

7 November 2025



Establishing an Asset Management Data Baseline using additional ISO Standards



Asset Management Data Baseline

Cohesive

Topic Overview

- Why a data baseline matters
- ISO standards overview
 - ISO 14224
 - ISO 55010
 - ISO 31000
 - ISO 8000
- Establishing a Data Baseline
- Benefits and outcomes



Data is the foundation of asset management.

- ❑ Asset management starts with data integrity
- ❑ A strong data baseline ensures compliance, reliability, and informed decision-making



Common Challenges and Business Impact

Common Challenges

- Fragmented asset registers across departments.
- Inconsistent naming conventions and taxonomy.
- Poor data governance leading to unreliable decision-making

The Business Impact

- Unreliable Reports
- Duplication
- Difficulty in performing Audits
- Difficulty in conducting lifecycle costing

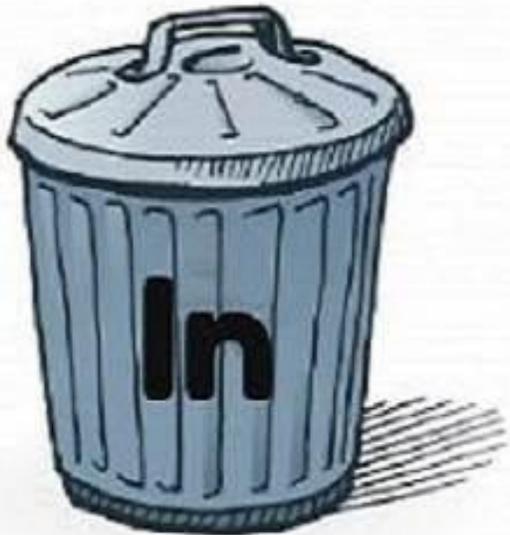
Good decisions require good asset data



Why a Data Baseline matters in Asset Management

- Asset Management activities rely on effective decision-making which in turn relies on data and documented information
- Good Asset Management data and information enable better decisions to be made

Bad Data



=

Bad Decisions



The Four Pillars of a Strong Asset Data Baseline



To build a strong baseline, we need four things:

- 1** Standardized taxonomy and hierarchy
- 2** Alignment between financial and Technical Data
- 3** Risk-informed prioritization
- 4** Reliable data quality and governance

ISO Landscape for building a Data Baseline

Developing an Asset Management Data Baseline using ISO additional standards



ISO 55000
Asset Management standard .

ISO 14224
Collection and exchange of reliability and maintenance data for equipment

Standardized Asset Taxonomy and master data

ISO 55010
Guidance on the alignment of financial and non-financial functions in asset management.

Aligning Financial (FAR) and Technical Data (TAR)

ISO 31000
Risk Management Guidelines

Asset Risk and Criticality Assessment

ISO 8000
Data Quality & Change Management

Data Quality & Governance

ISO Landscape: 55000 as the Overarching Framework



Foundational Framework ISO 55000

ISO 55000 outlines key principles and terminology for effective asset management practices.

Standardized Asset Taxonomy

ISO 14224 provides a taxonomy and structure for consistent asset master data collection.

Aligning Financial and Technical Data

ISO 55010 ensures consistency between financial reporting and operational asset data.

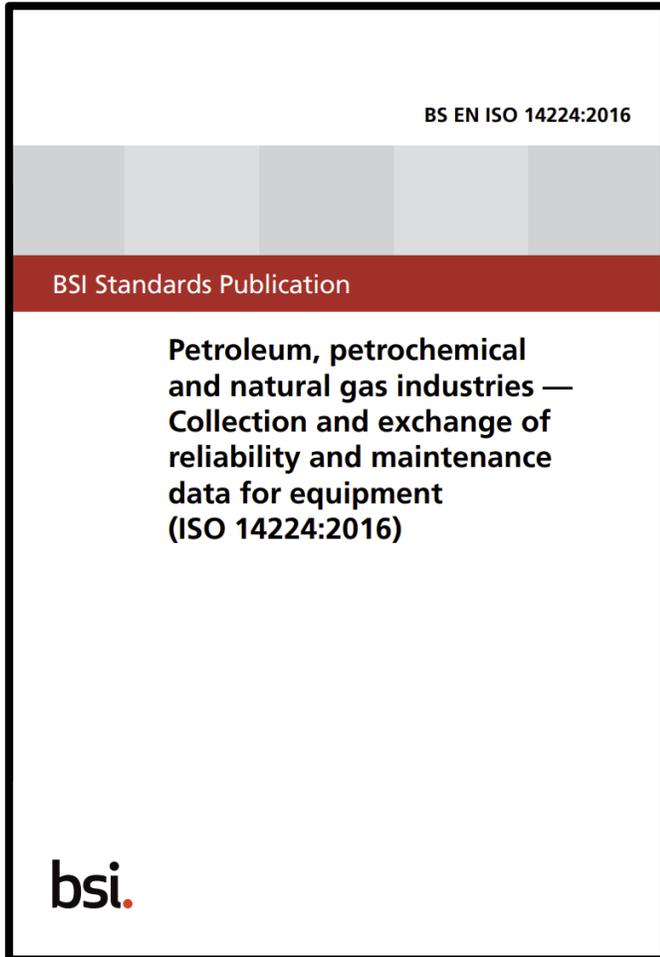
Risk Management.

ISO 31000 guides risk management and criticality assessment.

Data Quality Management

ISO 8000 ensures data quality and change management.

Standardizing Equipment, Maintenance and Reliability Data (ISO 14224)



Standardized Data Collection

ISO 14224 sets uniform guidelines to standardize the collection and exchange of reliability and maintenance data for equipment across industries.

Hierarchical Asset Structure

Provides a structured framework for **asset taxonomy & Hierarchy, Data attributes, failure and Maintenance data** as well as **Consistency & benchmarking**.

Failure Data Guidance

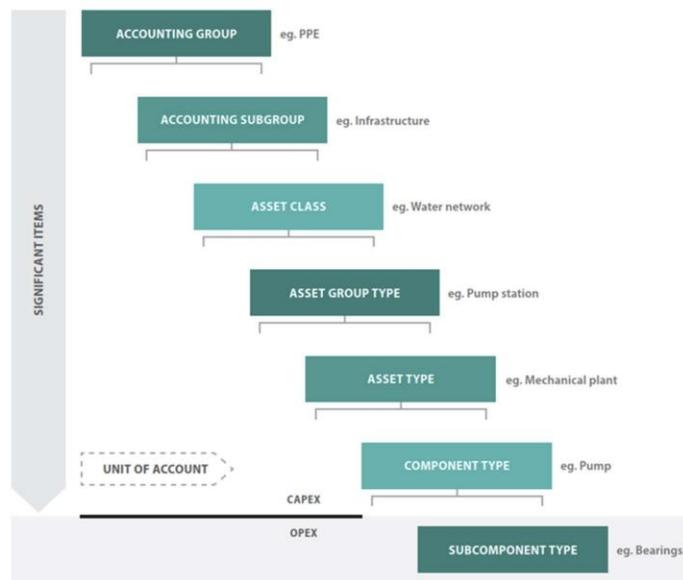
Provides guidance on recording failure modes, causes, and consequences for accurate analysis.

Enhanced Data Consistency

Helps organizations build a robust asset master data baseline, enabling better decision-making, predictive maintenance, and interoperability between systems..

Equipment Data Hierarchy

The taxonomy is a systematic classification of items into generic groups based on factors possibly common to several of the items (location, use, equipment subdivision, etc.)



Codification Example

1: Sebilo Perth Mine

10: Sebilo Perth Mine Surface Operations

10-P: Ore Processing Plant

10-PP: Primary Crushing System

10-PP-CV01: Feed Conveyor

10-PP-CV01-STRT01: Conveyor Structure

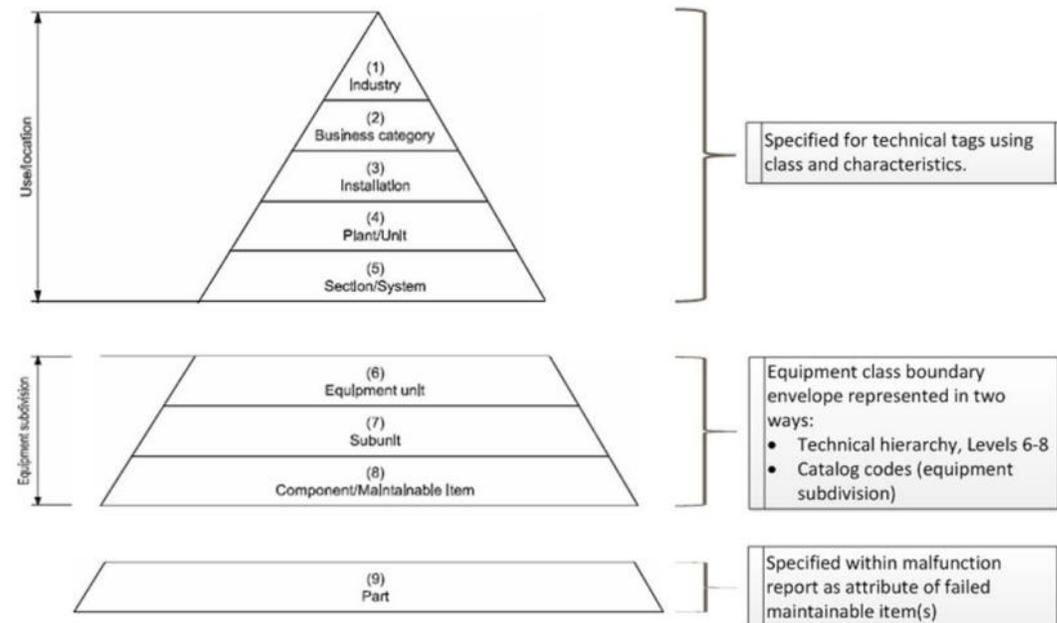
11-PP-CV01-MOTR01: Conveyor Motor

11-PP-CV01-GRBX01: Conveyor gearbox

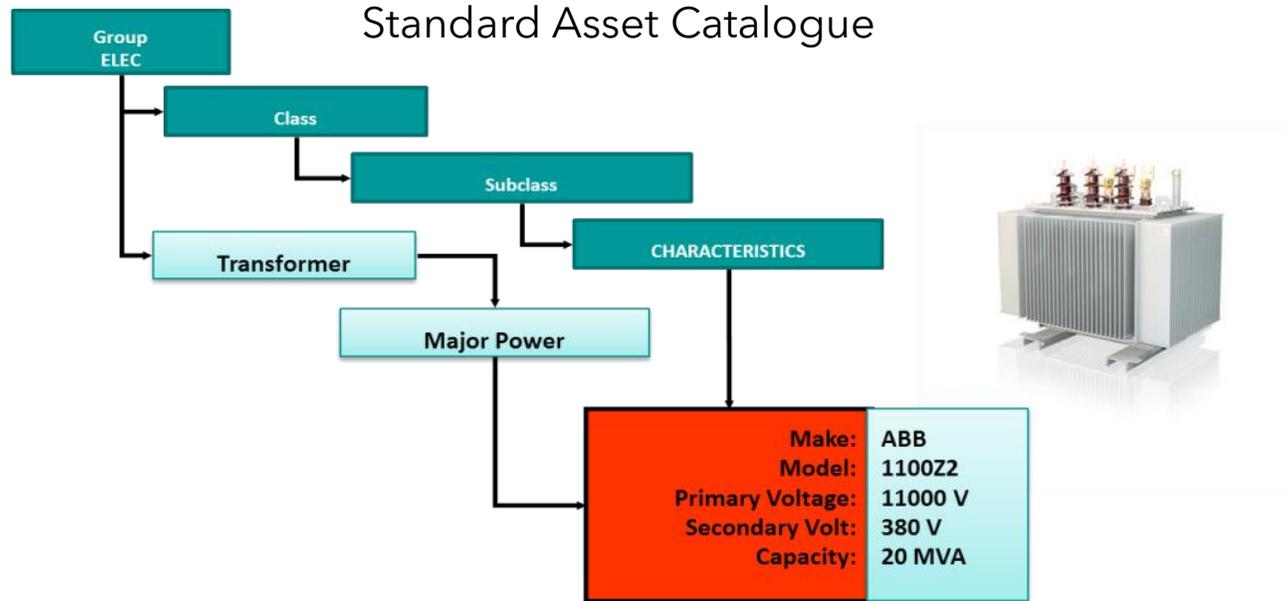
11-PP-CR01: Cone Crusher

11-PP-CR01-MOTR01: Crusher Motor

ISO 14224:2016 Figure 3 — Taxonomy classification with taxonomic levels



Equipment Data Hierarchy



System Generated Description: ITEM: ABC001
 Transformer, Major Power: Mftr ABB, Model: 1100Z2, PV 11000 V, SV 380 V, 20MVA.

Data category	Data	Taxonomic level ^a
Equipment attributes	Equipment class (see Annex A) (*)	6
	Equipment Type (see Annex A) (*)	6
	Equipment identification/ Location (e.g. tag number) (*) ^b	6
	Equipment description (nomenclature)	6
	Unique equipment identification number ^b	6
	Manufacturer's name (*)	6
	Manufacturer's model designation	6
	Design data relevant for each equipment class and subunit/component as applicable, e.g. capacity, power, speed, pressure, redundancy, relevant standard(s) (see also Annex A)	6

Benefits of implementing ISO 14224

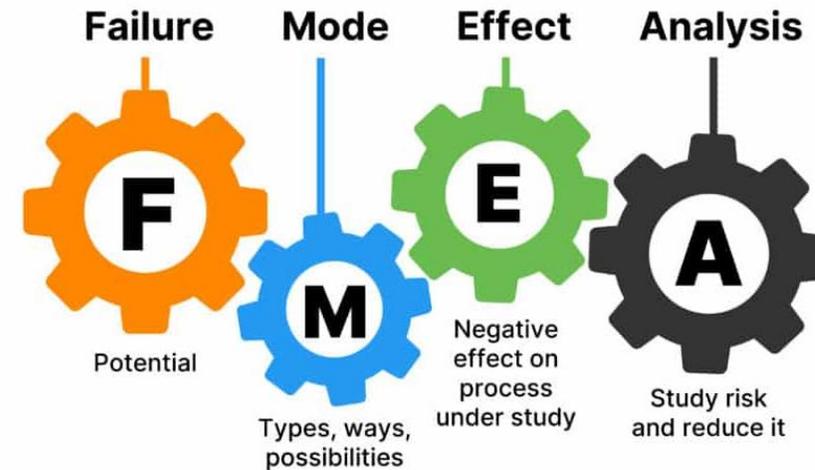
Standardized Structured Asset Data



Improved Maintenance Data



Structured failure analysis



Financial and Technical Alignment of Asset Registers (ISO 55010)



Alignment of Asset management (FAR and TAR)

ISO 55010 provides guidance on aligning financial and technical asset management activities to ensure consistency and transparency across the organization.

Shared Asset Registers and Governance

Promotes shared identifiers and ensures consistency between the Financial Asset Register (FAR) and Technical Asset Register (TAR) through shared identifiers and governance.

Operational and Financial Integration

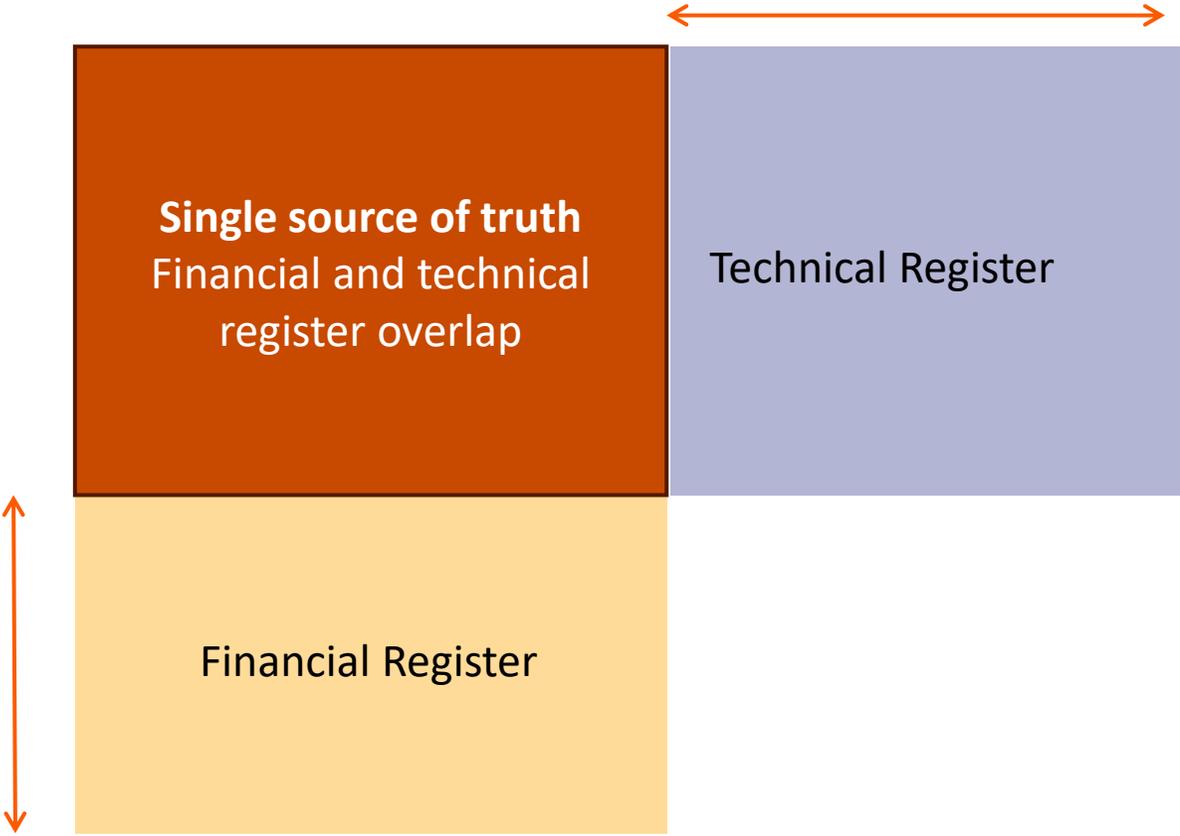
Integration ensures asset data supports operational efficiency and financial accountability together.

Improved Decision Making

alignment supports accurate lifecycle costing, improves decision-making, and enhances compliance by bridging the gap between finance and operations.

Alignment of FAR and TAR

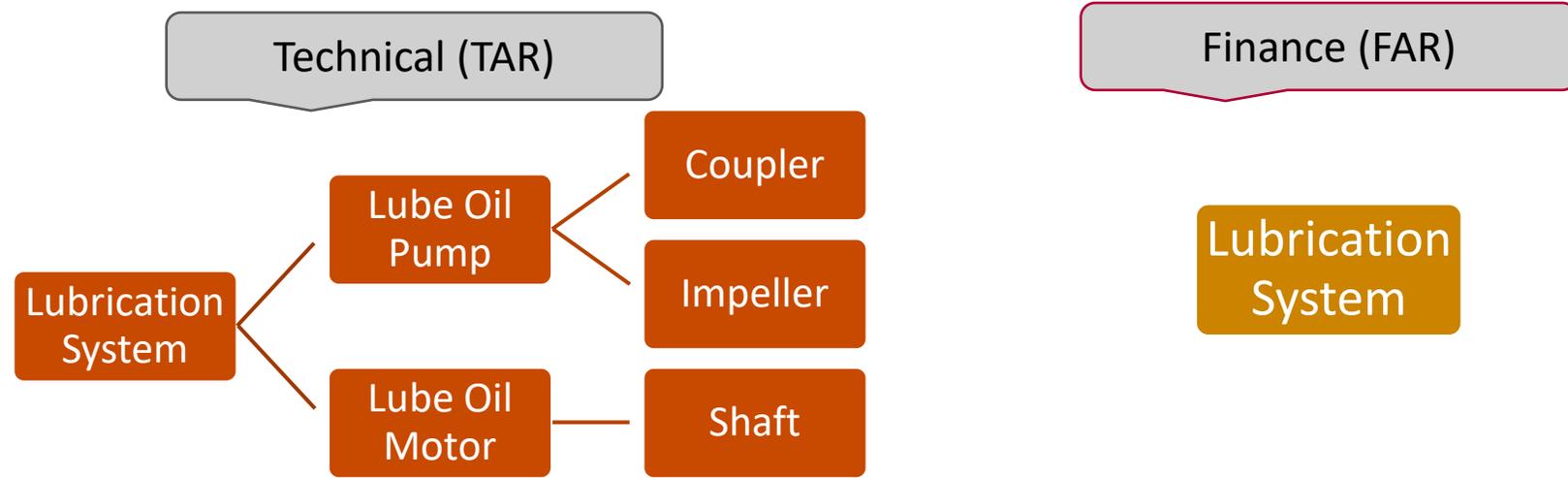
Added granularity for technical staff



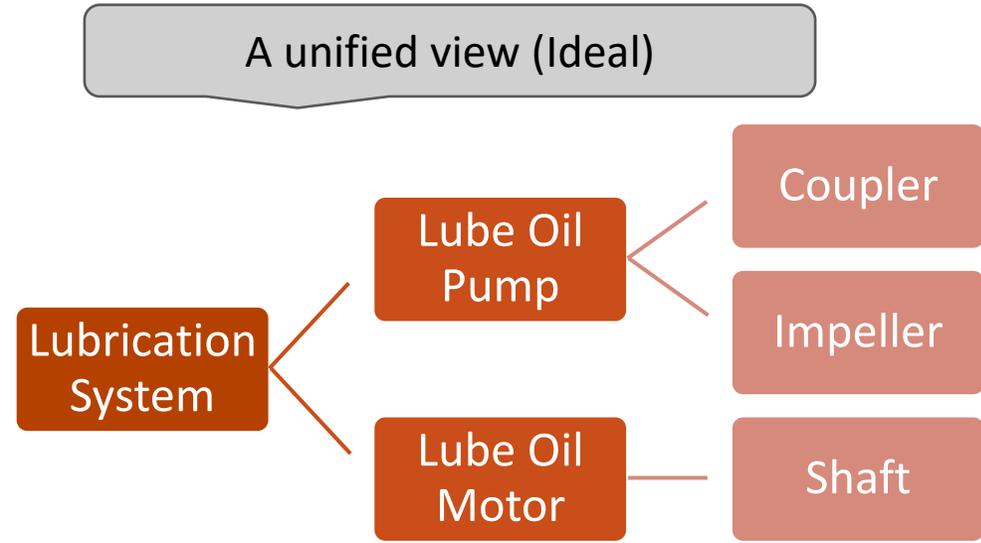
There is a core set of assets and granularity that are the same for both the technical and financial registers. After which the financial registers lists non-technical assets (e.g. chairs) and the technical registers lists more granularity (sub assemblies, components etc.)

Aligned Objectives & Asset Registers

FAR & TAR



Unified



Criticality Matrix and Risk Assessment (ISO 31000)



Core Data Quality Dimensions.

ISO 31000 guides organizations in identifying and prioritizing risks effectively.

Asset Criticality Classification.

By plotting likelihood of failure against consequence or impact on risk matrix, we are able to assess the criticality of assets enabling objective prioritization.

Risk Prioritization Benefits.

Risk-based prioritization guides maintenance planning and resource allocation to minimize failure risks, ensuring maintenance strategies and investment decisions are focused where they deliver the greatest impact

Asset Criticality Rating

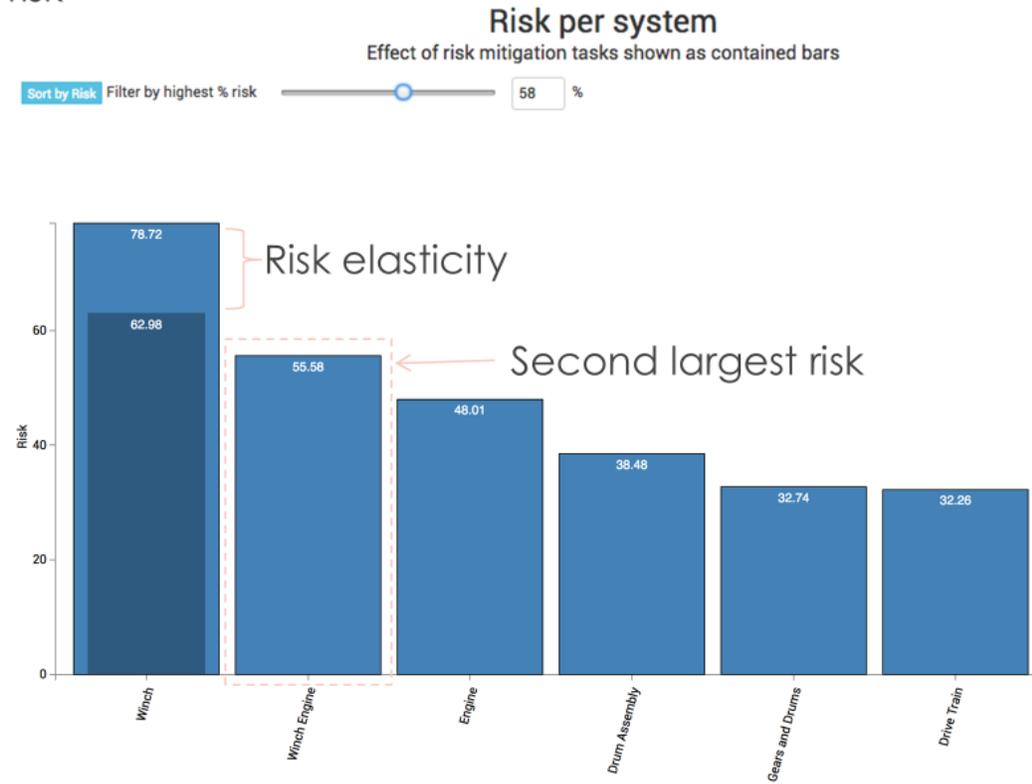
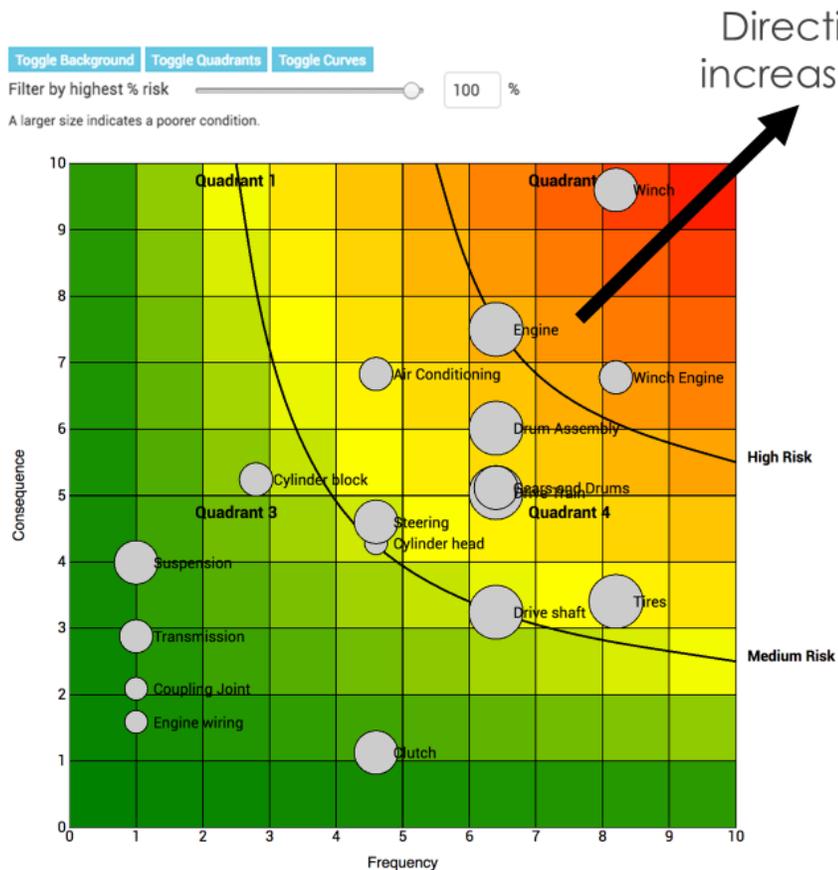
		RISK MATRIX					
		CONSEQUENCE / SEVERITY					
		Monetary Effect	R 0 - R 100,000	R 100,000 - R 1M	R 1M - R 10M	R 10M - R 100M	> R 100M
		Legal	Low Level/Legal Issues	Minor legal issues, non compliances and breaches of regulations	Serious Breach of regulations with investigation or report to authority with prosecution and/or moderate fine possible	Major breach of regulation. Major litigation	Significant prosecution and fines. Very serious litigation, including class action
		Community / Reputation / Media	Public concern restricted to Local complaints	Minor, adverse local public or media attention and complaints	Attention from media and/or heightened concern by local community	Significant adverse national media / public attention	serious public or media outcry (international coverage)
		Environment	Limited damage to minimal area of low significance	Minor effect on biological or physical environment	Moderate, short-term effect but not affecting eco-system function.	Serious medium term environmental effects.	Very serious long term environmental impairment of eco-system function
		Assets	Slight, repairable damage	Minor damage, mostly repairable	Moderate damage	Major plant damage, unit-trip or shut down	Extensive damage. Multiple unit-trips
		Personnel Health and Safety	Minor Injury	Minor injury requiring hospitalisation	Moderate injury or occupational illness	Single fatality and / or severe irreversible disability to one or more persons	Multiple fatalities, or significant irreversible effects to persons
FREQUENCY / LIKELYHOOD			Low	Minor	Moderate	Major	Critical
Likelihood	Frequency						
Continually experienced	More than once per year	Frequent	5	6	7	8	9
Occurs Often	Once a year or less	Likely	4	5	6	7	8
Occurs Several Times	Once in 10 years or less	Possible	3	4	5	6	7
Unlikely to Occur	Once in 100 years or less	Unlikely	2	3	4	5	6
Extremely Unlikely	Less than once in 100 years	Rare	1	2	3	4	5

Figure 4: Criticality Matrix

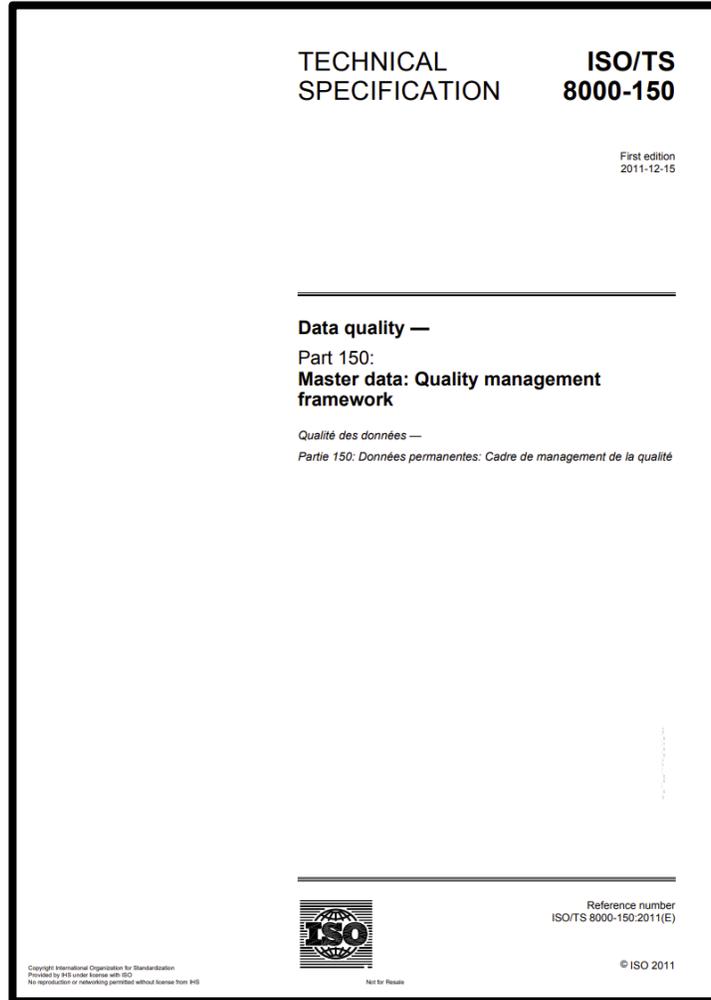
Dimension	Weight (example)	Examples of Consequences
Safety	30%	Injury, fatality, SIF activation
Environment	20%	Spill, emission exceedance
Production/Service	30%	Lost output, service outage
Financial	15%	Direct repair cost, penalties
Reputation	5%	Media, stakeholder impact

Embedding Risk Thinking into the Data Baseline

Evaluate Asset Risks



Ensuring Data Quality and Governance (ISO 8000)



Core Data Quality Dimensions.

ISO 8000 establishes standards for data quality and change management to ensure asset information remains accurate, complete, and consistent throughout its lifecycle.

Defines Quality Dimensions.

Defines quality dimensions such as accuracy, completeness, and timeliness, and introduces governance processes for controlled changes, versioning, and audit trails.

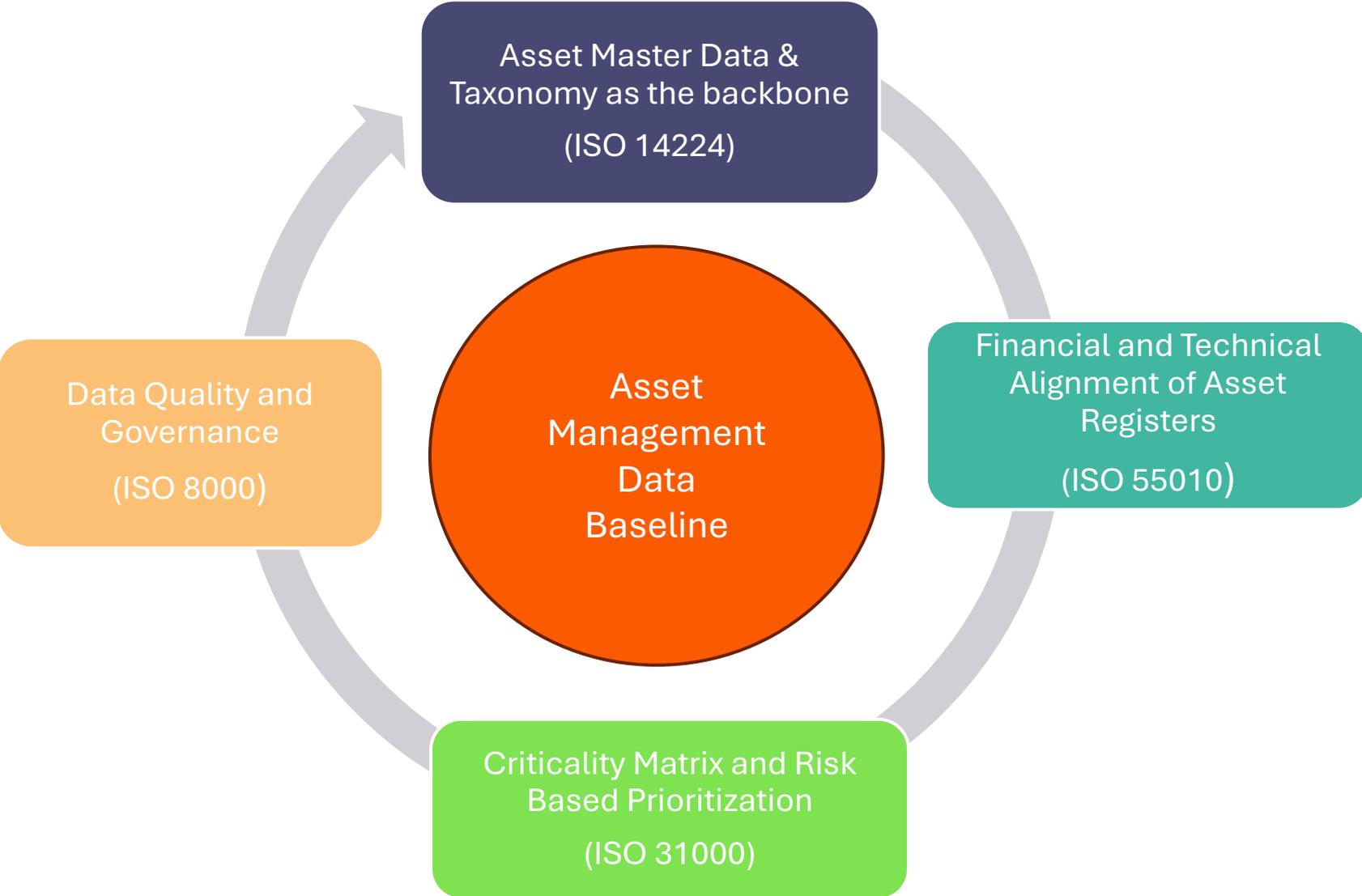
Governance and Stewardship Roles.

Clearly defined stewardship roles support data governance and maintain data integrity over time.

Establishing a data Baseline

Standards Overview

Establishing a Data Baseline



Benefits

Key benefits of using **ISO 14224**, **ISO 55010**, **ISO 31000**, and **ISO 8000** to build your Asset Management Data Baseline.



ISO 14224 – Asset Master Data & Taxonomy

- Standardized Data Structure.
- Improved Reliability Analysis
- Benchmarking & data Interoperability



ISO 55010 – Financial & Technical Alignment

- Unified Registers
- Accurate Lifecycle Costing.
- Compliance & Transparency



ISO 31000 – Risk & Criticality

- Risk-Based Prioritization.
- Safety & Reliability
- Strategic Planning



ISO 8000 – Data Quality & Change Management

- Data Integrity.
- Controlled Change
- Sustainable Improvement

