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Beyond Metadata: Data Governance and GIS at Williams

August 10, 2023

Agenda

- Who is Williams?
- Introduction to Data Governance
- Data Governance at Williams
- Implementing Data Governance in GIS

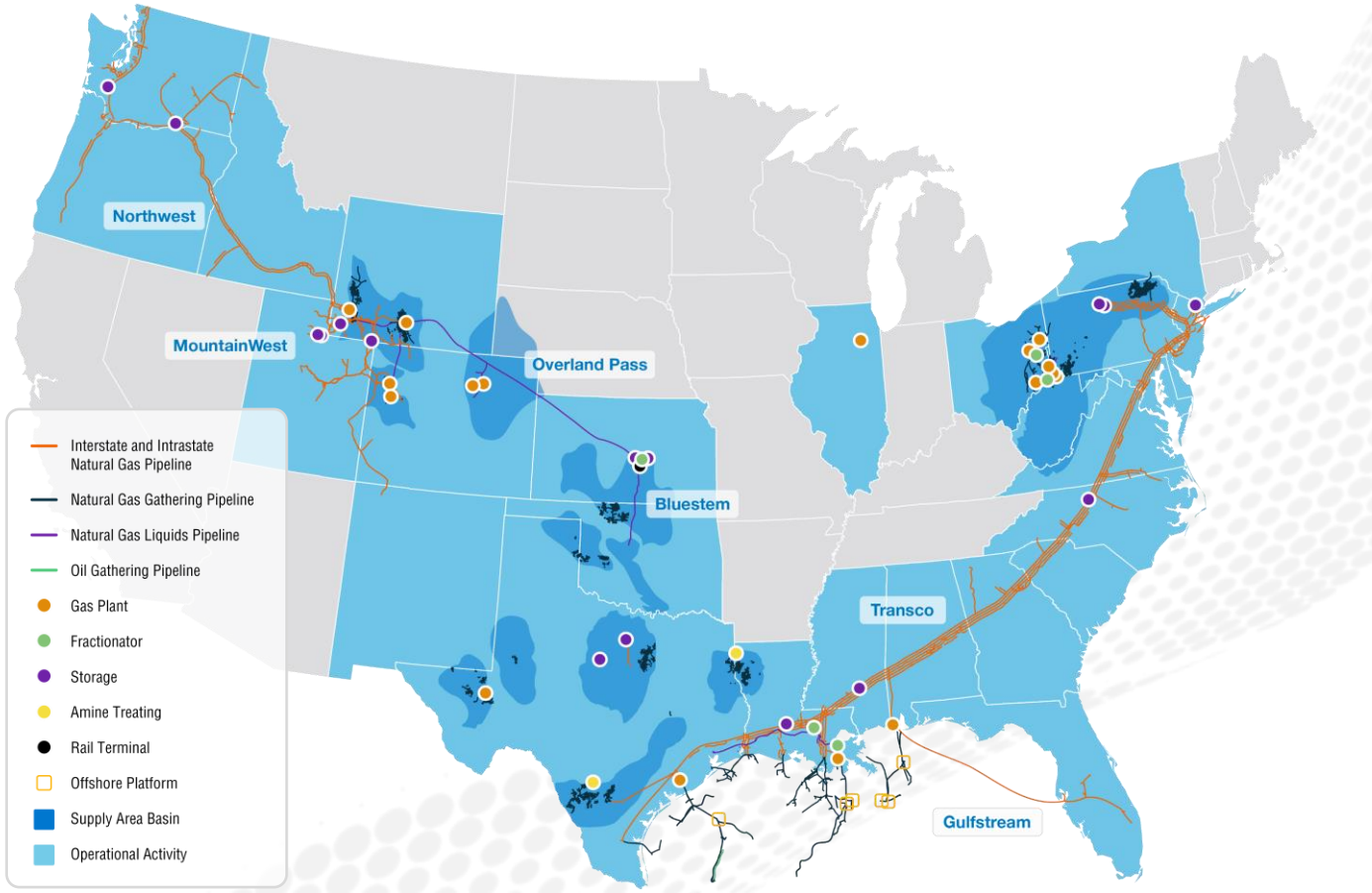
Who is Williams?

Transmission
Includes the nation's largest-volume interstate natural gas pipeline system

Gathering
Wet and dry gas gathering and transportation infrastructure

Processing
Natural gas processing and treating

Storage
Gas and liquid storage assets



What is Data Governance?

- Metadata is a set of data that describes and gives information about other data.
- Data governance sets up a structure and a set of rules to guide the collection, storage, processing, and usage of data to achieve the organization's objectives.
  - Data Governance takes metadata one step further by providing controls around the information that is stored about other data.
- Managing data as an asset.

Why Governance?

- Achieve business goals
- Support organization mission and processes
- Create value in Data Assets
- Data consistency across enterprise systems
- Data is available, secure, usable, accurate, and trustworthy
- …not just about technology

Stakeholders

- Data Governance Council
  - Comprised of senior leadership from Procurement and Digital Transformation, Project Execution, IT, Central Services, Accounting, Corporate Communications, HR, Internal Audit, Strategic Development, Safety & Operational Discipline, Legal
- Tactical Working Group
  - Individual contributors and low-to-mid level leadership
  - All people who report to those on the Steering Committee

Roles and Responsibilities

DATA STANDARD OWNER (SME)

- Provides expertise on a subject to define data standards

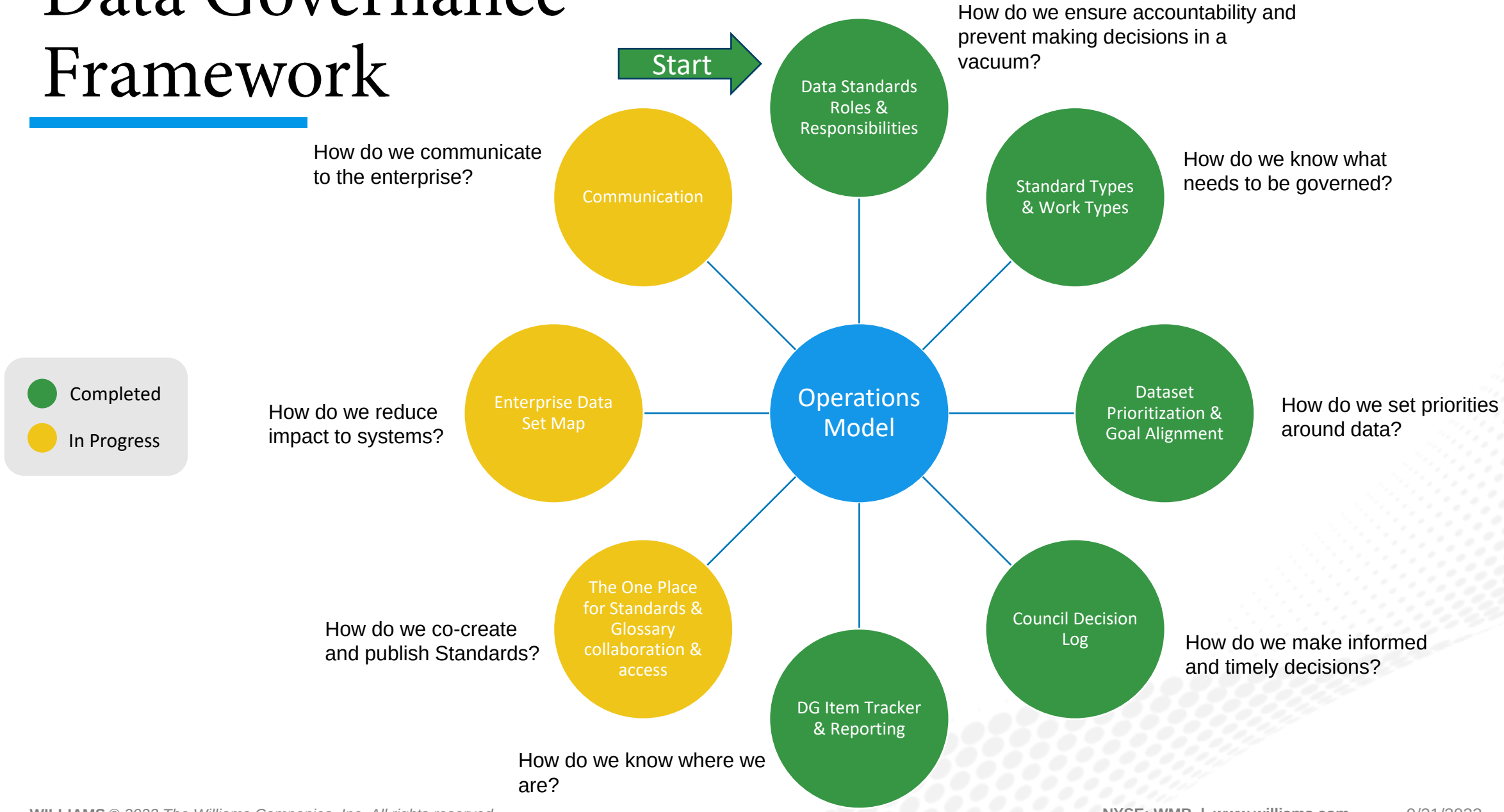
DATA STEWARD (GIS)

- Creates and implements data standards
- Ensures quality, enforces policies, provides documentation, etc.

DATA CUSTODIAN (IT)

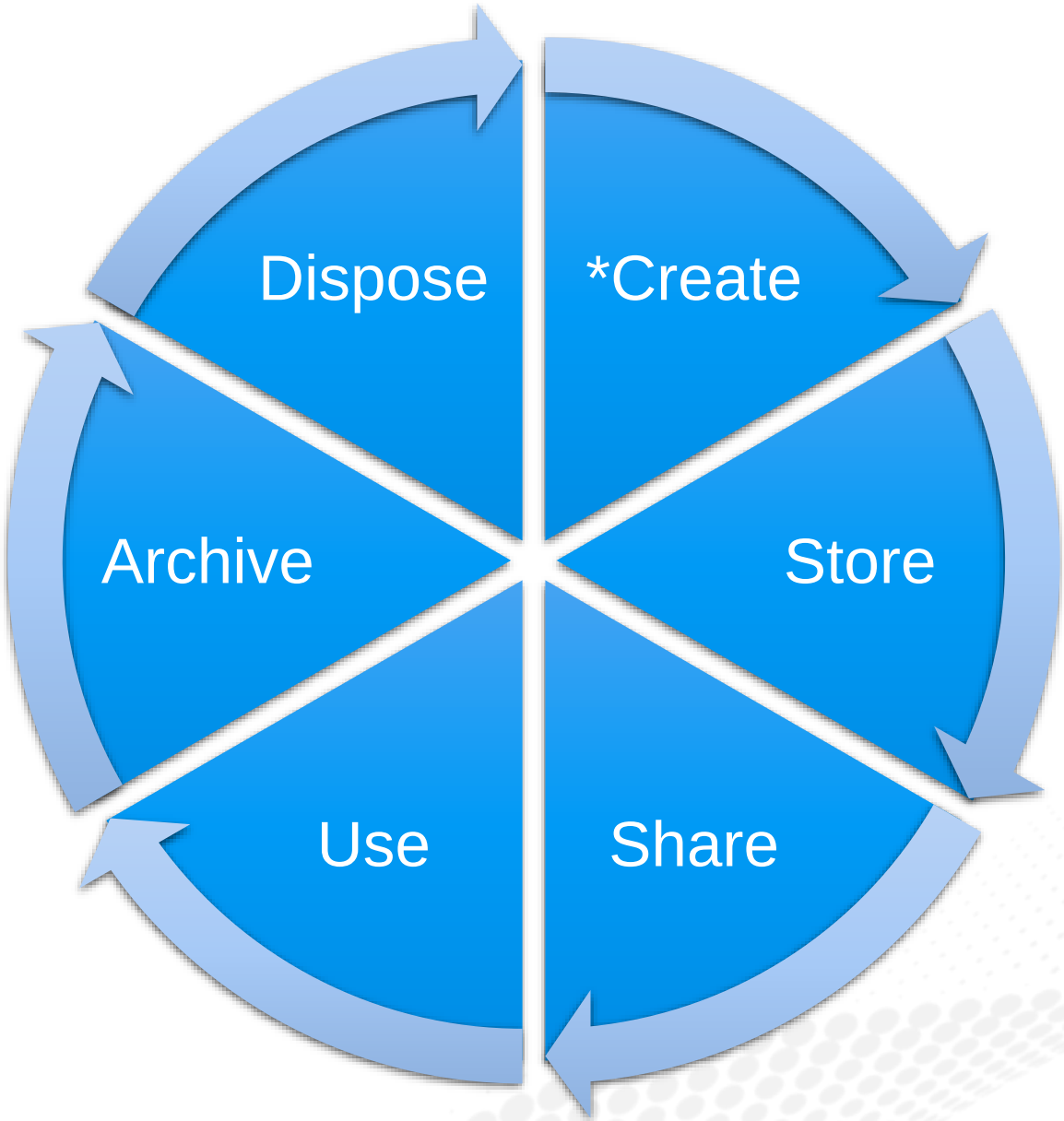
- Technical administration piece to ensure data flows to consuming systems
- Provides access, monitors performance, etc.

Data Governance Framework



Data Lifecycle

- Data management for the life cycle of an asset



The First Rodeo – Asset Hierarchy

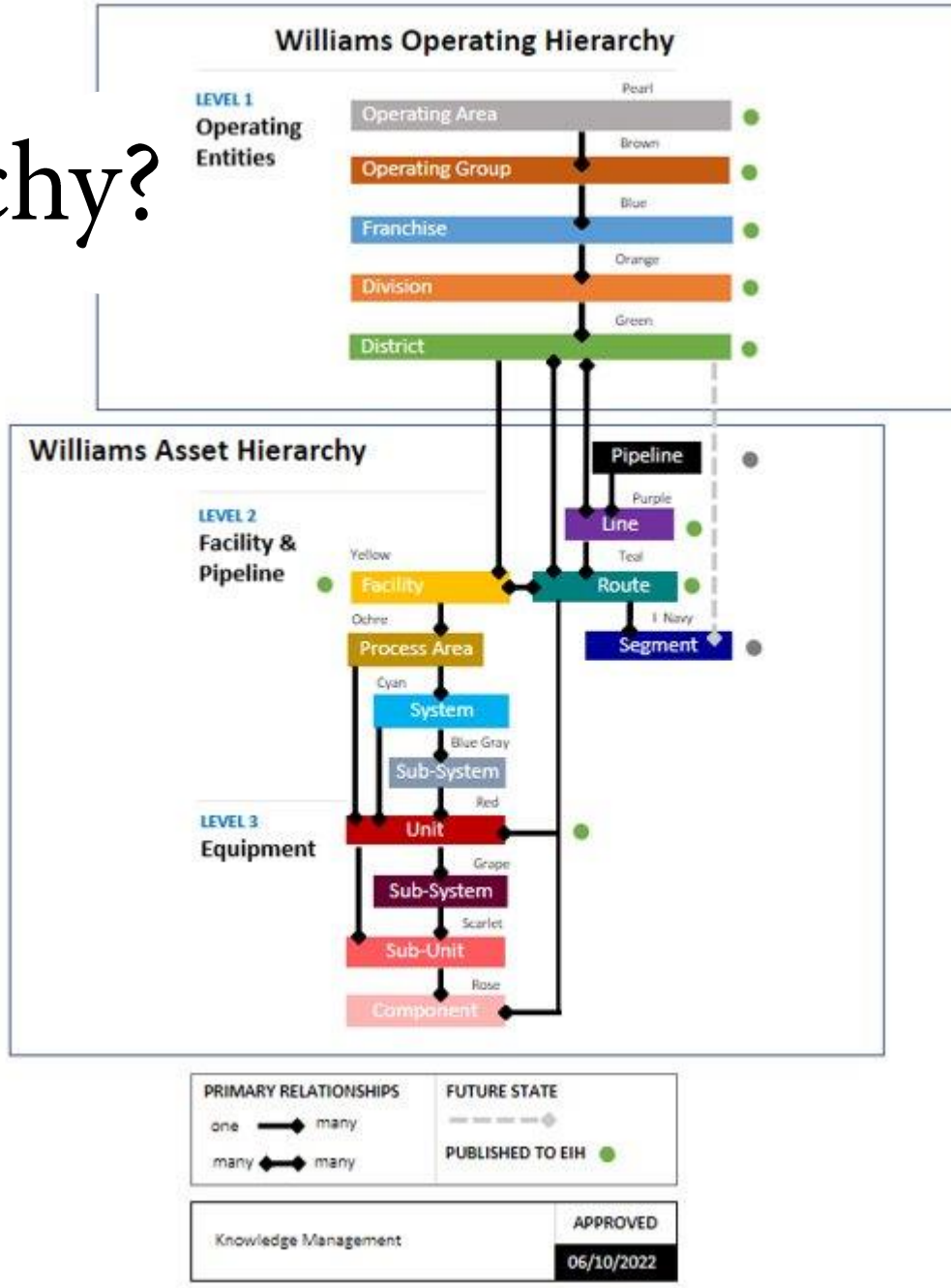
- **Problem Statement**: Inconsistency of asset information and asset hierarchy across major enterprise systems results in complex data management processes, ineffective system integration and analytics, therefore, adding unnecessary costs and limiting the company's business intelligence.

Maximo	GIS	Drawing Management System	Standardized Name
• BAKER STATION	• Baker	• [BOISE DISTRICT] CS BAKER	• Baker CS

What is Williams Asset Hierarchy?

- The Asset Hierarchy data sets include standardized values, definitions and unique IDs.

- These values can be used consistently across systems to create a common user experience.



Roles and Responsibilities – Asset Hierarchy Lifecycle

Create

Knowledge Management: Facilitates Asset Hierarchy changes
Operations: Provides input on new facilities and helps determine appropriate facility type
GIS: Creates UTIDs for new facilities. Responsible for data standardization quality and execution of the naming conventions.

Store

GIS: Completes changes to Level 1 & 2 hierarchy entities, including changing boundaries, names, identifiers and other attributes.
Maximo: Completes changes to lower-level hierarchy entities.

Share

Enterprise Architecture: Data is sent to the Enterprise Integration Hub, which sends data to other systems
Knowledge Management: Communicates changes to the Asset
Hierarchy Stakeholders (via managed distribution list)

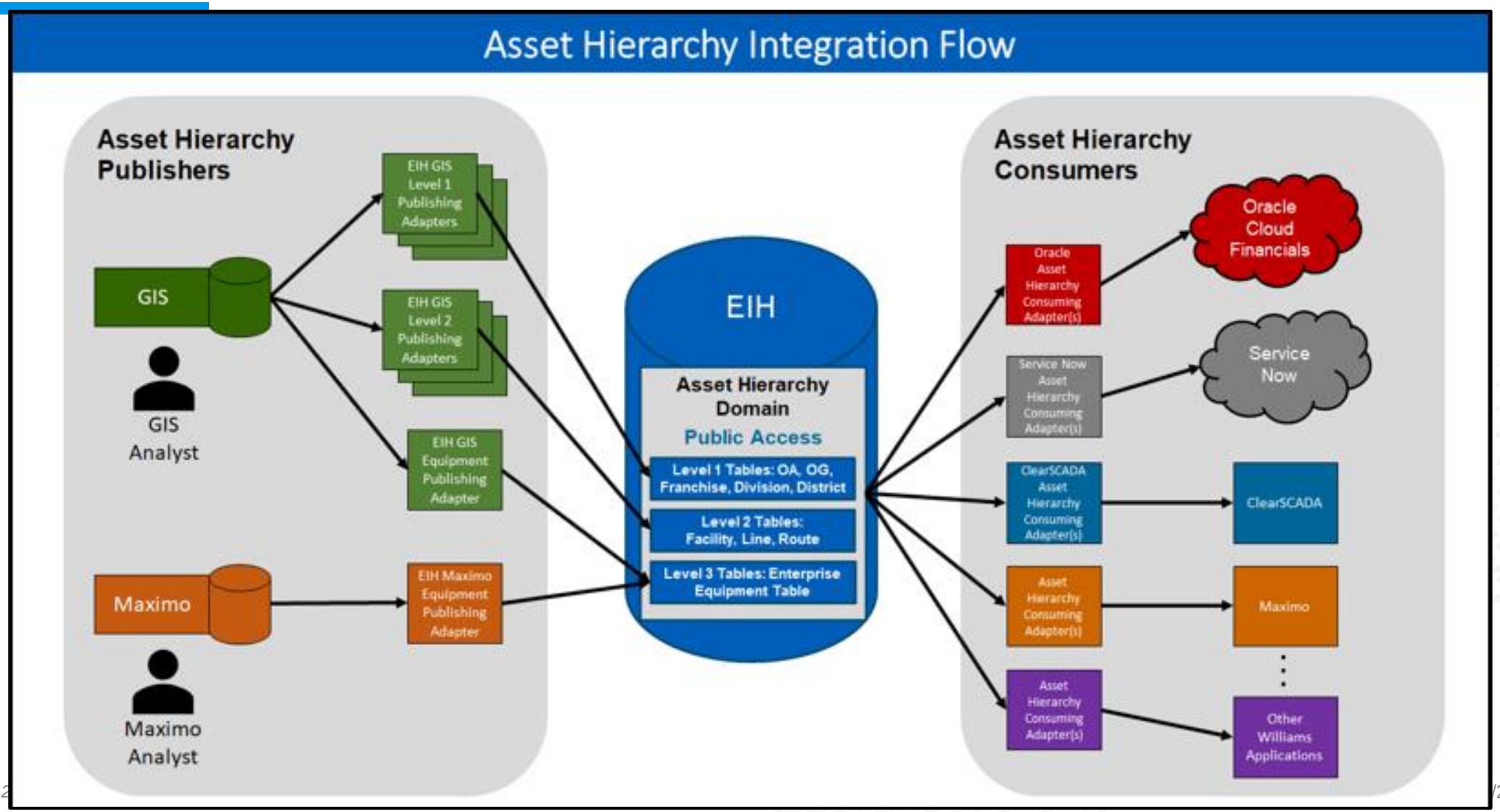
Use

Business Users: Use the data for reporting and business tasks

Master Values and Governance

LEVEL 1 Operating Entities (OA, OG, Franchise, Division, District)	Definitions	Source System	Steward Owner
Operating Entity Name	Name approved by Leadership	GIS	Operations
Operating Entity ID	Approved Synonym Abbreviation	GIS	Operations
Unique Term ID	Unique identifier for EIH integration	GIS	GIS
Term Status	Operating Entity term status	GIS	Operations
Leader	Leader Name approving the Name and ID	Workday	Human Resources
Legacy Term	Legacy name for the same area if available	GIS	Operations
LEVEL 2 Facility		**Source System**	**Steward Owner**
Facility Name	Name approved by Operations Leader	GIS	Operations
Facility ID	6 alpha numeric character approved Synonym ID approved by Operations Leader	GIS	GIS
Facility Type	Standard Enterprise Facility Classification	GIS	Asset Engineering & Reliability
Facility Type ID	Facility Type Synomym ID used to create a Facility Name	GIS	
Unique Term ID	Unique identifier for EIH integration	GIS	GIS
Operations Leader	Responsible for operating the facility	Workday	Workday
Facility Operational Status	Applicable Operational Status	GIS	Pipeline Safety
Owner / Operator	Williams or third party entity	GIS	Operations
Facility Latitude	Latitude coordinate for the Facility	GIS	GIS
Facility Longitude	Longitude coordinate for the Facility	GIS	GIS

How Master Data Values are Published and Consumed



How Data Governance is Applied in GIS

- Enterprise System of Record for operational boundaries
- Enterprise System of Record for Facilities and Pipelines (Lines, Routes, Segments)
- Data Creation
  - Geospatial features and attribution
  - Asset Naming
  - Assignment of enterprise Unique Term IDs
    - For system interoperability
    - Automated and manual
- Data Integrity Controls
  - Utility network (UNet)
  - Subtypes
  - Domains

Data Creation

- Asset Naming
  - Follow published naming convention
- Assignment of enterprise Unique Term IDs
  - IDs cannot be repeated or reused
  - Alphanumeric
    - FA1234
    - PL1234
    - LN1234
    - RT1234
  - Facilities
    - Manual
  - Pipelines, Lines, Routes
    - Automated in GIS

WILLIAMS FACILITY NAMING CONVENTIONS

There are two Standard naming conventions that apply to a New Facility being established and finalized at Gate 1 of the Project Lifecycle (PLC).

1. The Facility Name:
The objective of the Facility Name is to identify both the facility's name and the facility's type in a concise manner, then use the standardized name across the enterprise systems such as GIS and Maximo. Williams Legacy Facility Names might be duplicated across the enterprise, but the Facility ID will be unique.

The standardized Facility Name contains the abbreviated Facility Type or Facility Type ID. Use the Facility Type List of Standard Values to reference the abbreviations before you name **a new** facility. For example:

For a new compression St

- Cherry **CS**

For a new stand-alone Me

- East Painter **MS**

WILLIAMS PIPELINE NAMING CONVENTIONS

There are two Standard naming conventions that apply to a new pipeline being established and finalized between Gates 2 and 3 of the Project Lifecycle (PLC).

1. The Line Standard Name:
The objective of the Standard Name is to have a common naming structure that identifies the Line Designator or Pipeline ID, the Line Type, the Line Subtype ID and the Pipeline Operating Status.

The **Line Name** is comprised of four parts:

1. **Designator or Pipeline ID** - The Designator is an alpha-numeric name assigned by the Survey department for Transmission assets. The Line ID is a numeric ID assigned by GIS for Gathering & Processing assets.
2. **Line Type ID** – An abbreviated ID indicating the primary function and regulatory designation of the line. Use the Line Type and Subtype List of Standard Values to select the correct ID.
3. **Line Subtype ID** – An abbreviated ID indicating the secondary function of the line. Use the Line Type and Subtype List of Standard Values to select the correct ID.
4. **Operating Status ID** – An abbreviated ID indicating the operational status of the Line. Use the Standard Operating Status ID values to select the correct ID.

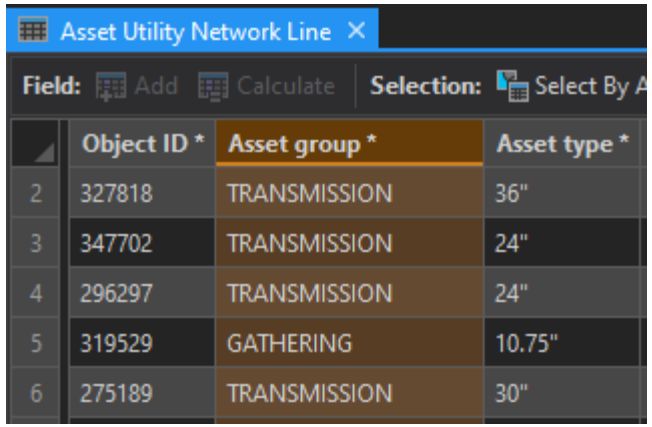
Note: that the Line name can change over time as the regulatory line type or operational status changes.

Data Integrity Controls - Esri Definitions

- Utility Network
  - Used to manage networks, providing a comprehensive framework of functionality for the modeling of utility systems.
  - Designed to model all of the components that make up the system, including pipes, valves, etc.
- Asset Group
  - Represents the major classification of utility network classes and required to be the subtype field.
- Subtype
  - A subset of features in a feature class, or objects in a table, that share the same attributes.
  - They are used as a method to categorize data.
- Domain
  - Used to describe the values accepted in a field.
  - Only values or ranges of values that have been deemed valid can be used as input in a field where a domain is applied.
- *Source: Esri (arcgis.com)*

Data Integrity Controls

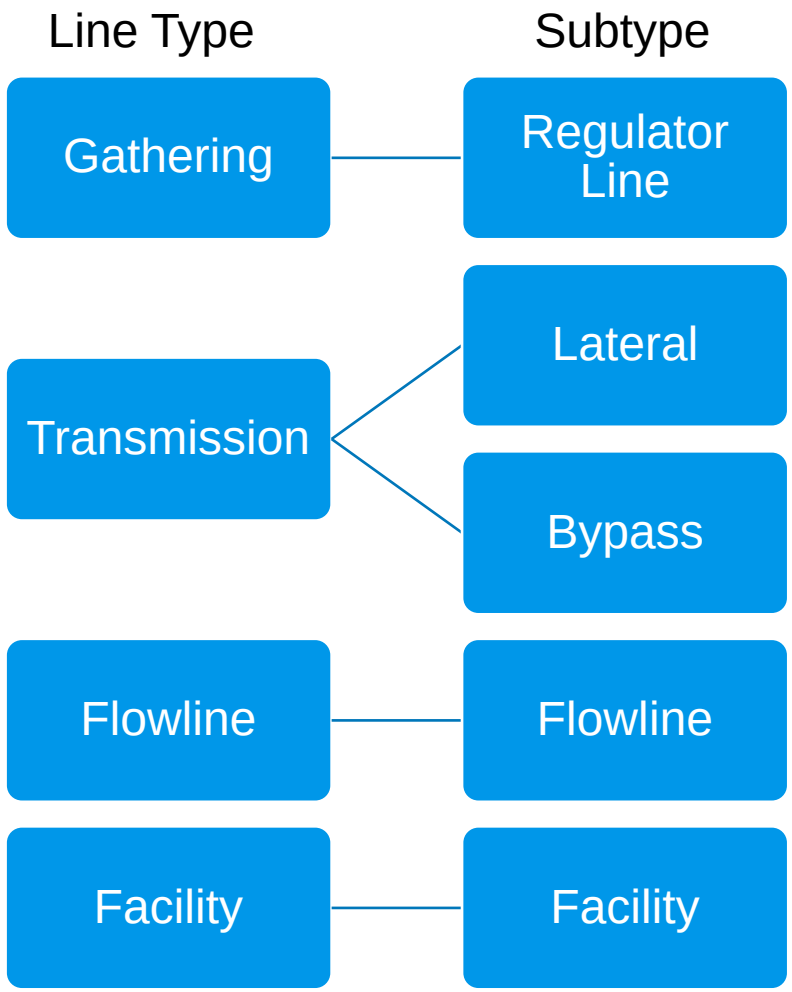
- Utility Network
  - Segments are spatially represented in the utility network
  - Hierarchy relationships are maintained in related tables
    - Level 1 Hierarchy >> Pipelines >> Lines >> Routes >> Segments
  - Facility footprints are spatially represented in the utility network
  - Hierarchy relationships are maintained in related tables
    - Level 1 Hierarchy >> Facilities
- Asset Groups and Subtypes
  - Line Type and Line Subtype
  - Facility Type and Subtype
- Domains
  - Level 1 Hierarchy values +

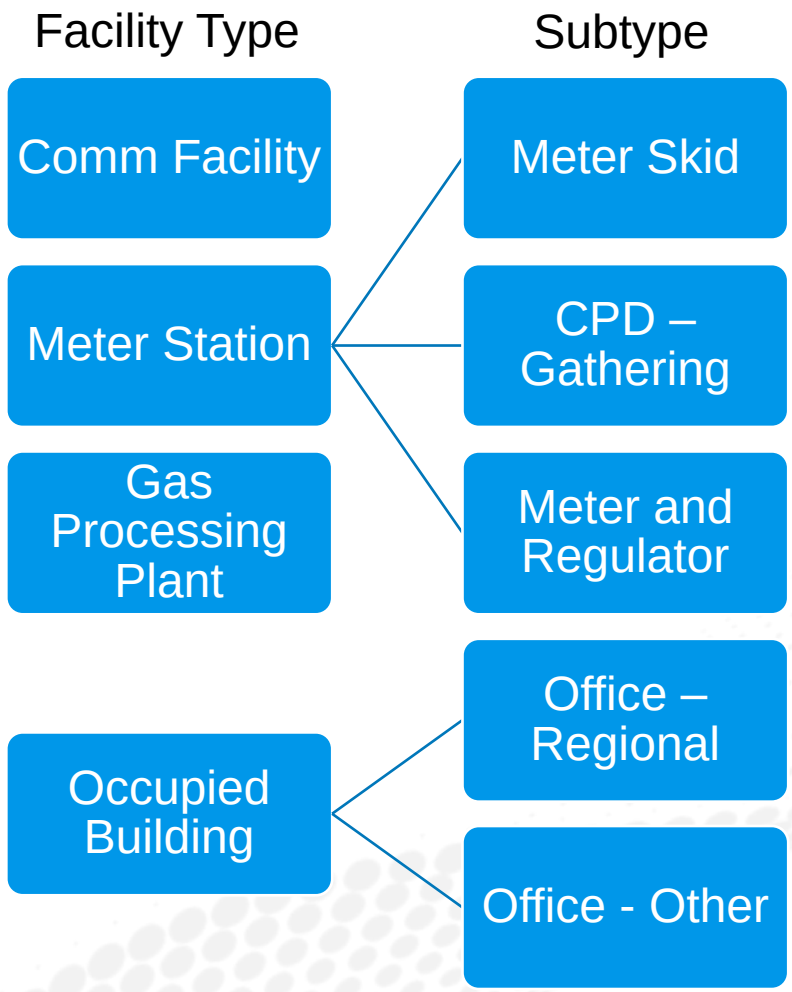


	Object ID *	Asset group *	Asset type *
2	327818	TRANSMISSION	36"
3	347702	TRANSMISSION	24"
4	296297	TRANSMISSION	24"
5	319529	GATHERING	10.75"
6	275189	TRANSMISSION	30"

Susquehanna
Piceance

Types and Subtypes Snapshot





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Questions?

Thank you!

Brianna Walcott and Carrie Landgraf