IBM Knowledge Accelerator for Energy and Utilities

Accelerate the implementation of data governance, enterprise vocabularies, and compliance with regulatory and industry standards to create comprehensive industry content for catalog-generated management.
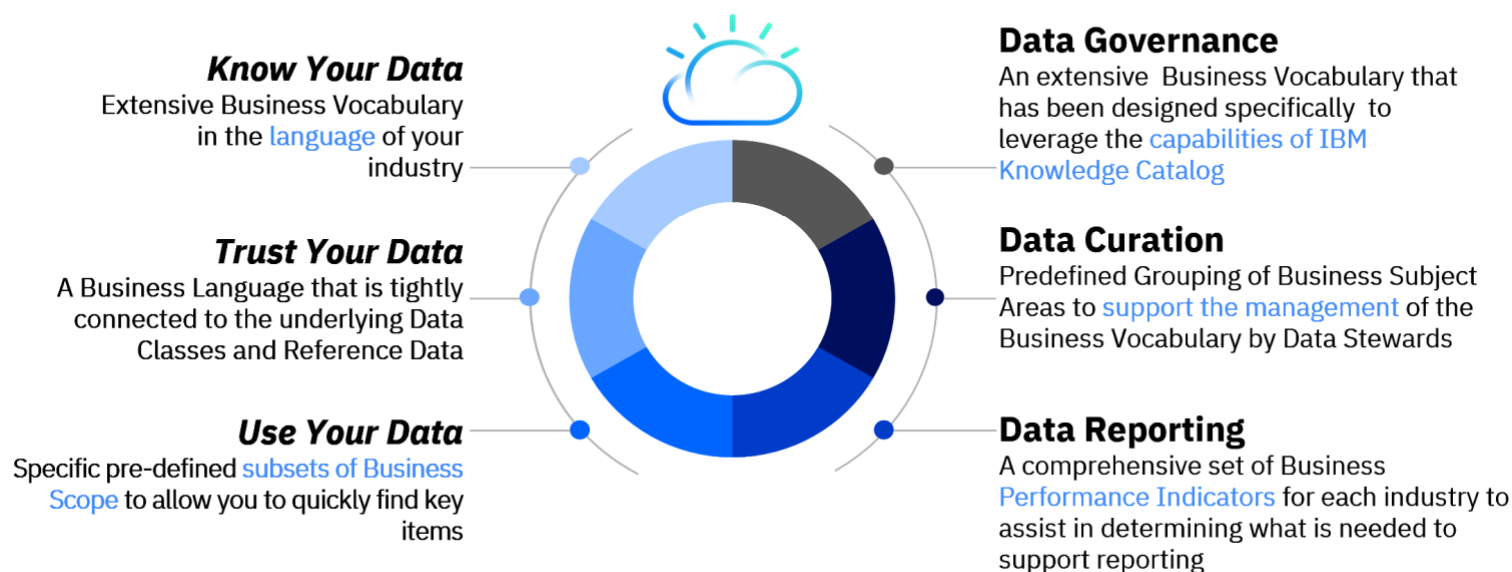
IBM

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Business Context

Enterprise knowledge management requires a trusted, industry-oriented business vocabulary that captures the business meaning and context for the industry concepts, practices, and assets related to business operations.

Enterprise Knowledge Management

Requires a trusted, industry-oriented Business Vocabulary

Know Your Data
Extensive Business Vocabulary in the language of your industry

Trust Your Data
A Business Language that is tightly connected to the underlying Data Classes and Reference Data

Use Your Data
Specific pre-defined subsets of Business Scope to allow you to quickly find key items

Data Governance
An extensive Business Vocabulary that has been designed specifically to leverage the capabilities of IBM Knowledge Catalog

Data Curation
Predefined Grouping of Business Subject Areas to support the management of the Business Vocabulary by Data Stewards

Data Reporting
A comprehensive set of Business Performance Indicators for each industry to assist in determining what is needed to support reporting

However, building a business vocabulary is more than creating a word list without definitions or business context. It takes time to create a usable business vocabulary, lots of time. It also requires a depth of industry experience and a breadth of operational business knowledge that usually is beyond a single person's capability. Thus, building a business vocabulary takes time and takes a team.

Best Practice Governance, Compliance, and Enterprise Search

An enterprise business vocabulary provides great value for organizations because it centralizes the governance of enterprise information and assets. Activities such as compliance risk management are supported by a business vocabulary that connects regulatory concepts to the enterprise data footprint and the data policies and rules that surround it. Additionally, a well-governed enterprise business vocabulary enables enterprise search capability to provide a true "everything to everyone" view of the business.
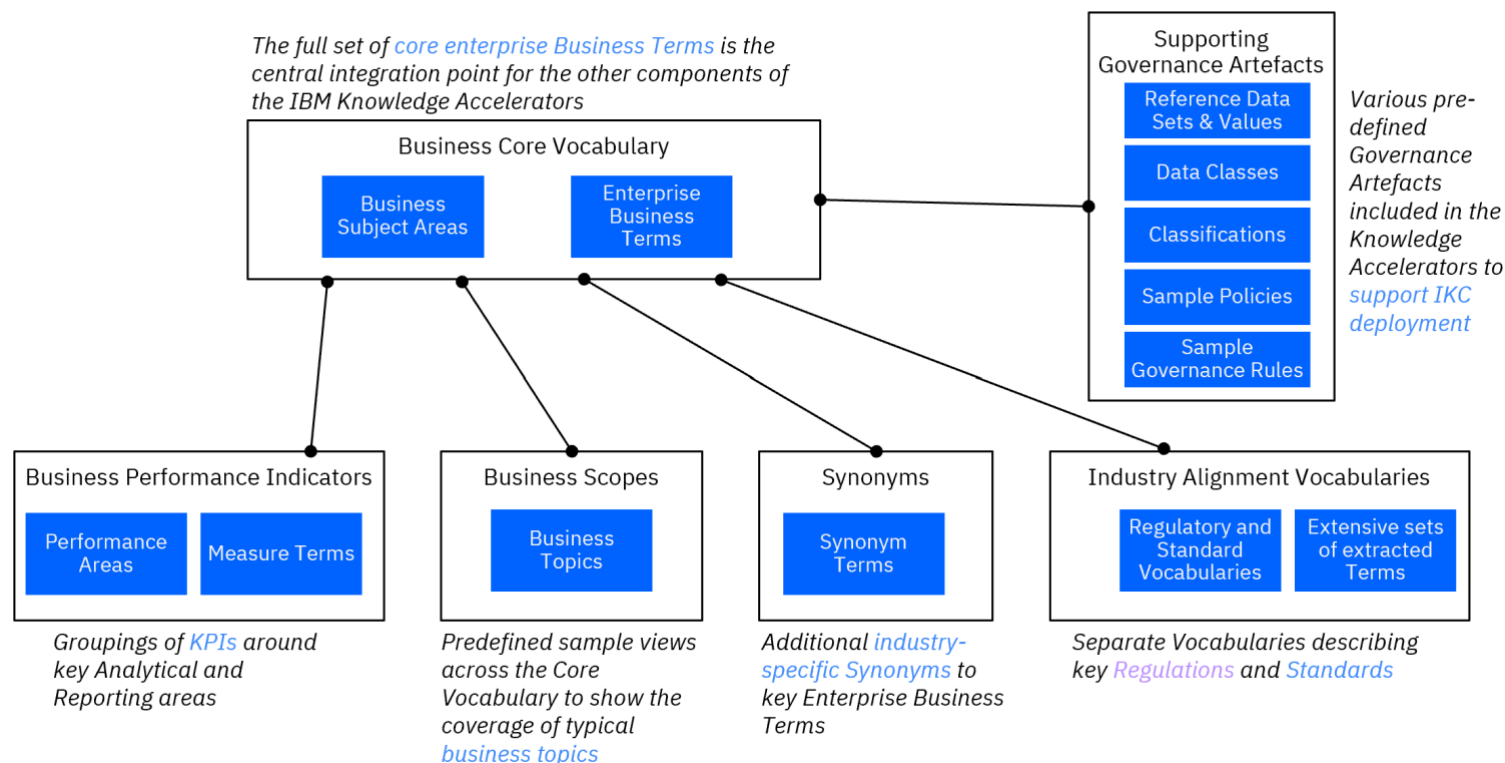
In addition, an enterprise business vocabulary is an important basis for the overall semantic layer of a Data Fabric ecosystem.

IBM Knowledge Accelerator for Energy and Utilities (IBM KAEU)

IBM® Knowledge Accelerator for Energy and Utilities (KAEU) is an industry-specific business vocabulary for energy and utilities organizations that is imported to [IBM Knowledge Catalog](). The comprehensive, multilayer business vocabulary includes thousands of inter-related terms that are grouped by intuitive subcategories.

The terms in these subcategories (Business Core Vocabulary, Business Performance Indicators, Business Scopes, Synonyms and Industry Alignment Vocabularies) are used by different business users to establish, understand, navigate, and use an enterprise vocabulary.

The full set of core enterprise Business Terms is the central integration point for the other components of the IBM Knowledge Accelerators

Business Core Vocabulary

- Business Subject Areas
- Enterprise Business Terms

Supporting Governance Artefacts

- Reference Data Sets & Values
- Data Classes
- Classifications
- Sample Policies
- Sample Governance Rules

Various pre-defined Governance Artefacts included in the Knowledge Accelerators to support IKC deployment

Business Performance Indicators

- Performance Areas
- Measure Terms

Groupings of KPIs around key Analytical and Reporting areas

Business Scopes

- Business Topics

Predefined sample views across the Core Vocabulary to show the coverage of typical business topics

Synonyms

- Synonym Terms

Additional industry-specific Synonyms to key Enterprise Business Terms

Industry Alignment Vocabularies

- Regulatory and Standard Vocabularies
- Extensive sets of extracted Terms

Separate Vocabularies describing key Regulations and Standards

Find out more about the IBM Knowledge Accelerators at: https://www.ibm.com/cloud/knowledge-accelerators

IBM KAEU subcategories

The IBM Knowledge Accelerator for Energy and Utilities is represented as a category of business terms within IBM Knowledge Catalog. The components within IBM KAEU are represented by the following subcategories:

- <u>Business Core Vocabulary</u>

Defining industry concepts in plain business language, the Business Core Vocabulary contains business terms that have properties and can be related to each other. Business terms can include a term hierarchy and are organized by logical business categories. Clearly defined business terms help standardization and communication within an organization and are a foundation for governance of enterprise information assets.

- <u>Business Performance Indicators</u>

Performance Indicators is a vocabulary of energy and utilities performance areas as well as Key Performance Indicators (KPIs) or business measures. These business measures are grouped by (related to) performance analysis terms. These measure terms are also related to terms in the Business Core Vocabulary and allow business users to fully articulate the requirements for analysis. Business Performance indicators can be used for defining and meeting reporting requirements for the organization. See Appendix A for a full list.

- <u>Business Scopes</u>

Business Scopes provide groupings of related Business Core Vocabulary terms that address a specific business use case. These are typically at a finer grain than the business core vocabulary categories and will help business users to focus on the terms required to support a particular business need. See Appendix B for a full list of business scopes. Several business scopes are available for separate download and import.

- <u>Synonyms</u>

Synonym terms represent a word with the same meaning within the E&U Industry and are synonyms of Core Business Vocabulary terms.

- <u>Industry Alignment Vocabularies</u>

Industry Alignment Vocabularies include terms that align key elements from industry regulations and standards to the terms within the Business Core Vocabulary for assisting the energy and utility organization with regulatory coverage and compliance (GDPR and CCPA), alignment with standards (CIM), and managing lineage to interface definitions (IBM Maximo and The Weather Company APIs) for the energy and utility organization.

Business Core Vocabulary

IBM Knowledge Accelerator for Energy and Utilities includes a comprehensive vocabulary of business terms that are specifically focused on the Energy and Utilities industry. These are organized into a set of business categories to enable users to quickly identify the terms relevant to their area of interest:

Accounting	Gas Asset	Supply Chain
Asset	Measurement	System
Common	Meter	Weather
Customer	Outage	Work
Human Resources	Power Asset	

For example, the business category Power Asset, contains over 40 terms representing asset types, one of which is Transformer model. This term inherits 10 generic property terms from Asset Model and has 25 specific property terms, some of which are:
- High side voltage
- High side voltage connection type
- Core type
- Rated voltage
- Winding insulation type

Similarly, the business category Gas Asset, contains approximately 30 asset type terms, all bringing their own property terms to help describe the Assets on the network.

Business Performance Indicators

Business Performance Indicators subcategory includes 5000+ Energy and Utilities related measure terms grouped by 350+ business *performance analysis* terms. These *performance analysis* terms are further organized under these *performance area* categories.

Accounting and Finance	Customer Load	Personal Data Protection
Asset Financial Planning	Customer Management	Supply Chain Management
Asset Health Assessment	Distributed Generation	Weather and Storm
Asset Management	Human Resource Management	Work Management
Call Center Management	Meter Operations	
Credit Collections	Outage and Reliability	

For example, the performance area called Asset Inspection and Health Score Analysis, contains the following measure terms.

- Asset Consequence Score
- Asset Failure Score
- Asset Health Score
- Average Asset Consequence Score
- Average Asset Failure Score
- Average Asset Health Score
- Average Number of Assets Assessed Per Inspection
- Average Risk Score
- Number of Assets Assessed
- Number of Inspections
- Number of Recommended Treatments
- Risk Score

Similar to the above example, each of the 110 + *performance analysis* terms will contain several *measure* terms, that describe key performance indicators for energy and utilities business reporting.

For a complete list of Performance Indicator subcategories and a description of each Performance Analysis term, please refer to Appendix A.

Business Scopes available for import

The IBM Knowledge Accelerator for Energy and Utilities has a number of business scopes available for separate download and import. These can be imported individually to address one or more business use cases. Multiple scopes can be imported with common terms being shared across the scopes. Users can also import the full KAEU vocabulary to supplement any scope vocabulary content already imported. The following business scopes are available for separate download and import:

Data Privacy
A Business Scope that groups terms for Data Privacy, addressing the personal information of individuals and the processing of that information.

Power Network Assets
A Business Scope that groups core Asset terms, as well as the asset types/models that would be found on a T&D network.

Gas Network Assets
A Business Scope that groups core Asset terms, as well as the asset types/models that would be found on a Gas distribution network.

Network Asset Measurements
A Business Scope that groups measurements of assets on the network.

Utility Customer
A Business Scope that groups core Customer terms including customer account, transaction & agreement. Also includes tariff and billing and the central concept of customer and related demographic data.

Metering and Usage Point
A Business Scope that groups Metering including Power and Gas meter specialisations. Relationship of the meter to the usage point and location address at the customer's premise. Also meter readings and interval data.

Industry Alignment Vocabularies

IBM KAEU includes Industry Alignment Vocabularies which are provided to guide mapping from industry standards and regulations to the Business Core Vocabulary content. Each supported industry standard or regulation is defined using subcategories and terms below the Industry Alignment Vocabularies top-level category.

Industry Alignment Vocabularies delivered with IBM KAEU:

CCPA (California Consumer Privacy Act of 2018)

Common Information Model (CIM) 61968 and 61970

GDPR (EU General Data Protection Regulation)

IBM Maximo Asset Management Integration Objects

The Weather Company Data for IBM Bluemix APIs

IBM Knowledge Accelerators subcategories

The "Knowledge Accelerators" category contains related artifacts such as Data Classes, Reference Data, Policies, and Rules organized in subcategories.

Data Classes

IBM KAEU extends the set of data classes that are provided in IBM Knowledge Catalog with several data classes describing types of data commonly found in data assets across multiple industries. Additionally several data classes based on CIM reference data sets are also included.

The existing IBM Knowledge Catalog data classes and the new data classes that are provided by the Knowledge Accelerators are all combined in a new category hierarchy based on topics such as Demographics, Finance, and Location. This subcategorization allows them to be selectively included in different metadata enrichments to improve matching accuracy. As the data classes are pre-mapped to terms in the Business Core Vocabulary, metadata enrichment also automatically assigns the business term when it matches data in an asset to a data class.

Data classes that are relevant to personal data also have a classification of either Personal Information (PI) or Sensitive Personal Information (SPI) depending on the sensitivity of the data it describes. This classification helps in the identification of personal data in data assets and supports the application of data protection rules to control data access.

Reference Data

IBM KAEU includes approximately 300 reference data sets with 1000's of reference values sourced from the CIM standard. This reference data, where applicable is mapped to the core business vocabulary. In [IBM Knowledge Catalog,](#) reference data sets can be used to generate Data Classes, which are used to profile the data in the Data Catalog. Try the [guided demo](#) of IBM Knowledge Catalog to explore the capabilities.

Policies

IBM KAEU provides a sample selection of governance policies in the areas of Data Privacy and AI Governance. The policies are further broken down into policy subcategories, which contain individual policies that illustrate how the organization can define its own policies in these areas. The Organization might also use this category structure to create policies in other areas such as Sustainability, or Diversity. Policies are descriptive rather than enforceable in IBM Knowledge Catalog.

Rules

IBM KAEU provides a sample selection of governance rules in the areas of Data Privacy and AI Governance. These rules express how the organization intends to implement their policies. Governance Rules can be related to one or more governance policies. They can also be related to business terms where such terms are clearly applicable to the rule. Like policies, Governance Rules are not enforceable. This sample that is provided illustrates how the organization can define its own expanded set of rules.

Data Privacy and Protection

IBM Knowledge Accelerator for Energy and Utilities contains business terms with classifications to guide the identification of personal information and sensitive personal information. By using the metadata enrichment tool in IBM Knowledge Catalog, the business terms can be assigned to imported data assets to identify the assets that contain personal data.

IBM KAEU includes a **Data Privacy Scope** that contains a set of Business Core Vocabulary terms to accelerate the discovery and governance of personal information and the activities that are related to processing such information.

The Business Terms in the Data Privacy scope are categorized to align with key data privacy topics:

- Personal Data
    - Affiliations
    - Basic Personal Information
    - Beliefs, Views & Opinions
    - Criminal & Offence Activity
    - Demographics
    - Education & Skills
    - Finance
    - Health & Biometric
    - ID - Government
    - ID - Others
    - Online Activities
        - Online Behavior
        - Opinion
        - Personal Communication
        - Personal Human Resources
        - Personal Location
        - Schedules
        - Telephony & Video

- Personal Data

The scope is not intended to be a definitive standard for data privacy and protection requirements as the classifications of Personal Information (PI) and Sensitive Personal Information (SPI) vary in different legal jurisdictions. However, the business terms in the scope include suggested PI and SPI classifications.

The Data Privacy Scope complements specific regulations such as GDPR or CCPA and includes Business Core Vocabulary terms that are related to these regulations in the following categories.

- Regulatory Alignment
    - CCPA Related Terms
    - GDPR Related Terms

The Data Privacy Scope helps accelerate the building of the organization's data privacy taxonomy and the creation of an inventory of data assets that contain personal information. This scope is available for separate download and import.

Data Privacy Regulations

IBM Knowledge Accelerator for Energy and Utilities contains key concept terms from two leading data privacy regulations. These regulatory terms are related to the business terms within the Business Core Vocabulary, which helps data users identify enterprise information that is relevant to these regulations. This coverage can help the organization understand what components need to be considered including consumer rights, personal data types, processing activities, processing purposes, and roles.

GDPR

IBM KAEU supports the General Data Protection Regulation (GDPR) and provides an industry-specific vocabulary that can help the organization discover and govern privacy data. IBM KAEU also provides KPI templates for regulatory reporting. It can help organizations ensure that their enterprise data architecture is able to provide the necessary data artifacts to report on data protection issues. It can also help to determine and define which type of personal data the organization uses.

CCPA

IBM KAEU also supports the California Consumer Privacy Act (CCPA). Building on the foundations put in place with GDPR, IBM KAEU identifies key terms within the CCPA regulation, which are then mapped to the Business Core Vocabulary terms.
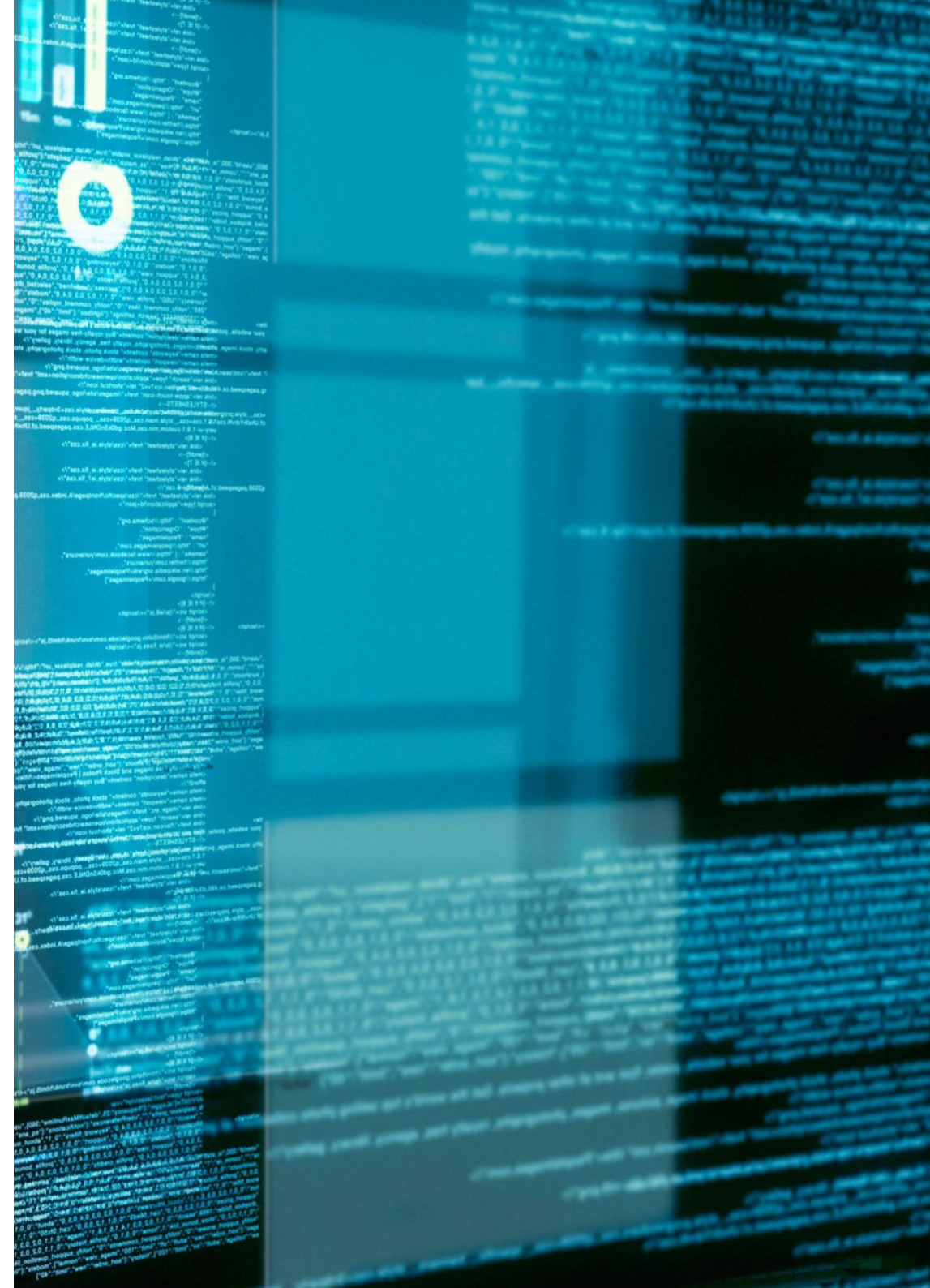
AI Governance

IBM KAEU includes a set of policies relating to governance of the use of Artificial Intelligence by the organization. The AI governance policies are organized into a set of subcategories that describe the main process flow of an AI project.

- **AI Scoping and Planning Policies** relating to the scoping and planning of AI projects including assignment of responsibilities, establishing the use case, and identifying potential ethical issues and risks.
- **AI Data Collecting and Organizing Policies** relating to the collection and organization of data for use in AI projects. It is critical that such data is appropriate to the use case and does not introduce bias into the model.
- **AI Building and Training Policies** relating to the building and training of AI models by the organization. This includes mitigating risks and bias, and the systematic recording of assessment results.
- **AI Validating and Deploying Policies** relating to the validation of machine learning models against their original context as well as the predetermined performance thresholds prior to deployment.
- **AI Monitoring and Managing Policies** relating to the ongoing monitoring and management of deployed machine learning models used by the organization.

This sample policy set is provided for illustrative purposes only. It shows how the organization can define its own expanded set of policies in this and other areas.

Industry Led Governance

While a business vocabulary is often defined as a way to provide a business view to connect with more technical artifacts, or as the starting point for defining the business scope to be used to guide the identification of a subset of logical model elements, the business vocabulary has significant value in its own right.

A properly defined business vocabulary that reflects the needs and terminology of the various users can be used to:

- act as a common language across the different business users across the organization
- provide a reference point when aligning new or acquired businesses into the overall organization
- provide the Data Steward with a comprehensive and scalable template with which to grow their business vocabulary, addressing both the needs of the central IT as well as the needs of the individual groups of Self-Service users
- provide a basis for the identification of gaps and overlaps between different projects or activities that the enterprise may be engaged in

- leverage the AI/ML capabilities of IBM Knowledge Catalog. Where relevant, the business terms in the IBM Knowledge Accelerators are integrated with the Data Classes provided out of the box with IBM Knowledge Catalog and the Knowledge Accelerators. This ensures a higher coverage and accuracy of the Auto assignment of Data Assets to Terms, thus improving the integration of the Knowledge Accelerators with the governed assets
- broaden the current coverage of the AI-driven Data Discovery process. The IBM Knowledge Accelerators include sample Reference Data Sets and Reference Data values that, when customized as required, can be used as a basis for the creation of additional Data Classes. This results in a broader range of data classes available to underpin the Data Discovery process.

IBM KAEU contains comprehensive enterprise vocabulary structure designs.

Data Lake, Lakehouse and watsonx.data

The [data lake](#) and the more recent lakehouse have emerged as the possible mechanism to enable organizations to define, manage and govern the use of various big data technologies. This represents an evolution of big data towards mainstream use in an enterprise and the associated focus on management of such assets.

Many of the same traditional imperatives for the use of IBM KAEU also exist when organizations deploy a lakehouse

- the need to establish a common cross enterprise set of assets for use by the business, with such assets fully integrated with the overarching layer of business terms
- the use of Energy and Utilities-oriented and business-friendly terminology to ensure a suitable basis for self-service access by the business users of the lakehouse

- the use of classifications and tags on terms to assist business and technical users when searching and navigating the vocabulary
- the need for consistent and scalable structures of the vocabulary to ensure common understanding of the lakehouse assets by the business and technical users
- the need to enforce a common governance layer around the lakehouse.

IBM KAEU contains a number of components which are ideally suited to supporting deployment to a data lake architecture. IBM Knowledge Catalog enables organizations to govern and protect their data assets in a [watsonx.data](#) lakehouse.

Digital Transformation Support

Energy providers face the challenge in the digital age of customers expecting digital first in their interactions and communications. There is a rich vocabulary of terms in communications (social media posts, emails) and contact points (social media accounts, email addresses) linked to customers, customer accounts, usage information and billing.

These business terms available in IBM KAEU, in conjunction with the performance indicators, can inform digital interaction, utilizing IBM Knowledge Catalog to help govern the new data flows required.

Customer Retention Support

A deregulated market has opportunities for all energy providers to source new customers. The other aspect of this is managing existing customer relationships, in order to minimize their risk of churning.

The Knowledge Accelerator for Energy and Utilities contains a rich set of Performance Indicators grouped into the following analysis areas, that are linked to the necessary business terms, in order to help manage and give visibility as to the current state of the customer relationship with the provider:

- Customer Agreement Churn Analysis
- Customer Churn & Customer Churn Propensity Analysis
- Customer Complaint Analysis
- Customer Credit Risk Analysis
- Customer Interaction Analysis
- Customer Revenue Analysis
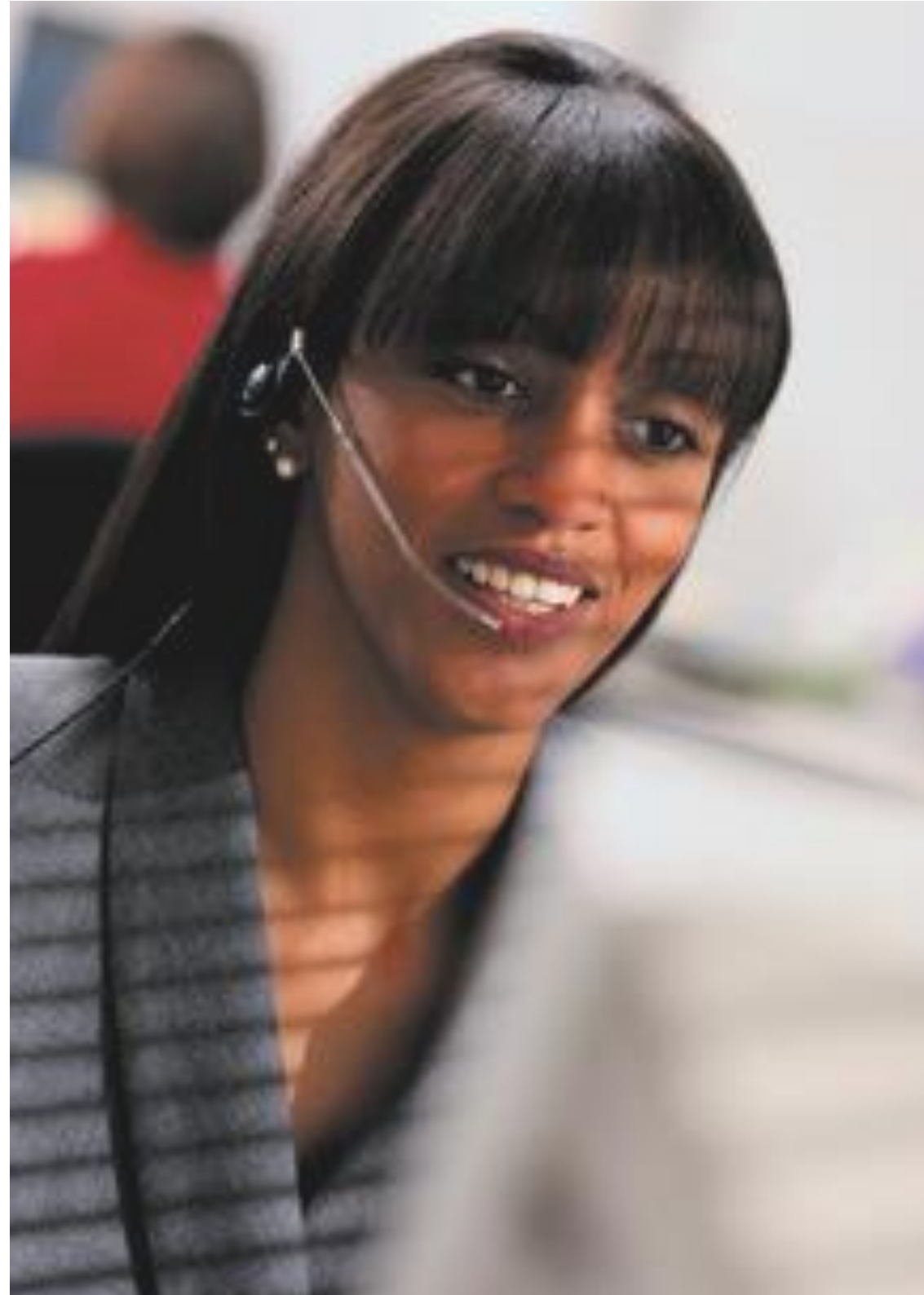
Distributed Generation Support

Energy and utility companies must manage the growing rate of small-scale distributed generation on the grid. In order to do this management, having good structured data is vital, as well as a set of business terms to manage this data. IBM KAEU provides network connectivity terminology that can be used to help govern this data, including the asset types connected to the network, not just owned by the utility, but also by the distributed customer.

Distributed generation analysis must also have consideration to the electric vehicles connected to the network; these can be both a consumer and source of power. Having a good understanding as to the demographics of the customer, with out of the box IBM KAEU support for such terms as "number of electric vehicles" in the household, is key to understanding sources of usage, and also targets for specific customer demand management strategies, such as 'off peak hours charging'.

Power and Gas Utility Support

The Knowledge Accelerator for Energy and Utilities supports both power and gas utilities. There are a common set of terms that are generic to both utility types but then have specialisations in the Gas and Power areas, for asset types such as Regulators (Gas) and Transformers (Power); there are also specialisations for Meters and Customer Usage Points.

This common language of Asset, Customer, Meter, Work Management that is applicable to both utilities, not only has advantage to a utility which supports both Gas and Power, but also to utilities that would like to put in place a terminology that future proofs their expansion plans into other utility types.

Learn More

IBM Knowledge Accelerator Metamodel

IBM Knowledge Accelerators are designed based on a common metamodel specification described in the components section of the IBM Documentation.

IBM Knowledge Accelerators for Cloud Pak for Data Components
https://www.ibm.com/docs/SSQNUZ_4.8.x/ka/components/compnts.html

IBM Knowledge Accelerators for Cloud Pak for Data as a Service Components
https://dataplatform.cloud.ibm.com/docs/content/kaaas/User_Guide/ika/compnts.html

IBM Documentation

IBM Knowledge Accelerator for Energy and Utilities documentation is available on the following sites:

IBM KAEU for Cloud Pak for Data
https://www.ibm.com/docs/SSQNUZ_4.8.x/ka/ka-cpd.html

IBM KAEU for Cloud Pak for Data as a Service
https://dataplatform.cloud.ibm.com/docs/content/kaaas/kaaas_intro.html

Appendix A – Performance Indicator Categories, Performance Analysis Terms and Descriptions

This section describes the business content in the Business Performance Indicators Category

Accounting and Finance

Account Entry Composition Analysis - An analysis of the financial transaction composition of an account entry. This demonstrates the lower level financial transaction detail that composes an account entry.

Account Reconciliation Analysis - An analysis of account reconciliations within a reconciliation. There can be many reconciliation items in an account reconciliation. This supports analysis of the efficiency of the reconciliation process.

Balance Sheet Analysis - To analyze the organization's Balance Sheets, which report the total assets, total liabilities, and total shareholders equity at a specific time.

Cash Flow Analysis - To analyze an organization's Cash Flow, which is the amount of cash an organization generates and uses during a period, calculated by adding non-cash charges (such as depreciation) to the net income after taxes.

Financial Summary Analysis - To support the organization in the generation and analysis of the Security And Exchange Commissions (SEC) 10Q and 10K reports.

Income Statement Analysis - To analyze an organization's Income Statement, which is a financial report that by summarizing revenues and expenses, and showing the net profit or loss in a specified accounting period it depicts an organization's financial performance due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement.

Journal Account Entry Analysis - An analysis of the account entries that compose a journal.

Journal Approval Analysis - An analysis of journal approvals by workers.

Asset Financial Planning

Distribution Financial Analysis - An analysis of the project work that focuses on the adherence to the project plan and the distribution maintenance cost per customer and per-asset mile.

Maintenance Cost Analysis - An analysis of the cost of asset maintenance work. The analysis focuses on the split and comparison of the cost that results from preventive maintenance and corrective maintenance, and expresses the cost as a percentage of the total maintenance cost.

Asset Health Assessment

Asset Failure Analysis - An analysis that focuses on instances of asset failure events.

Asset Inspection and Health Score Analysis - An analysis that focuses on asset inspections, asset health scores and recommended treatments that are recorded as inspection results.

Asset Installation and Removal Analysis - An analysis that focuses on asset installation and removal.

Asset Lifecycle Analysis - An analysis that focuses on measurements that are associated with the lifecycle of an asset.

Line and Structure Analysis - An analysis that focuses on overhead lines and the pole and tower structures that support these lines.

Network Risk Analysis - An analysis that focuses on network risk analysis.

Power Fault Analysis - An analysis that focuses on instances of power failures, related tasks and outages and affected assets.

System Asset Availability Analysis - An analysis that focuses on the availability and use of assets on the network.

Asset Management

Asset Reliability Analysis - An analysis of asset reliability.

Asset Risk Analysis - An analysis of asset risk based on the consequence of a failure of the asset and the probability of the failure occurring.

Equivalent Annual Cost Analysis - An analysis of owning and operating an asset over its entire lifespan.

Call Center Management

Call Center Performance Analysis - An analysis of call center call handling performance.

Call Center Worker Analysis - An analysis of call center workers time allocation.

Contact Subject Analysis - An analysis of the subjects of customer communications with the contact center.

Shrinkage Analysis - An analysis of call center shrinkage. Call center shrinkage represents paid worker time that is not allocated to handling calls.

Credit Collections

Accounts Receivable Analysis - An analysis of unpaid amounts of all charges billed to the customer account including all due or overdue payments.

Collection Activity Analysis - An analysis that focuses on the collection related communication and activities. The activities included in the analysis are service disconnections, reconnections and deliveries of the door hangers notices.

Debt Reduction Analysis - An analysis that focuses on the uncollectable amounts on the customer accounts.

Outbound Collection Communication Analysis - An analysis that focuses on the collection related outbound communication. The communication types include the outbound calls, letters and other notices delivered to the customer residence in person.

Overdue Balance Analysis - An analysis that focuses on overdue balances on residential and non-residential customer accounts.

Payment Assistance Agreement Analysis - An analysis that focuses on the participation of customers in all payment assistance plans offered by the organization or other agencies, the new and active payment assistance agreements as well as the agreed payment amounts and the unpaid bills amounts of the program participants.

Revenue Analysis - An analysis of revenue derived from customer billing in the context of credit collections.

Customer Load

City Gate Metering Analysis - An analysis of gas volumes entering and leaving the city gate facilities based on the measurements from the input and output meters, an input measuring meter owned by the transmission supplier and an output measuring meter on the distribution side owned by the utility.

City Gate Sendout Analysis - An analysis of expected demand for gas for a given service area. Forecasts are used to predict demand placed on city gate facilities.

Customer Usage Factor Analysis - An analysis that focuses on how metered usage by a given customer differs from the typical usage of similar types of customers. New customers are usually given a default usage factor of one. Once the new customer's actual usage is measured, it is then possible to assess the degree to which this customer uses more or less than the average.

Gas Storage Sendout Forecast Analysis - An analysis of expected demand for gas for a given service area. Forecasts are used to predict demand placed on gas storage facilities.

Load Planning Analysis - An analysis of budgeted and actual sales and the difference between these values for a given period.

Peak Load Analysis - An analysis of expected demand from customers based on peak hour usage. This analysis and reporting facilitates coordination with energy suppliers.

Customer Management

Customer Agreement Churn Analysis - An analysis that focuses on the reasons why customers close agreements with the organization and the impact of such closures on the organization.

Customer Bill Analysis - An analysis of customer bills.

Customer Churn Analysis - An analysis that focuses on the reasons why customers of the organization cease to use its services and the impact this has on the organization.

Customer Churn Propensity Analysis - An analysis that focuses on the tendency and estimated likelihood of customers or types of customers to leave the organization to avail of the services of a competitor.

Customer Complaint Analysis - An analysis that focuses on the pattern of complaints raised by customers of the organization and the effectiveness of the complaint resolution process.

Customer Credit Risk Analysis - An analysis that focuses on the amount of credit in arrears, average balances, credit score and customer balance sheet in order to determine profiles of customer credit risk.

Customer Interaction Analysis - An analysis that focuses on how the organization interacts with its customers, and the effectiveness of various communication types and channels in terms of retaining customers and winning new business.

Customer Loyalty Analysis - An analysis that focuses on the determination customers have for continuing to use the services of the organization, while recognizing the customers have alternative choices.

Customer Revenue Analysis - An analysis that focuses on the available wealth of customers compared to their utilization of services of the organization.

Customer Segmentation Analysis - An analysis that focuses on the identifications of groups of customers based on the various population criteria and other customer characteristics known to the organization.

Premise Occupancy Analysis - An analysis that focuses on the occupancy of the premises that includes the numbers of household members and numbers of people usually present at workplace.

Revenue Protection Analysis - An analysis focused on revenue protection and potential fraud analysis.

Social Media Sentiment Analysis - An analysis that focuses on the social media activity relating to the organization or a particular subject of interest. It looks at measures such as the social media sentiment and the exposure of the social media profile.

Distributed Generation

Distributed Generation Agreement Analysis - An analysis of net metering agreements with customers.

Distributed Generation Analysis - An analysis focused on the amount and value of power generated by distributed generation customers.

Distributed Generation Equipment Analysis - An analysis focused on the type of distributed power generation equipment used by net metering customers.

Human Resource Management

Employee Performance Analysis - An analysis that focuses on the employee performance assessments.

Worker Agreement Analysis - An analysis that focuses on the agreements between the utility and their employees and the contract workers.

Worker Cost Analysis - An analysis that focuses on the cost related with active agreements of both the employees and the contract workers.

Worker Turnover Analysis - An analysis that focuses on the turnover of both the employees and the contract workers.

Meter Operations

Advanced Metering Analysis - An analysis focused on the operational integrity of meter data collection. The analysis centers on meter readings that are out of normal reading value ranges.

Meter Data Analysis - An analysis of non-consumption related interval values for meters.

Meter Deployment Analysis - An analysis used to analyze the rate of progress of meter deployments.

Meter Deployment Failure Analysis - An analysis of meters that have repeated testing failures in the context of meter deployment.

Metered Usage Analysis - An analysis of energy usage based on meter readings. The analysis measures both usage by customers as well as energy generated and delivered to the grid by customers.

Meter in Possession of Employee Analysis - An analysis that focuses on meters that are removed from inventory for installation in the field. This facilitates reporting of situations where a meter is checked out more than a standard number of days and in not yet installed.

Meter Inventory Analysis - An analysis used to analyze meter inventory.

Meter Reading Analysis - An analysis of energy usage based on meter readings.

Meter Reading Correction Analysis - An analysis of corrections of inaccurate meter readings.

Meter Reading Estimates Analysis - An analysis of instances of estimated meter readings.

Meter Reading Route Optimization Analysis - An analysis supporting optimization of meter reading routes. Route optimization ensures optimal usage of reading resources and supports reduced inaccurate manual meter readings.

Meter Transformer Connectivity Analysis - This demonstrates some of the analysis that is possible based on the connectivity of a meter to its transformer.

Metered Usage Analysis - An analysis of energy usage based on meter readings. For the electric service, the analysis measures both usage by customers as well as energy generated and delivered to the grid by customers.

Outage and Reliability

CEMI Analysis - An analysis of customers experiencing multiple interruptions (CEMI) metrics.

Estimated Restoration Time Analysis - An analysis that focuses on the outage-related outbound communication and accuracy of communicated estimated restoration time.

Leak Report Analysis - An analysis that focuses on leak reports and measures related to managing of confirmed leaks.

MAIFI Analysis - An analysis of Momentary Average Interruption Frequency Index metrics.

SAIDI Analysis - An analysis of System Average Interruption Duration Index metrics.

SAIFI Analysis - An analysis of System Average Interruption Frequency Index metrics.

Personal Data Protection

Data Subject Agreement Status analysis - An analysis of the status of consents and other agreements regarding use of data and associated restrictions for personal data that is controlled by the organization.

Data Subject Request Analysis - An analysis that focuses on the number of requests by type with associated response times and outcomes.

Personal Data Breach Analysis - An analysis that focuses on data breaches and measures related to handling of these breaches.

Personal Data Processing Activity Analysis - An analysis that focuses on operations that are performed on personal data.

Personal Data Protection Risk Assessment Analysis - An analysis of the procedures undertaken by the organization to identify and quantify risks related to protection of data controlled by the organization.

Supply Chain Management

Catalog Item Analysis - An analysis of catalog items. A catalog item is an item that can be or was ordered from a supplier or suppliers.

Cycle Count Analysis - A periodic physical count of inventory items in a warehouse facility.

Daily Inventory Level Analysis - An analysis of inventory levels on a periodic basis. For example, the level of warehouse inventory at end of day.

Inventory Transaction Analysis - An analysis of financial and non-financial inventory transactions.

Material Request Analysis - An analysis of material requests for inventory and non-inventory items required to complete work order tasks.

Warehouse Item Analysis - An analysis of warehouse items. A warehouse item describes a catalog item as stored at a particular warehouse.

Weather and Storm

Storm Area Impact Analysis - An analysis of areas with outages caused by storms or otherwise impacted by storms.

Storm Outage Forecast Analysis - An analysis of outages forecasted for storms compared to actual outages caused by storms.

Weather Alerts Analysis - An analysis of the weather alert accuracy that focuses on the comparison of issued alerts and confirmed actual impacts of event to alerted areas.

Weather Analysis - An analysis of measurements that describe the weather conditions.

Weather Forecast Analysis - An analysis of the weather forecast accuracy that focuses on the comparison of forecasted and actual measurements that describe the weather conditions.

Weather Impact on Asset Failure Analysis - An analysis that focuses on the influence of weather on the number of asset failures.

Work Management

Asset Maintenance Analysis - An analysis that focuses on asset maintenance. The analysis captures measures that are specific to the maintenance type of the work.

Asset Work Labor Analysis - An analysis that focuses on the labor information that is recorded for the work on asset. The analysis examines overtime and unplanned labor as well as the relationship between the labor and the contracted work.

Asset Work Resource Cost Analysis - An analysis that focuses on the variety of cost of the work that is based on the type of resource that is consumed or used in the assessed period.

City Gate Maintenance Analysis - An analysis that focuses on the maintenance work carried out on the assets in city gate facilities.

Crew Availability and Utilization Analysis - An analysis of the hours that the crew is available for work and the efficiency of the crew labor planning and crew utilization.

Crew Outage Readiness Analysis - An analysis that combines forecasted outages and forecasted number of customers impacted by outage with crew available hours in the assessed period and location.

Engineering Accuracy Analysis - An analysis of the design and planning of a type of work task. The analysis focuses on comparing the task template standard resources with resources planned and resources actually used for tasks. Resource types include labor, contractor work, material, equipment (tool) and asset.

Gas Emergency Work Analysis - An analysis that focuses on the gas emergency work orders. The analysis captures measures that are specific to the leak, fire and carbon monoxide related emergencies occurred in the assessed period.

Gas Inspection Job Analysis - An analysis that focuses on gas network inspections, and work arising from the inspection results.

Hold Analysis - An analysis of the holds that prevent the work from continuing. The analysis shows the holds that are active or were created or removed in the assessed period.

Project Financial Analysis - An analysis of the financial status of a project. The overall project can be undertaken by more than one subcontractor.

Service Disconnection Work Analysis - An analysis of the completed jobs related to fieldwork involved in customer service disconnections and reconnections.

Standard Unit Analysis - An analysis of the task type templates with the focus on standard material quantity and standard labor duration.

Task Planning Analysis - An analysis of the planning of a type of work task. The analysis focuses on comparing the planned and actual task start and completion date and the labor duration that is associated with the task execution.

Work Cost Budget and Forecast Analysis - An analysis that focuses on the cost of work that is budgeted, forecasted or actual in the context of the assessed period. The work cost can be recorded at the level of task, work order or project. The individual cost items that are collected from multiple sources, and can be used for costs that are standard, budgeted, forecasted, planned and actual.

Work Order Completion Analysis - An analysis of the work order completion that focuses on the number of work orders, the duration of the work and accuracy of work planning for the completed work.

Work Order Dispatching Analysis - An analysis that focuses on the performance that is related to the dispatching and resolution of unplanned work.

Work Order Scheduling Analysis - An analysis of the scheduling of a type of work order. The analysis captures the number of work orders that are created and scheduled, and includes the number of measures that are based on the work status changes.

Appendix B – KAEU Business Scopes

This section lists all of the content in the Business Scopes category in KAEU.

Account	Event	Party and Contact Point
Account Entry	Fault And Failure	Payment Assistance Agreement
Account Transaction	Filter	Performance Review
Accounting Structure	Financial Transaction	Personal Data Breach
Asset Context	Gas Leak Context	Personal Data Consent
Asset Management Optimization	Gas Meter and Meter Loop	Personal Data Processing
Billing	Gas Network Assets*	Pipe and Fittings
Call Center Communication	Gas Sendout Forecast	Population
Catalog Item	Gas Stations	Power Measurement Context
Cathodic Protection	Gas Storage	Power Network Assets*
City Gate	Gas System Resource	Power System Resource
Collection Activity	Generation And Production	Provider Contract
Communication	Inspection And Score	Purchase Requisition And Order
Customer Agreement	Inventory Transaction	Reconciliation
Customer And Customer Account	Job Briefing	Regulator
Customer And Usage Point	Journal	SCADA
Customer Assessment	Location	Shunt Compensator
Customer Load Profile	Marked Location	Station Assets
Data Privacy*	Material Request	Structure
Data Processing Service Contract	Measurement Context	Switch And Breaker
Data Protection Impact Assessment	Meter Reading	System Resource
Document	Metered Interval	System Terminal And Connection Node
Employment Agreement	Metering and Usage Point*	Tariff And Charge
End Device	Network Asset Measurements*	Transducer
End Device Instruction And Response	Outage Context	Transformer

*Available for separate import

Utility Customer*
Usage Point
Valve
Warehouse Item
Weather Alert

Weather Almanac
Weather Event
Weather Forecast
Weather Observation
Wire And Cable

Work Cost
Work Order
Work Order Design
Work Order Planning
Worker

*Available for separate import