A Semantic Layer to Enable Risk Management at a Multinational Bank

Enterprise Knowledge is working with a multinational bank to enable their risk-assessing processes by using semantics and connected data. Heavily regulated financial services firms require comprehensive and complex risk management. This requires employees to thoroughly account for risk and report it in detail to regulators. It also necessitates accurate, timely, and detailed data and information to inform risk assessment. The firm sought to create a holistic and connected risk assessment capability to increase transparency for the firm and regulators, reduce the burden on employees, and enable real-time reports and insights into firm risk levels.

The Challenge

The firm faced several challenges in managing risks across the organization. First, data originated from various sources with different terminology and classifications, making it difficult to connect related information. This resulted in weeks-long efforts to aggregate information for regulators and gaps in key information required to maintain risk levels that fit the firm's appetite. Second, this data needed to be centralized for easy access and consumption by various stakeholders and applications across the firm, but was siloed in process-specific applications. Finally, the complexity of the data created a need for a more intuitive and efficient way for employees to interact with and understand this information. These challenges required a solution that could align terminology and classification, centralize data, enhance usability, and make the information easily accessible for various purposes across the organization.

The Solution

The firm identified a semantic layer and corresponding solutions as a key enabler for risk management and partnered with EK to develop a strategy and implement the structures and technology required to create a data-centric risk assessment. To address the firm's risk management and semantics challenges, EK developed semantic data capabilities and frameworks, including:

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1. Standardized Categorization Structure:

Recognizing the need for a common language across the organization, EK created a standardized terminology structure by identifying the most used topical areas and vocabularies in need of standardization. Examples include free-text risk descriptions that EK shortened by leveraging an AI pipeline with humans in the loop to create standardized data items, mismatched organizational constructs that EK extrapolated to common levels and groupings, and a proliferation of product taxonomies that EK concatenated into a cohesive, central Product Taxonomy. EK and the firm achieved common categorization across representations of business units, products, and legal entities among others.

This centralized, evolving framework provides a consistent way to categorize and classify data, ensuring interoperability across different systems and use cases. By implementing this structure within the risk assessment application and encouraging its adoption by other data providers, EK ensured that all parties were using the same terminology when handling related datasets. This improved data consistency and accuracy, facilitating data sharing and analysis. Additionally, this framework is standards-based and can be expanded with additional use cases and can be implemented in additional systems, as it is an extensible source for descriptive metadata that applies across the firm.

2. Ontology and Knowledge Graph:

To enhance data connectivity, EK developed a domain-specific ontology and knowledge graph through net-new design, reuse of existing structures, and uplifts to meet semantic standards. This knowledge graph serves as a central repository for all risk-related data, capturing the complex relationships between data points and providing a holistic view of the risk landscape. The knowledge graph enables users to easily explore and understand key data relationships via a graphical user interface layer and acts as a central repository for risk data that can be published to and consumed from as an authoritative source of truth. This solution provides a foundation for advanced analytics, reporting, and decision-making while also accommodating future growth and evolving data needs.

3. Consumer-Grade Capabilities:

EK implemented a suite of consumer-grade capabilities designed to make interacting with data more intuitive by mirroring experiences end users have every day when utilizing tools such as Google and LinkedIn. Consumer-grade capabilities include an advanced search functionality that allows users to quickly find the information they need, as well as recommendation engines that proactively suggest relevant data and insights. EK also leveraged data analysis techniques to develop features like notification services, alerting users to critical changes or potential risks. These capabilities empower users to interact with data more effectively, improving productivity and decision-making.

4. Semantic Architecture Development:

EK collaborated with the firm to enhance the existing data management architecture. This involved strengthening connections between existing tools and technologies, implementing appropriate APIs, integrating visualization tools, and establishing robust change management capabilities. This approach ensures seamless integration and interoperability across the organization's knowledge management infrastructure, maximizing the value of their data assets and promoting a data-driven culture.

This multifaceted approach provided the firm with a robust and scalable solution to their information and knowledge management and semantic data challenges.

The EK Difference

With a team of experienced professionals spanning diverse disciplines—including taxonomy design, ontology development, knowledge graph implementation, semantic layer architecture, machine learning, and search—EK brought a holistic set of expertise to the engagement. This allowed for the development of a robust and scalable solution tailored to the firm's specific needs. EK's commitment to ongoing governance and maintenance ensured that the implemented solutions would continue to deliver value and adapt to evolving requirements, setting the firm up for long-term success.

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The Results

The firm has established a robust foundation for enhanced risk management. By shifting risk operations from application-centric to data-centric, the standardized terminology structure fosters consistency, accuracy and connected data usage across the organization. The addition of consumer-grade capabilities enhances user experience and streamlines access to critical insights through imbedded dynamic knowledge panels, search capabilities, reporting dashboards and downloads, and a flexible knowledge graph visualization layer. Furthermore, the development of a robust semantic layer architecture ensures seamless integration and interoperability across the organization's knowledge management infrastructure.

To date, the EK approach has collapsed the Risk dataset from over 20,000 free-text risk descriptions into a streamlined process with 1,100 standardized taxonomies for risks. Additionally, eight core taxonomies are being leveraged in two key applications with three more scheduled for adoption in an upcoming phase. The consumer-grade semantic capabilities are in production environments aiding in business processes. The knowledge graph connects 3+ applications with six more in progress and scoped as part of the next release. The ontology and knowledge graph provide a centralized, interconnected view of risk information (without the need for data migration), facilitating better analysis and decision-making. These advancements are empowering the firm to proactively identify, assess, and mitigate risks, improve regulatory reporting, and foster a more data-driven culture across the firm.