

The Asset Information Model and its Impact on Enterprise Interoperability



May 31, 2023



It's nice to meet you.

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Which word has all the following definitions?

—
An outdoor playing field.

—
To present or advertise especially in a high-pressure way.

—
A black or dark viscous substance obtained as a residue in the distillation of organic materials and especially tars.

—
To cause to be set at a particular angle.

—
To throw toward a particular point.

To incline downward.

—
To set in a particular musical key.

Context is important for shared understanding.



How I think I sound.

What people probably hear.





**Drive toward shared
understanding.**

May 31, 2023

Understanding Complexity

Operations projects are frequently innovative, strategic, and complex across multiple dimensions.

Technical	Organizational	Strategic
<ul style="list-style-type: none">• Number and type of interfaces• Technology development requirements• Interdependencies among technologies (tight coupling vs. loose)	<ul style="list-style-type: none">• Number and variety of partners (industry, international, academia/research)• Distributed/virtual team; decentralized authority• Horizontal project organization• Intensive learning needs	<ul style="list-style-type: none">• Number and diversity of stakeholders• Socio-political context• Funding source(s) and process(es)• Geopolitical interests (international partnerships)

Describe my job to someone at a party.

- Have you ever argued with someone about the correct way to load a dishwasher?
- My work often feels like helping different people load the same dishwasher without fighting about it.



Is it making sense yet?

- Dishwashers → Applications (PI, GIS)
- Dishes → Assets
- Taxonomy can be the different levels where dishes can be placed
- Classifications could be types of dishes allowed in the dishwasher

**How do we make sense of our
Asset Information?**

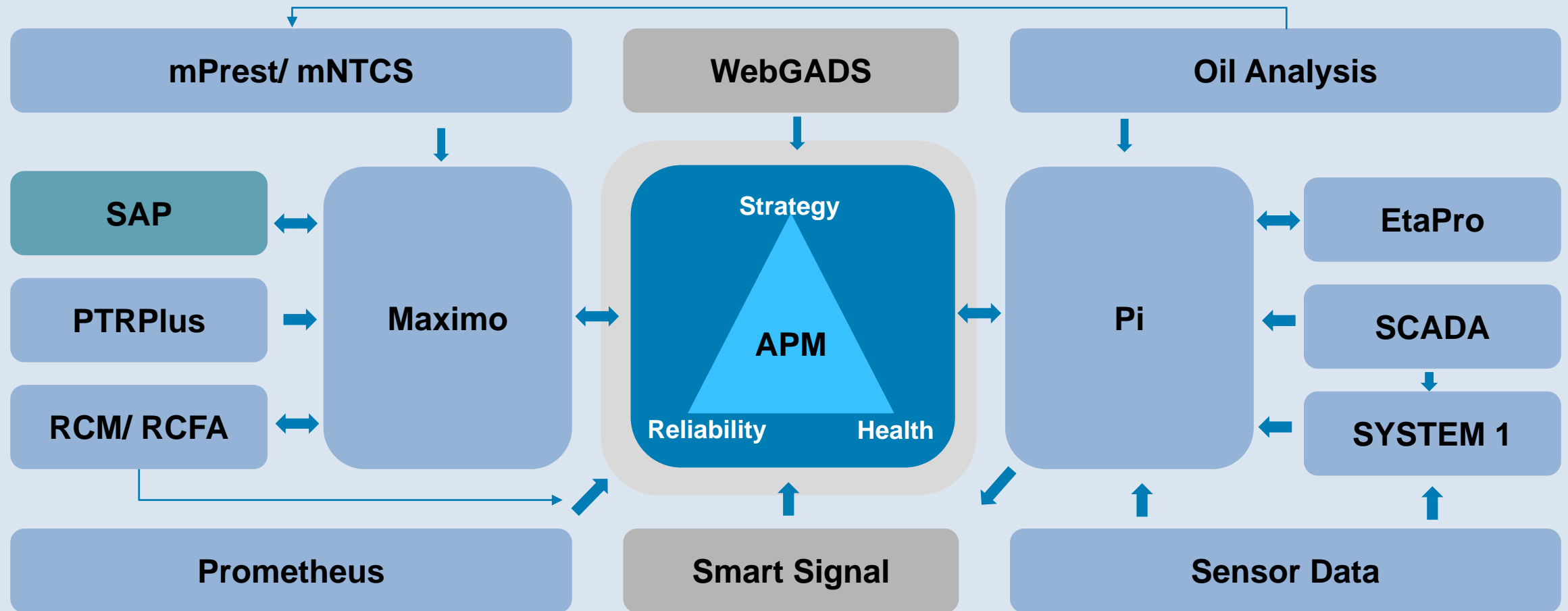


Asset Info. Strategy

- Identifies and documents the **highest priority information needs** determined by workshops with critical Asset Management System roles
- Scope goes **beyond info held in Maximo** and Operations to include info residing in other systems of record (PI, GIS, SAP)
- **Multi-year roadmap** for improvement projects



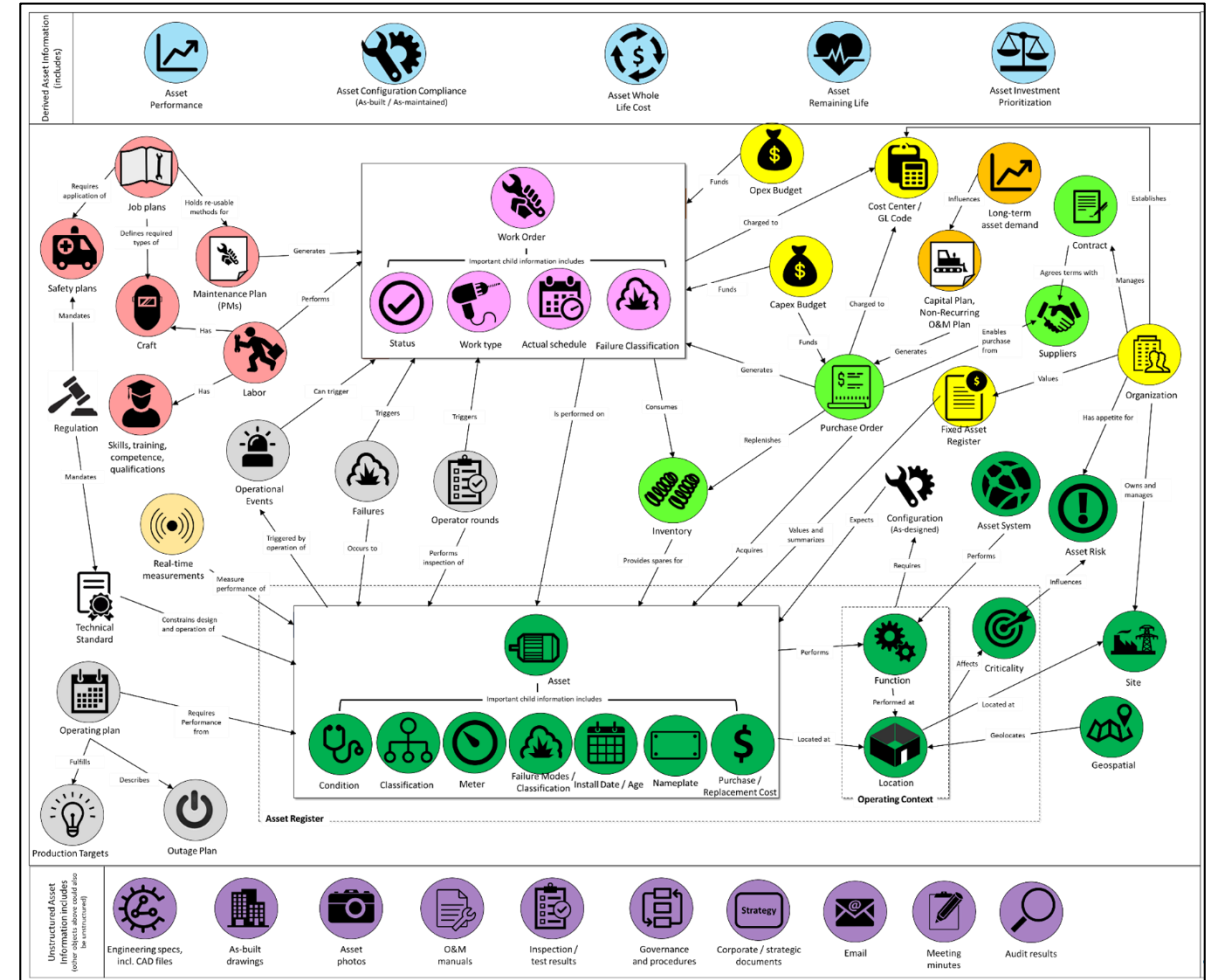
Asset Info. Strategy in a Complex Ecosystem



■ Operational Equipment Data
 ■ Asset & Work Mgmt.
 ■ Asset Performance

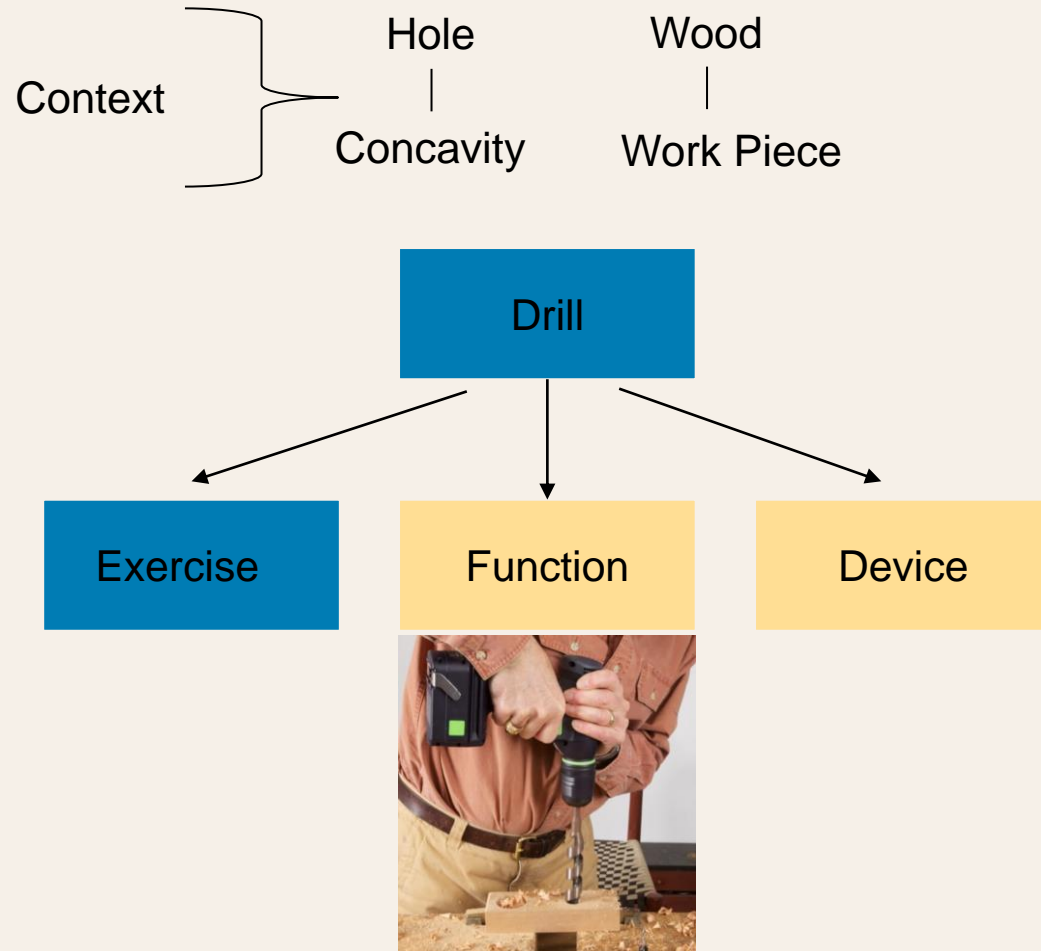
Conceptual Information Model

- Overall framework for describing the primary Asset Information **entities** that NYPA works with, and the **relationships** between them
- Valuable tool for **understanding** and **structuring** ongoing **improvements** to Asset Information

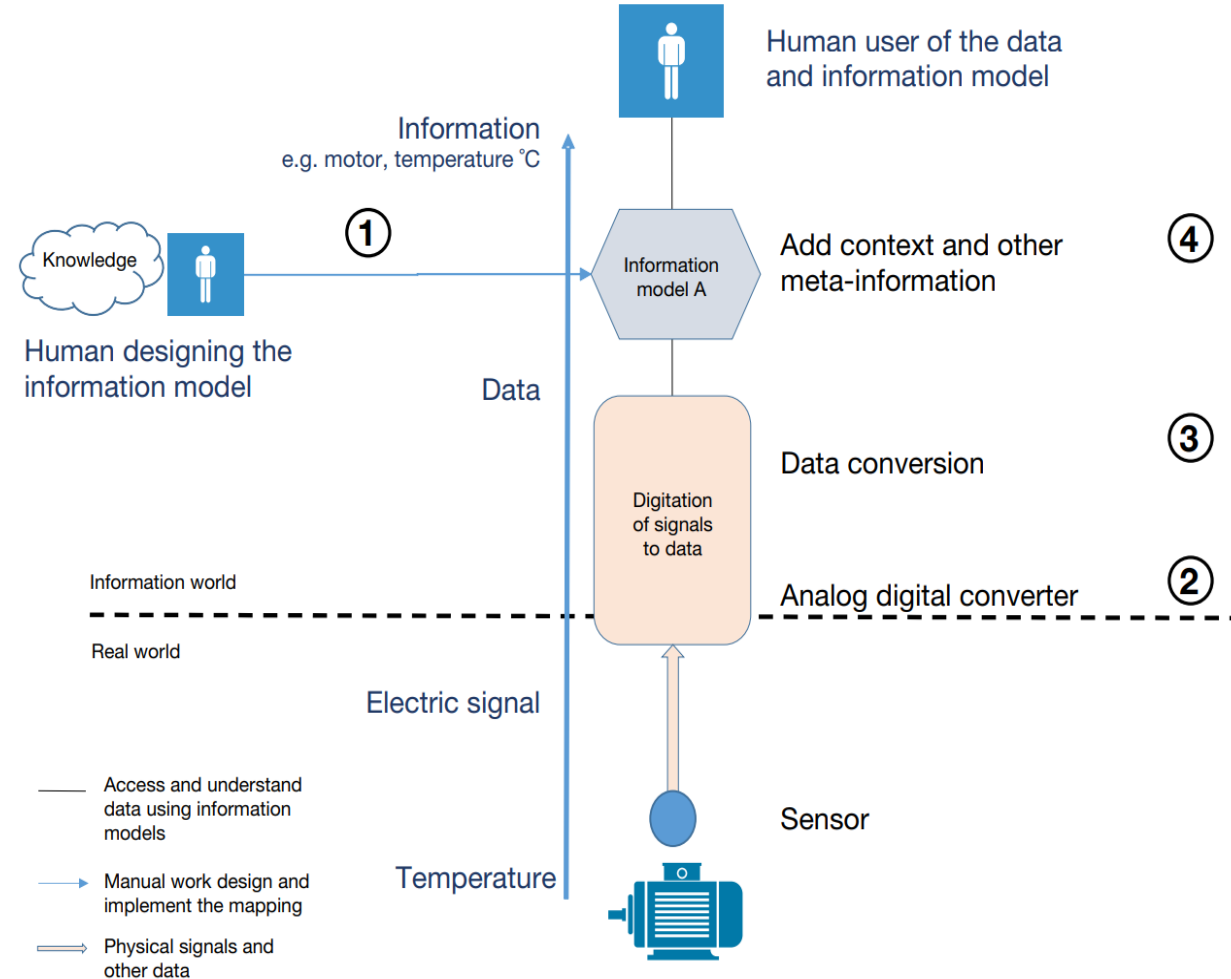


What is Information Model?

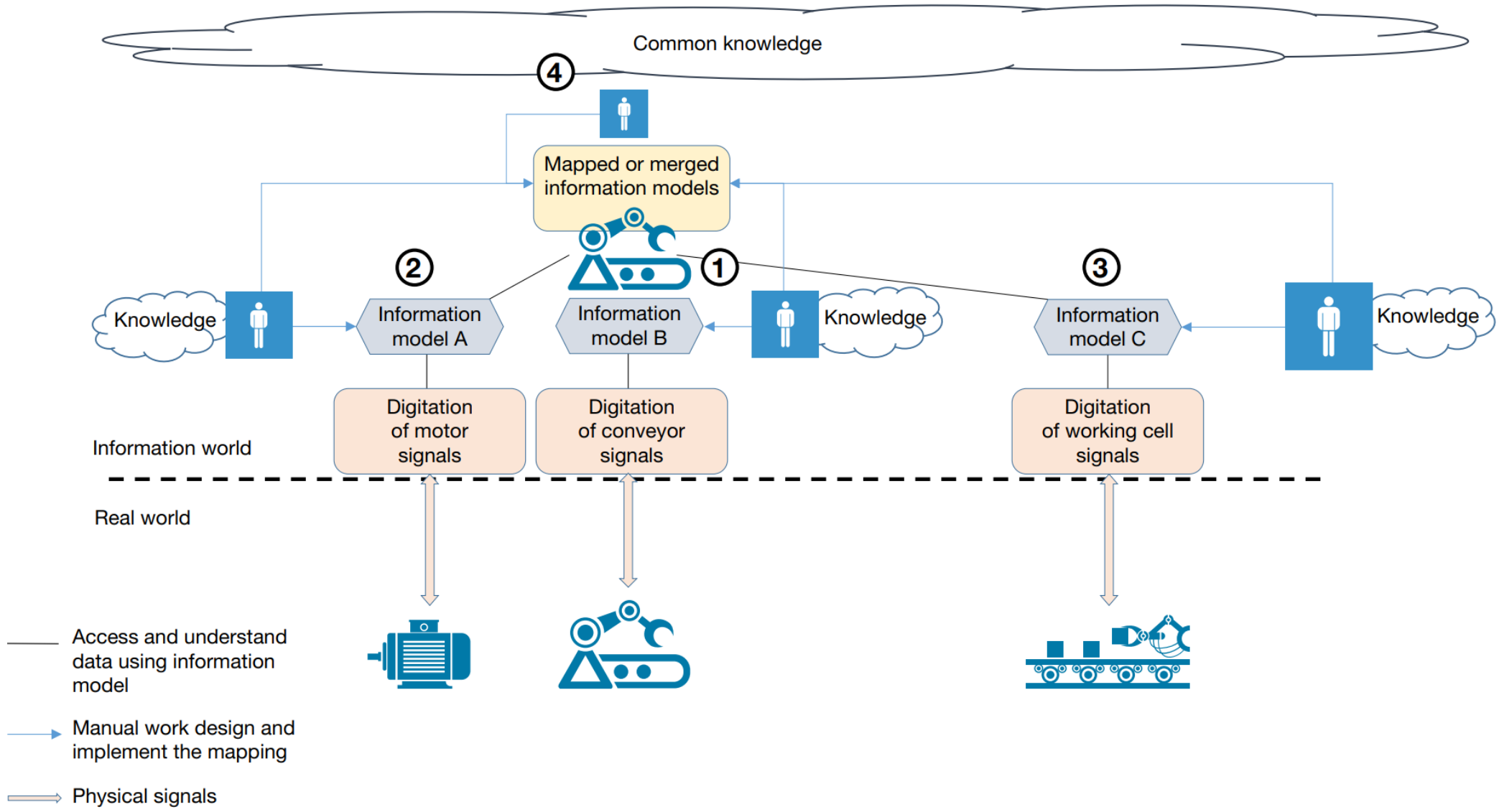
Natural Language- Information Model



Digital- Information Model



System/Machine Understandable- Asset Information Model



Types of interoperability in the context of Asset Information

Technical Interoperability

Ensuring systems can communicate with each other to support

Semantic Interoperability

Ensuring shared understanding of asset information across systems and stakeholders

Organizational Interoperability

Ensuring coordination and alignment across different departments and business units managing assets

Technical Interoperability – Application Integration Strategy

Ensuring seamless data exchange across asset-related systems

Tools and Technology

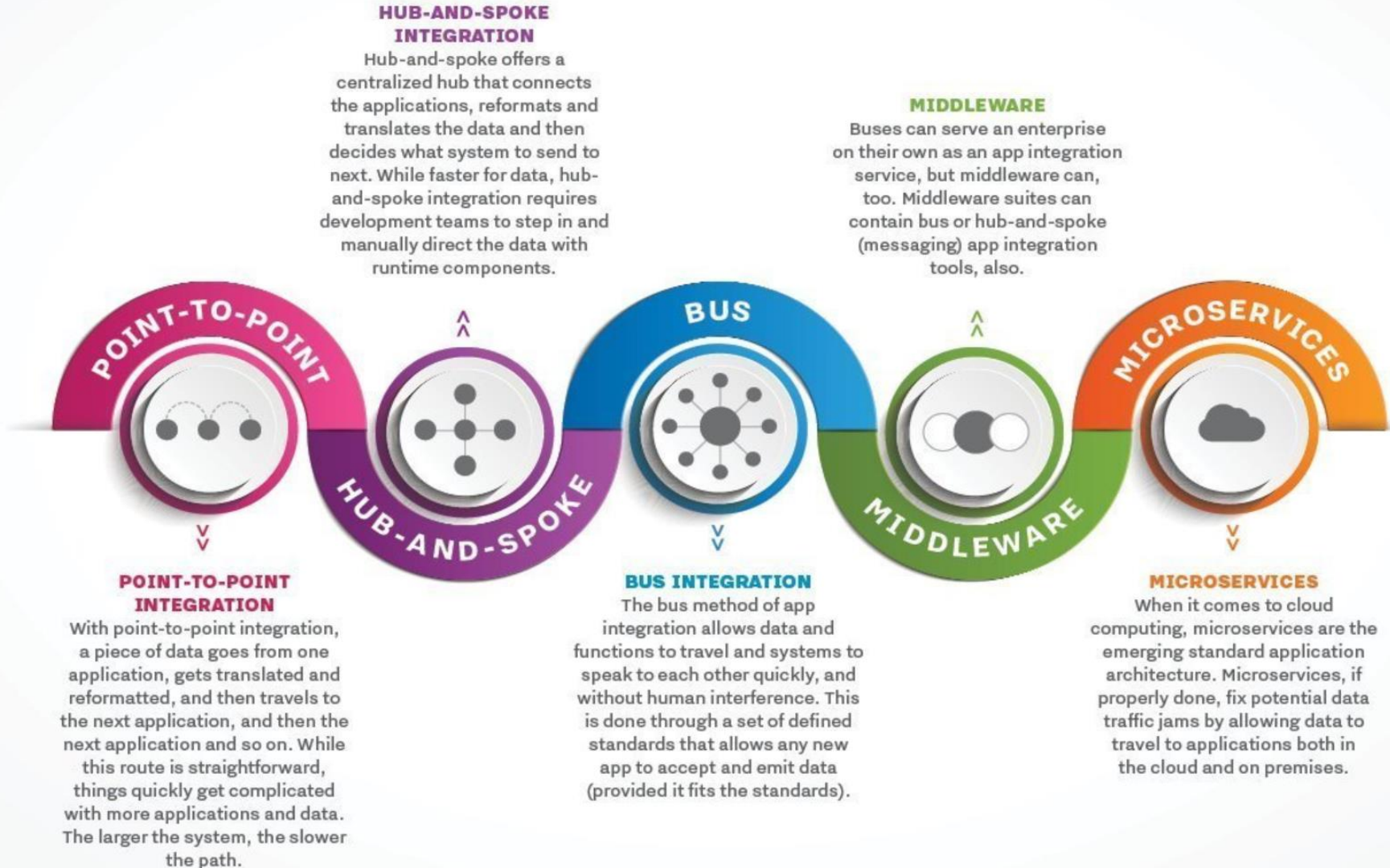
Security

Platform selection

Sizing and High availability

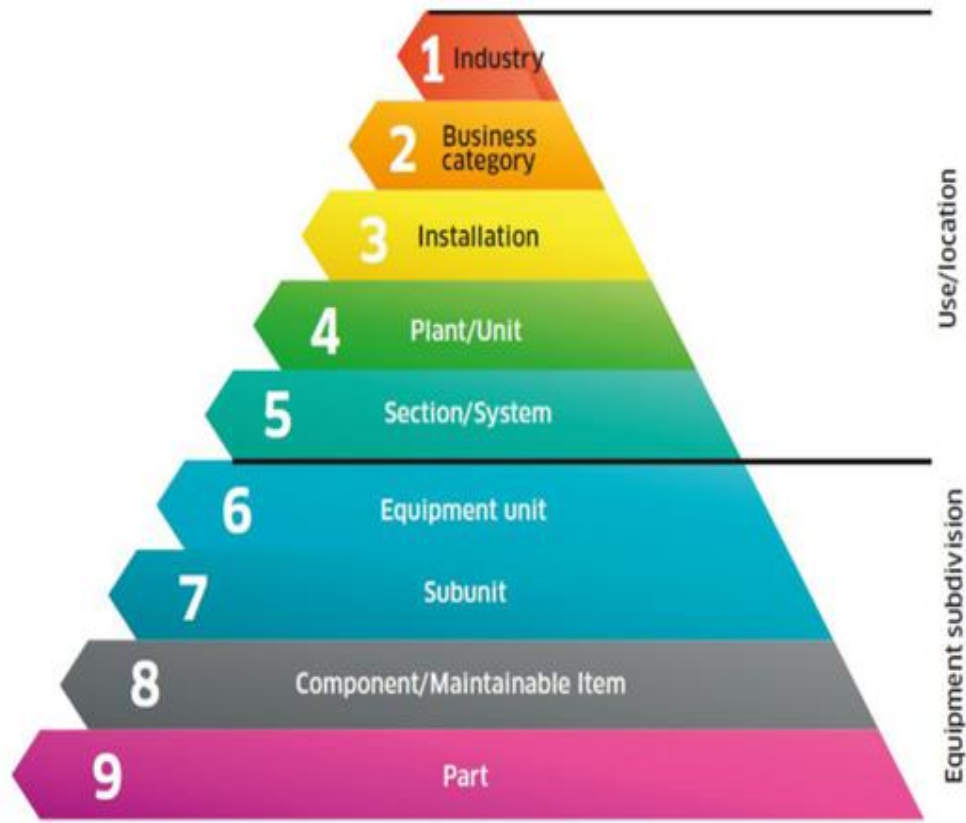
Data Mapping

Monitoring



Semantic interoperability- Taxonomy

Ability to automatically interpret the information exchanged meaningfully and accurately in order to produce useful results as defined by the end users



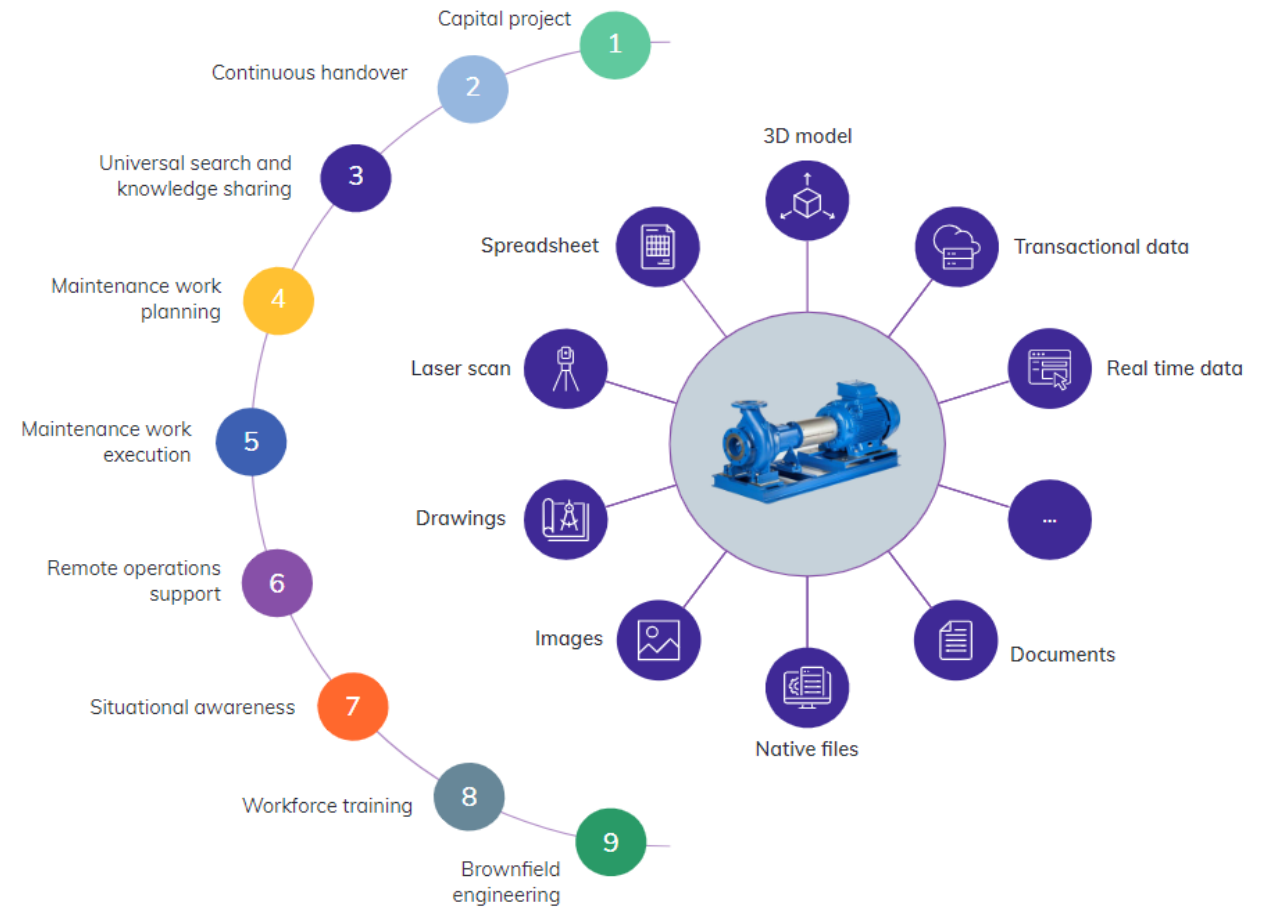
- ✓ Instinctive and logical structure.
- ✓ Uniformed approach to asset coding and naming.
- ✓ Asset-specific attributes to ensure consistent data capture.
- ✓ Audit and update the information

Organizational interoperability

Shared Asset management Goals and Objectives



“A culture of collaboration between teams and wide stakeholders is fostered through greater transparency and bi-directional data flows”



Best practices for Enterprise Interoperability through Asset Information management

PRACTICE
DOCUMENTATION
BENCHMARK
RESULTS
STANDARD
ANALYSIS
NEEDS
SUPERIOR
MANAGEMENT

TEMPLATES
ORGANIZATION
TECHNIQUE
BUSINESS
DOMAIN
FEATURE
EXPECTATIONS
APPLY

BEST
METHOD
IMPROVEMENT
PROCESS
QUALITY
STRATEGIC
PROFESSIONAL
SELF-ASSESSMENT



Establishing a common asset information architecture



Implementing asset data governance and data quality practices

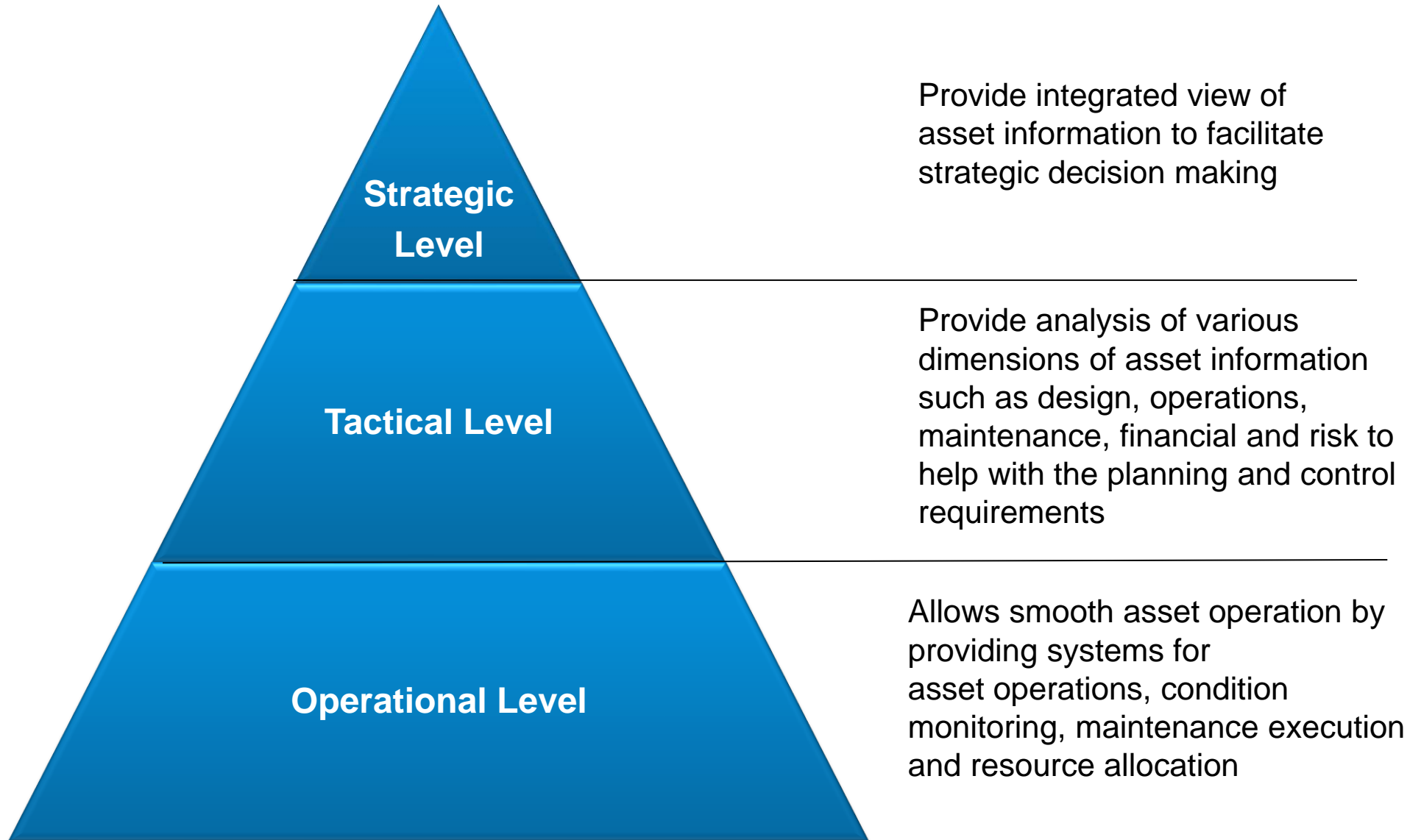


Establishing clear ownership and accountability for asset information management

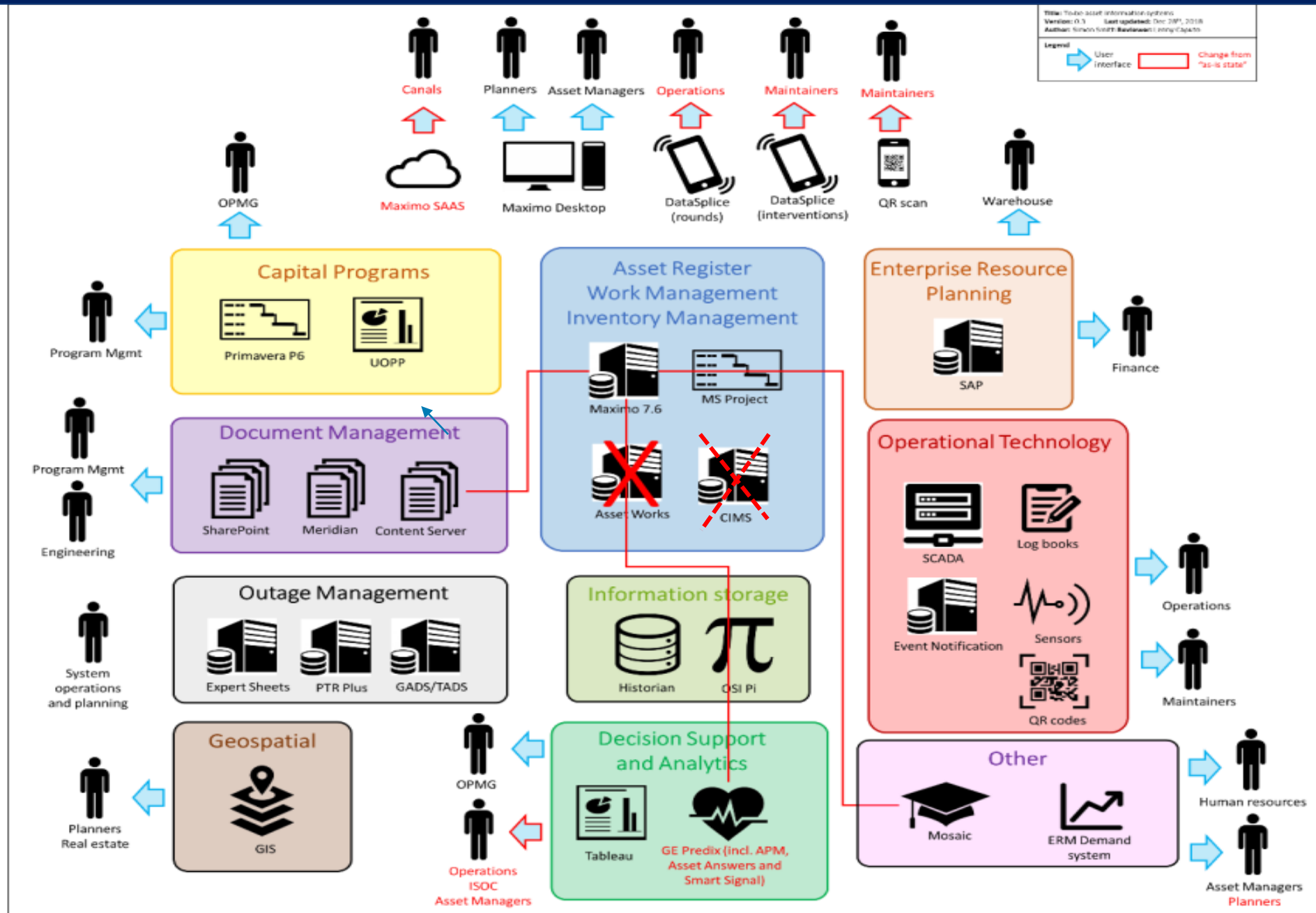


Ensuring ongoing communication and collaboration across departments and business units managing assets

Scope of IT System in Asset Management



Asset Information Consumers



NYPA's Asset Information System Landscape

ASSETS

These are the individual pieces of equipment that make up NYPA's G&T systems.

Sensors are being placed on assets, including:

- Transformers
- Reactors
- Turbines
- Generators
- Breakers
- Battery Banks
- Cables
- Transmission Lines

SENSORS

Installed on NYPA's generation, substation and switchyard assets, sensors collect data that can be used in evaluating and predicting asset health. NYPA is installing sensors on its assets through the multiphase sensor deployment program:

Phase 1: 20,000 new and 26,000 existing data points

Phase 2: 65,000+ new data points

Phase 3: Implement & pilot test noncommercial sensors

LOCAL CONTROL ROOMS

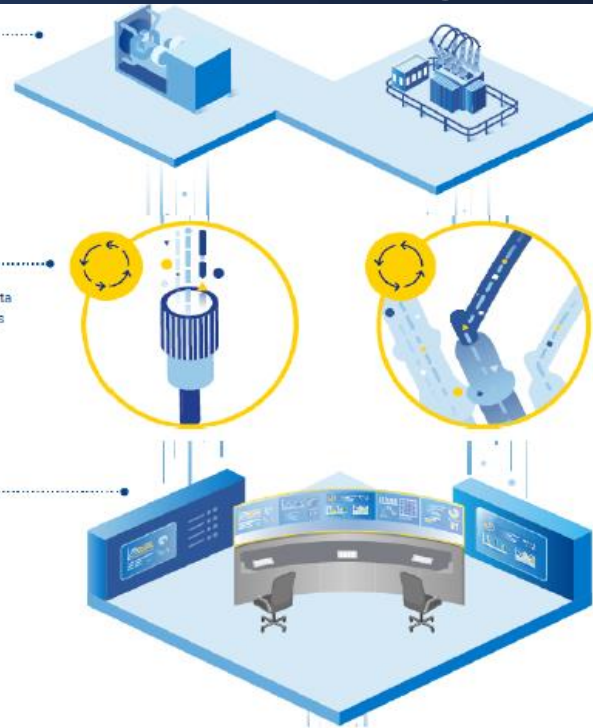
Data points captured by the sensors are transported to the local control room where they are mapped to the Process Integration (PI) system.

COMMUNICATIONS BACKBONE

This transports the data from the local control room to the central PI system so it can be viewed, shared and analyzed by users across the organization.

ASSET PERFORMANCE MANAGEMENT (APM)

The APM software uses data from the sensors and other data sources to perform advanced analytics that help optimize cost, risk and performance of assets. By calculating an asset health score, NYPA will identify potential issues, find the source of the issue and take appropriate action before the asset fails, reducing overall maintenance cost and avoiding unplanned outages.



ACTION AT THE PLANTS

Making asset information available that enables plants to collaborate and optimize asset...

- Health
- Efficiency
- Risk
- Safety
- Criticality
- Cost
- Availability
- Regulatory Compliance

ASSET INFORMATION USERS

On-site at the facilities

- Including:
- Planners
 - Operations and Maintenance Departments

At facilities and in White Plains

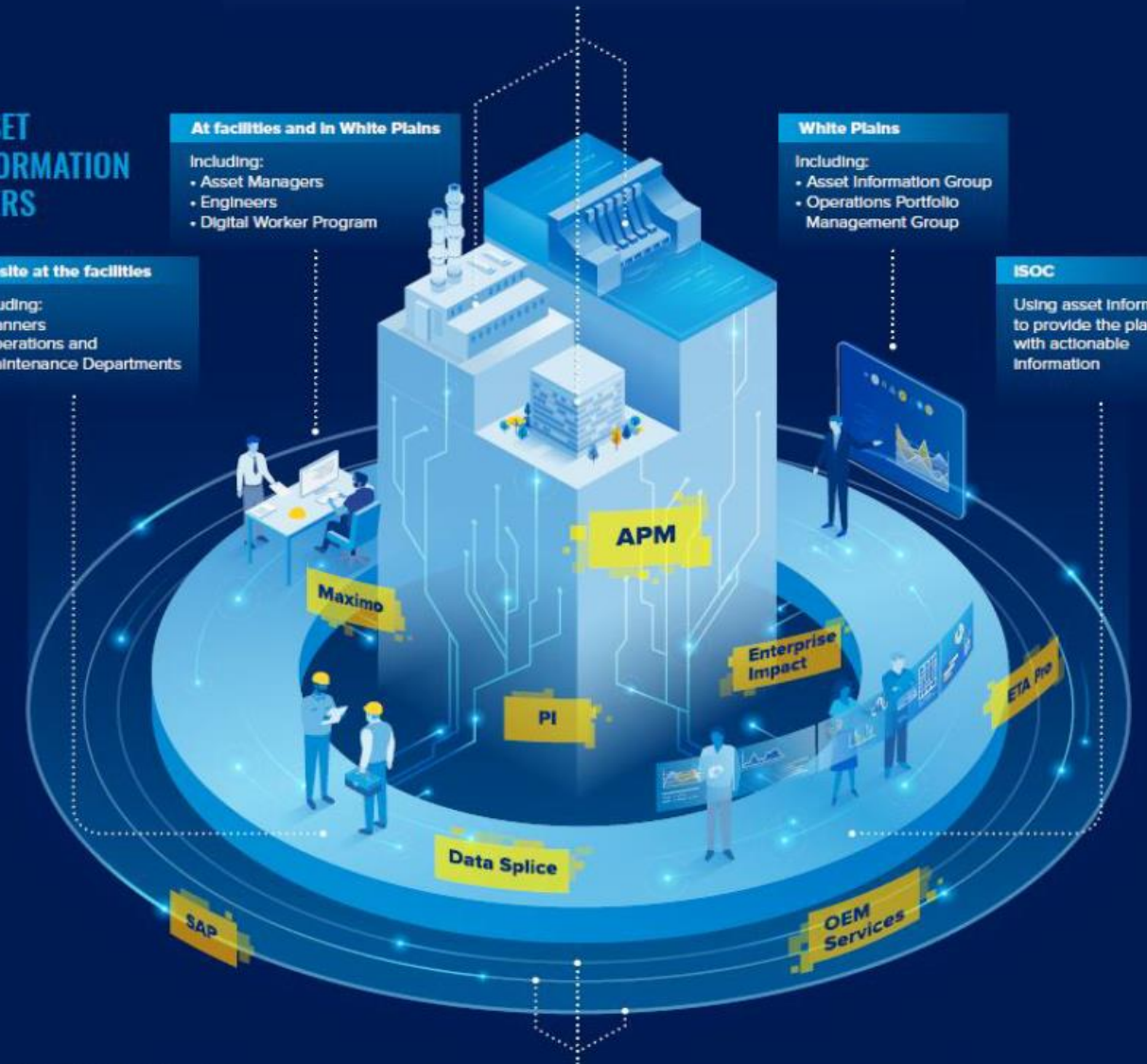
- Including:
- Asset Managers
 - Engineers
 - Digital Worker Program

White Plains

- Including:
- Asset Information Group
 - Operations Portfolio Management Group

ISOC

Using asset information to provide the plants with actionable information



COLLABORATION

Users share information to drive **continual improvement** across the organization and better inform Life Extension and Modernization and Reliability Centered Maintenance projects



Q & A

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