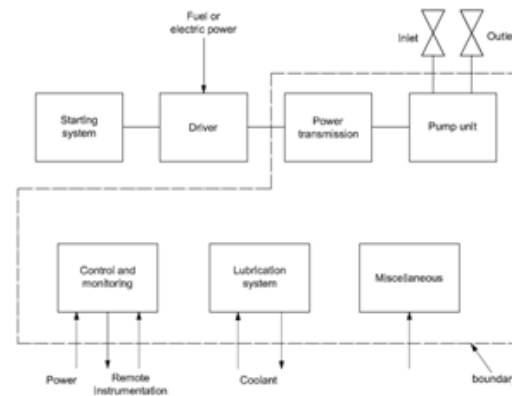
EQUIPMENT AND SPARES TAXONOMY CENTRIFUGAL PUMP		Version	1.0
		Release Date	05-02-2013



EQUIPMENT CLASS (NOUN)	EQUIPMENT TYPE (MODIFIER)	UNSPSC	ISO 14224
PUMP	CENTRIFUGAL	40151503	PUCE

Definition: A non positive displacement device, which utilizes a rotating element with a vane or blade assembly known as an impeller, in an enclosure as a means of transferring a liquid from one place to another.

Pump – BOUNDARIES (As per ISO 14224)



Establishing the Foundation with a Sound Taxonomy

EQUIPMENT AND SPARES TAXONOMY CENTRIFUGAL PUMP	Version	1.0
	Release Date	05-02-2013



Equipment Characteristics

Characteristics	Data Status	Data Type	Characteristic Description	UDM	Example	Suffix
					Values	
Type	M	TEXT	The type of the Pump based on construction/operation		SELF PRIMING	
Drive Type	O	TEXT	The type of drive which is coupled to the primary shaft		MOTOR	
Speed	M	NUM	The specific speed of the pump (impeller)	RPM	1800 RPM	
Case Material	O	TEXT	The surface treatment followed by the predominant base material of casing and material grades and/or specifications when available		SS ASTM A216 GR WCB	
Impeller Material	O	TEXT	The surface treatment followed by the predominant base material of impeller and material grades and/or specifications when available		SS ASTM A216 GR WCB	
Number of Stages	O	NUM	The numerical quantity of stages of the Pump		5	
Head Range	O	NUM	The measurement of total or dynamic head	MM, M	15 M	
Size	M	TEXT	The inlet and outlet size of the Pump		NPS 1, DN 50	
End Connection	O	TEXT	The type of end connection, along with the applicable standard		THREADED, ASME B1.20.1, RAISED FACE, ANSI B16.5	
Flow Rate	M	NUM	The volume of fluid delivered per unit of time	CFM, LPM	440 LPM	
Discharge Pressure	M	NUM	The rated pressure discharge of the Pump	PSI, BAR, KPSI	25 BAR	
Applicable Standard	O	TEXT	The applicable dimensional and referential standards of the Pump		API 610	
Additional Features	O	TEXT	Any other important features of the Pump			

Accurate Asset Information Aligned with ISO 14224 Standards

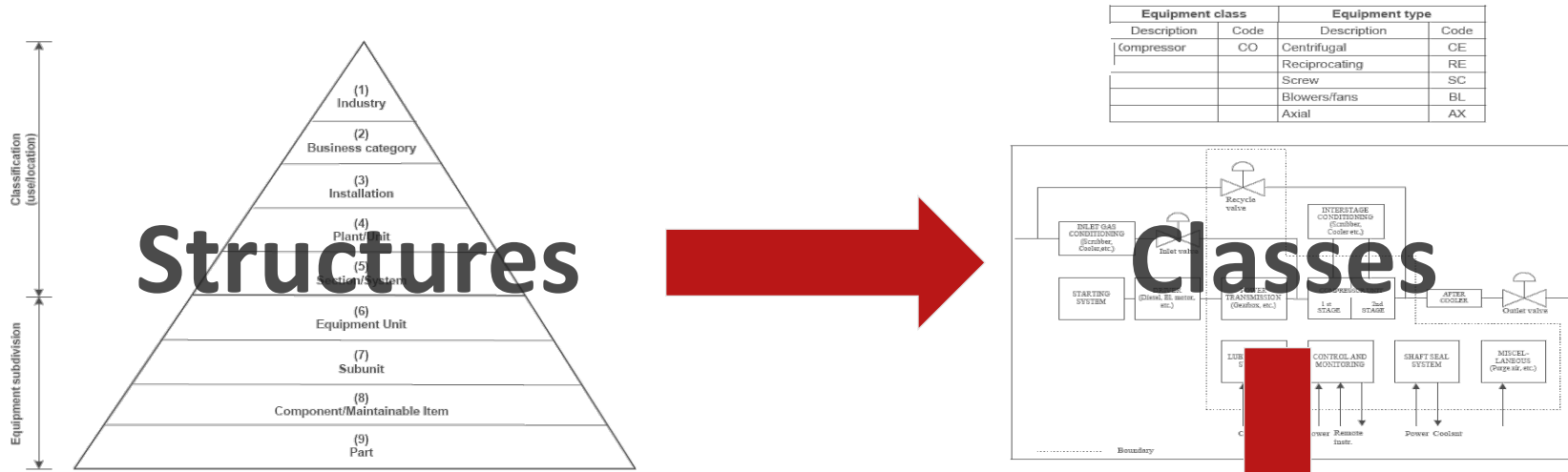


Figure 4 —Taxonomy classification

No.	Notation	Description
1.0	Design-related causes - general	Failure related to inadequate design for operation and/or maintenance, but no further details known
1.1	Improper capacity	Inadequate dimension/capacity
1.2	Improper material	Improper material selection
1.3	Improper design	Inadequate equipment design or configuration (shape, size, technology, configuration, operability, maintainability, etc.)
2.0	Fabrication/installation-related causes - general	Failure related to fabrication or installation, but no further details known
2.1	Fabrication error	Manufacturing process failure
2.2	Installation error	Assembly failure (e.g. maintenance not included)
3.0	Failure related to operation/maintenance - general	Failure related to operation/use or maintenance of the equipment, but no further details known
3.1	Off-design service	Off-design or unintended service conditions, e.g. compressor operation outside envelope, etc.
3.2	Operating error	Operator error, negligence, oversight, etc.
3.3	Maintenance error	Maintenance error, negligence, oversight, etc.
3.4	Insufficient maintenance	Failure caused by wear due to insufficient maintenance
4.0	Failure related to management - general	Failure related to management issues, but no further details known
4.1	Documentation error	Failure related to procedures, specifications, drawings, reporting, etc.
4.2	Management error	Failure related to planning, organization, quality assurance, etc.
5.0	Miscellaneous - general	Causes that do not fall into one of the categories listed above
5.1	Unknown	No information available related to the failure cause

^a The data acquirer should judge which is the most important cause if more than one exist, and try to avoid the 5.0 and 5.1 codes.

Equipment class	Components					
Subunit	Power transmission	Compressor	Control monitoring system	Oil tank with heating system	Shaft seal system	Miscellaneous
Maintainable item / Part	Gearbox/variable drive	Casing	Control	Pump with motor	Reservoir	Base frame
	Bearings	Rotor with impellers	Actuating device	Check valves	Pump with motor/gear	Piping, pipe support and bellows
	Coupling to the driver	Balance piston	Monitoring Valves	Filters	Valves	Control-isolation and check valves
		Interstage seals	Internal cooler	Valves	Valves	Coolers
		Radial bearing	Internal piping	Valves	Valves	Silencers
		Thrust bearing	Valves	Valves	Valves	Purge air
		Shaft seals	Internal piping	Valves	Valves	Dry gas seal
		Internal piping	Valves	Valves	Valves	Seal gas
		Valves	Antisurge system including recycle valve and controllers	Valves	Valves	Scrubber
		Piston				
		Cylinder liner				
		Packing				

Materials Supply Chain

BOMs

Step 2

Assess the Quality of Your Data vs. This Good Data Definition

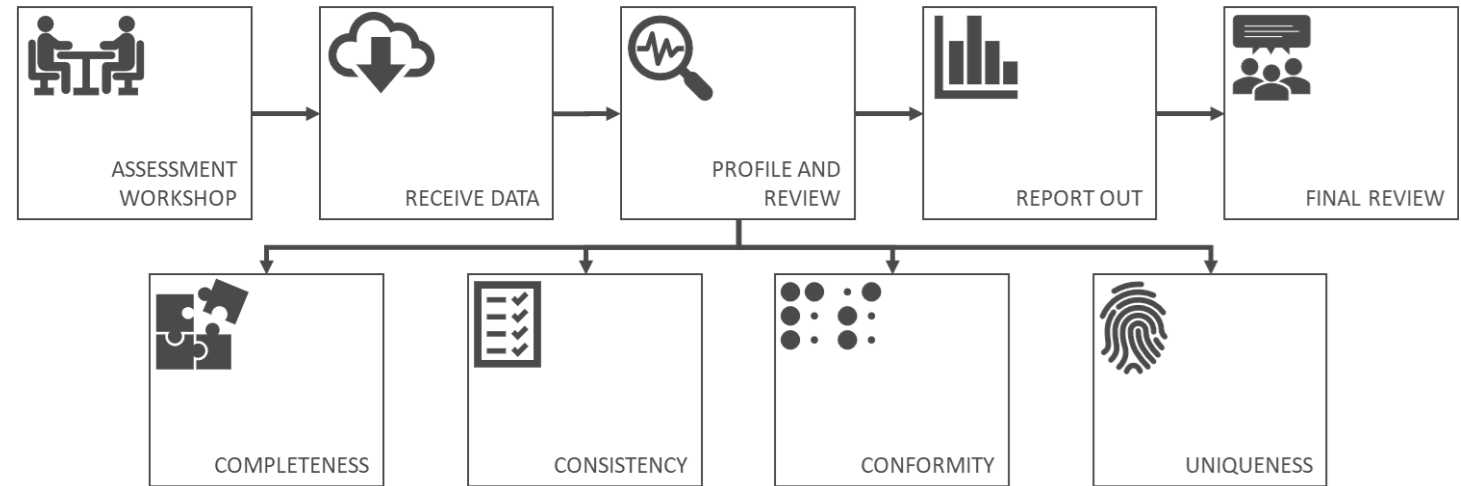


Prometheus Data Health Assessment Process

The DHA is a quantitative, point-in-time analysis of your critical business data.

The process highlights the integrity of your data across four dimensions of data quality.

DHA leverages SAP Information Steward and Data Services software for information analysis and reporting to diagnose and illustrate data limitations.



COMPLETENESS

Identification of critical missing or invalid data in required master data fields

CONSISTENCY

Application of standard conventions, terms, formats, and abbreviations

CONFORMITY

Validation of data against internal, industry, or international standards

UNIQUENESS

Exposing potential and exact duplicates which exist within master data

Data Health Assessment Parameters/Examples

- **Completeness**
 - Attribute fill rate
 - Descriptions
 - Records
 - Linkages
- **Consistency**
 - Standard abbreviations and terms
 - Naming conventions
 - Coding standards
 - UNSPSC, ECCMA, eOTD, WITSML etc.
 - Logical linkages
 - Business Partner, Materials, BOM's, Equipment
 - Functional Locations etc.
- **Conformity**
 - Check against internal data dictionary
 - (Noun/ Modifier/ Attributes)
 - Compare data dictionary to industry standards
 - Industrial Taxonomy Standards
- **Uniqueness**
 - Exact Matches (EM)
 - Exact Substitutes (ES)
 - Functional Equivalentents (FE)

Our DHA Team evaluates client provided master data tables to present a cohesive output

Vendor Master Summary

6.74 quality score shows that we need to improve Vendor data for migration into SAP.

- Incomplete or missing values in 9% of records
- Industry standard special characters are present in 15.4% of records
- Significant inconsistency present in 52.1% of records
- Duplication present in 53.6% of Vendor records on expected evaluation criteria

Example 1: Item is present in master table in 3 countries USA, GBR & NLD

ITEM	DESCR	Item Group	CATEGORY	CODE	Product ID	COUNTRY	Inventory Business Unit
123A	500# MEM	FG_ZED	10463	4116155	123A-BB-4	USA	4030
123A	500# MEM	FG_ZED	10463	4116155	123A-BB-4	GBR	4030
123A	500# MEM	FG_ZED	10463	4116155	123A-BB-4	NLD	4030

Scope of Data Health Assessment - Customer

Performed standard DHA for customer records, customer KNA1 table details are described below:

Source System	Table Name	Total	Active	Inactive
SAP	KNA1	26,959	21,839	5,120

The Extraction criteria is –

- Identified active records based on LOEVM field is null in KNA1(Gen)
- Data Health Assessment will be done only for Active records

Key Observations and Findings

MATERIAL_GROUP	ACTIVE	INACTIVE
NON_DANGEROUS_GOODS	79512	109549
DANGEROUS_GOODS	1660	457
TOTAL	81172	110006

Profiles were done on only active records in the table. Records marked inactive are ignored for profiling, but records with "DEL" or "DNU" in the name are not considered inactive for this exercise.

Consistency: ~77.2% inconsistent usage of acronyms and abbreviations in material descriptions are found, that are frequently used by end users. Search functionality is negatively affected when proper abbreviations are not used, and this leads to duplication as well.

Uniqueness: ~3.3% Similar/exact and potential duplication of materials found across different verticals of INGEVITY material master data. Unnecessary spending on materials that are already in stock under different material numbers.

Column: ITEM, Attribute: PATTERN

Value	Percent	Row Count
999999	22.8%	52695
<Other>	19.4%	44790
9999	18.8%	43481
9999-999	5.2%	12086
9999-99	4.5%	10323
999-99-999	3.4%	7866
9999-9X	2.6%	6061
99999	1.5%	3563
99-999-XX	1.5%	3476
9999XX	1.4%	3121
9999-9	1.3%	3017
99999-99	1.1%	2547
XXX-999-X	1.0%	2199
99999-999	0.8%	1959
XX9999	0.8%	1924

Data Quality Scorecard – Conformity

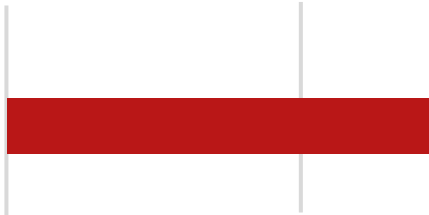


CONFORMITY Show Detail ▾

Quality

7.20

Conform..



Non Conforming Data Examples

- **Example 1: Obsolete Stock Item** in Long Description
- **Example 2: Deleted** in Short Description
- **Example 3: Manufacturer Name with 501**
- **Example 4: Part Number not valid/ wrong format**

MATERIAL CODE	ENGLISH SHORT DESCRIPTION	SPANISH SHORT DESCRIPTION	ENGLISH LONG DESCRIPTION	MANUFACTURER (HERS)	PART NUMBER (HERS)
000000000040280443	VALVE CONTROL GP HYDRAULIC		HYDRAULIC SYSTEM 988B LOADER S/NO.50W6041-UP ***** OBSOLETE STOCK ITEM *****	CATERPILLAR TRACTO	9J4142
000000000040208132	COOLER ASSEMBLY	TO BE DELETED (USE 40126771)		EMPIRE EXCHANGE 501	2506186X
000000000040002273	ELBOW, PIPE, SIZE: 1/2", ANGLE: 90DEG		MATERIAL:316SS, CONNECTION:THREADED, SCHD 40, MAX PSI:150	CAMCO FITTINGS CO((1/2") L
000000000040000341	NUT, WIRE, BLUE, 600V, #14-#6 AWG		VOLTS:600,WIRE RANGE: #14 - #6 AWG	3M - ALL DIVISIONS	MMMB
000000000040003802	ADHESIVE CEMENT PARASEAL SOLVENT			BARBER WEBB	N

Data Quality Scorecard – Consistency



CONSIST Show Detail ▾

Quality

6.08

Consist...



Inconsistent Data Examples

- Example 1,2: TERM – **ADAPTER/ ADAPTOR** and **ADAPT**
- Example 3,4: TERM – **RBR** and **RUBBER**
- Example 3,4: TERM – **GROOVED** and **GROOVES**
- Example 5,6: Manufacturer Name

MATERIAL CODE	ENGLISH SHORT DESCRIPTION	SPANISH SHORT DESCRIPTION	ENGLISH LONG DESCRIPTION	MANUFACTURER (HERS)
000000000040413522	ELBOW, 45 DEG. MALE ADAPT X FEMALE COUPL	ELBOW, 45 DEG. MALE ADAPT X FEMALE COUPL	ALUMINUM, W/CAM LEVER COUPLING	DIXON VALVE & COUPLING COMPANY
000000000040076742	ADAPTER , ELECTRICAL COMPONENT ADAPTOR			RITTAL CORPORATION
000000000040325911	REDUCER, VIC, CONCENTRIC, RUBBER LINED		20"X12", 1/2" RBR LINED SMR5, STD CS ERW, C/W VICTAULIC GROOVES , VICT X VICT, DWG NO. 29SL-008083-12" R1 REV 0, SHEET 2LN444 REGRIND CYCLONE LAUNDER TO 2ML20,	WALES, R. & SON (R)
000000000040325910	PIPE, RUBBER LINED, CARBON STEEL 12" ID		X 2' 6.0" LG, 1/2" RUBBER LINED SMR5, STD CS ERW C/W VICTAULIC GROOVED , VICT X VICT DWG NO. 29SL-008083-12"-R1 2LN444 REGRIND, CYCLONE LAUNDER TO 2ML20, C4	WALES, R. & SON (R)
000000000040576134	SENSOR OPTICO DE OXIGENO DISUELTO	SENSOR OPTICO DE OXIGENO DISUELTO	LARGO INSERTO 120 MM, LARGO CABLE 3 MTS, SOPORTE INMERSION EN ACERO INOXIDABLE, PLACA DE IDENTIFICACION (TAG)	YOKOGAWA CORPORATI
000000000040613156	AMPLIFIER, 2 WIRE PH, ATEX,	AMPLIFIER, 2 WIRE PH, ATEX,		YOKOGAWA



Step 3

Assess the Business Impact of your Imperfect Data Quality



The Business Impact

Improved Maintenance Productivity



- Increase maintenance 'wrench-time'
- Added cycles for deferred maintenance
- Improved asset information context for informed troubleshooting & repair

Increased Operational Efficiency



- Reduce downtime from equipment failure
- Lower mean-time-to-repair
- Increase asset availability

Reduced MRO Supply Chain Costs



- Enables accurate prediction of spares needs
- Facilitates identification of obsolete inventory
- Minimizes expedited procurement

Decreased EH&S Risks



- Accurate, complete information enables informed decisions, reduces risks for maintenance staff and operators

Improved Auditability



- Improved financial accountability
- Ensures regulatory compliance
- Reduces product liability risks from quality

Achievement of Operational Excellence



- Enables achievement of top quartile performance through advanced maintenance techniques such as reliability-centered-maintenance, risk-based inspection, performance analytics

Ensuring accurate, complete asset master data can have a direct impact on reducing environmental, health & safety risks, improving operational performance and maintaining regulatory compliance.

A Typical Business Case For Data Quality Improvement

Obsolete Inventory Analysis

MRO Spares Balance Sheet	\$600,000,000.00
Annual Carrying Cost (25%)	\$150,000,000.00
MRO Spares Annual Spend	\$1,500,000,000.00

MRO Material Count	58,393
Materials on a BOM	29,914
Potential Obsolete Materials	28,479
% of Total	48.77%
Legitimate due to critical spares or lack of inventory	75.00%
Potential Impact	12.19%

Potential for All Locations	\$73,156,885.25
Annual Carrying Costs	\$18,289,221.31

Manufacturing Industry Client

- \$21B USD Revenue
- 54,000 Employees
- Benchmark data from 2 typical facilities

First Call Resolution (Work Orders)

Total Equipment Master Records	65,200
Total Criticality 9's and 5's	34,500
Criticality 9's and 5's with BOM	10,400
Current First Time Call Resolutions %	30.14%

Impact of Utopia BOM Initiative	
New BOM's added to Equipment	11,500
Criticality 9's and 5's with BOM	21,900

Future First Time Call Resolution % 30.14%

Utopia Impact 110.58%

Wrench time / Asset Availability Analysis

Total Equipment Master Reords	65,200
Total Criticality 9's and 5's	34,500
Criticality 9's and 5's with BOM	10,400
Current First Time Call Resolution %	30.14%
Equipment missing BOM's	21,100
Industry Average Wrench Time	40%

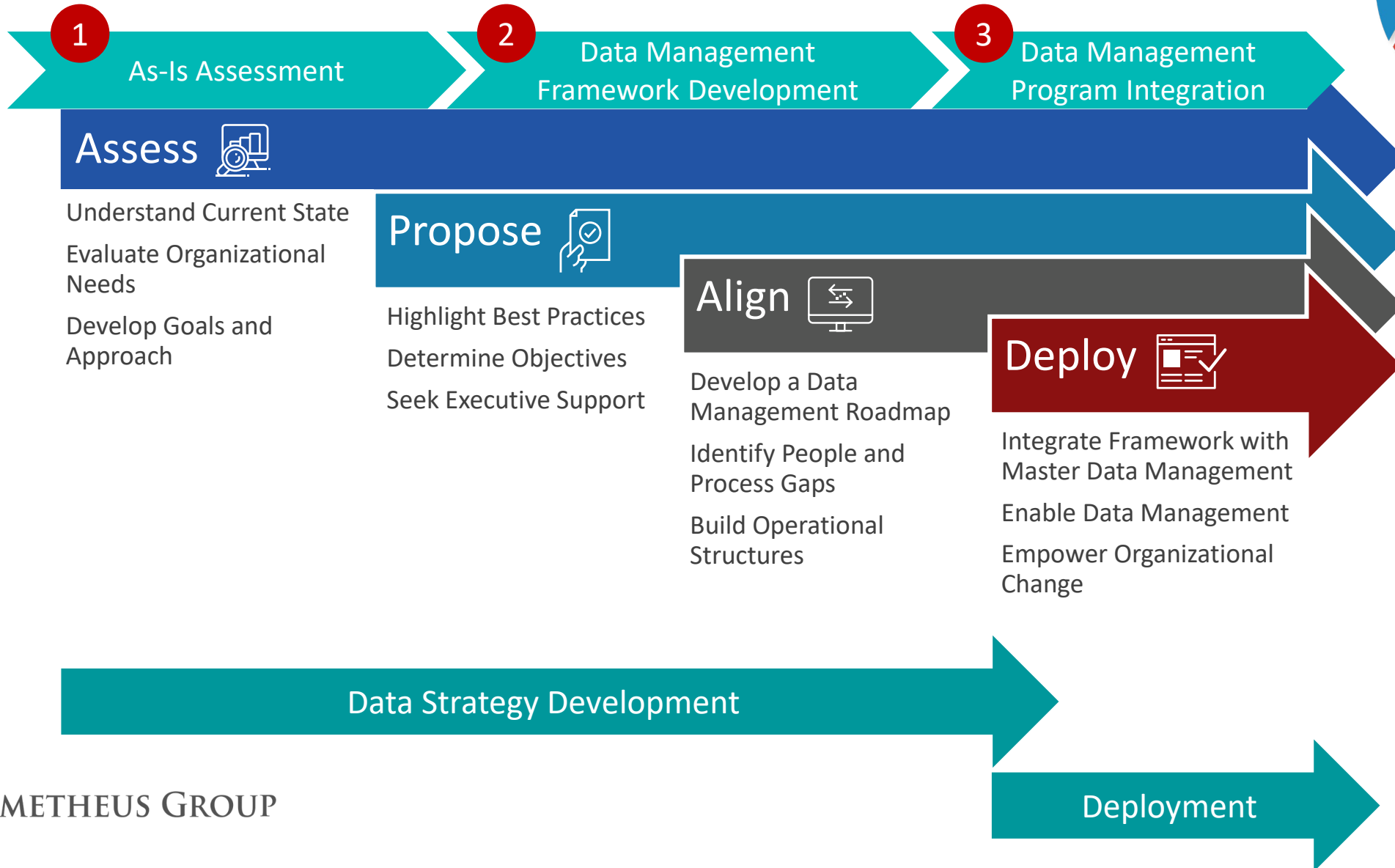
Impact of Utopia BOM Initiative	
New BOM's added to Equipment	11,500
Criticality 9's and 5's with BOM	21,900
New First Time Call Resolution %	63.48%
Equipment missing BOM's	12,600
Potential Wrench Time Improvement	47.72%
Potential Wrench Time	59.09%

Step 4

Develop a Strategy for Master Data Transformation & Management



Data Transformation & Management Strategy



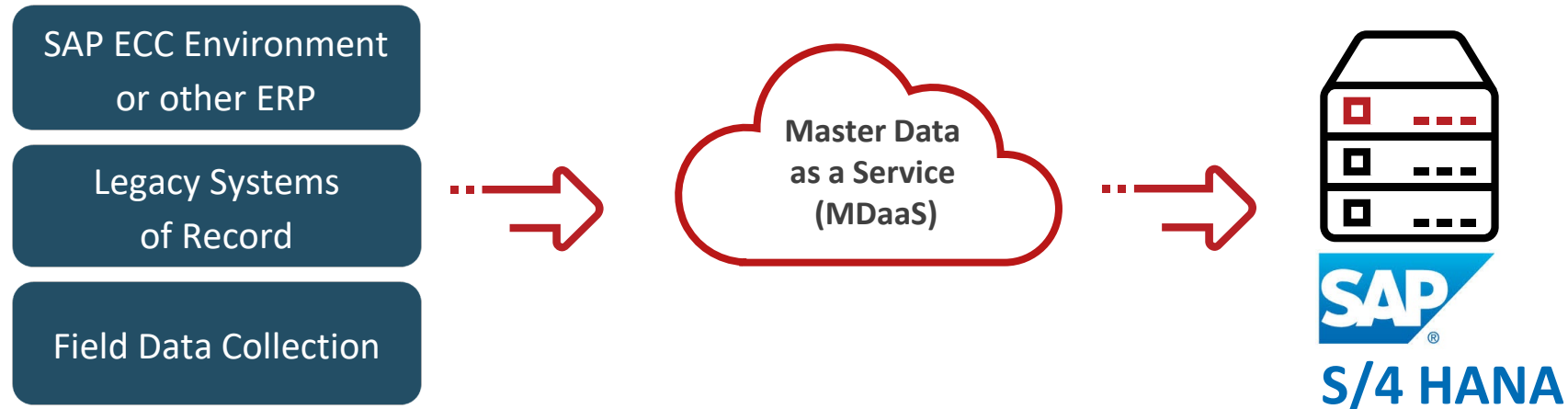
Step 5

Implement the NO-REGRETS STEP Data Transformation Methodology



The Prometheus Best Practice for Data Transformation / Migration to SAP S4

- Data extraction, cleansing, enrichment from legacy systems, documents & drawings and field data collection
- Maintain currency of legacy master data until SAP S/4HANA deployment
- Realize the business benefits of accurate master data immediately even before S/4 deployment
- Load accurate, complete master and transactional data upon S/4HANA deployment
- Maintain accuracy of master data in new S/4 HANA environment



Questions?



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