SmartLogic™

Case study

Transit authority provides a rich and robust user experience with Semantic AI

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Introduction

Driverless cars on city streets, commercial drones delivering packages, and computer-captained ships navigating the high seas – revolutionary changes that promise improvements in mobility, safety, efficiency, and convenience, but do not guarantee them.

The transportation sector is faced with multiple challenges. How the future unfolds depends on which technologies and services consumers and businesses embrace and how policy makers respond.

Transportation authorities must:

- Sharply curb greenhouse gas emissions to slow the rate of climate change
- Serve a growing population and cope with worsening highway congestion
- Maintain and upgrade a massive system of roads, bridges, ports, waterways, airports, and public transit and determine how to pay for those improvements
- Adapt to shifts in trade, energy, and funding sources that affect all modes of transportation

The answers to these and other questions are critically important as transportation plays a central role in society and the economy but is frequently taken for granted. One major metropolitan transit authority leveraged the Semantic AI capabilities of Semaphore to provide targeted and contextualized user search results of transit authority management documents to drive transparent and open government.

The Opportunity

Transit authority documents provide stakeholders and the public with information regarding the activities, decisions and general information of transit management. The authority used a public third-party database application to store their 3000+ board reports and related data (i.e. descriptions, attachments, notes, summaries, agendas). The reports are available to internal users and the public via the authority's website.

The user search experience resulted in noisy and ambiguous results. A simple keyword search returned "everything," which in most cases was more than users wanted and the information provided lacked context. Document metadata, which is used to provide context, is applied manually and is often incomplete, inconsistent or missing. Users are able to use the 3rd party tool to associate indexes to board reports, which can then be used for further search and refinement, however, the ability to find the relevant index is difficult.

The transit authority engaged with Smartlogic to use Semaphore's Semantic AI capabilities to:

- **Improve the user search experience** – eliminate noisy and ambiguous results. Provide targeted and contextualized documents, suggestions and links
- **Automate document tagging** so that content and indexes are completely, consistently and precisely tagged to drive refinement and user search results
- **Deploy applications to a cloud-based environment** that can integrate with existing applications and systems

Semaphore provides the tools and technologies they need to efficiently and effectively improve operations and the user experience.

How They Did It

They leveraged Semaphore's Knowledge Model Management (KMM) in the Cloud to build a model that contains the relevant concepts, topics, and subjects associated with transportation policy, funding and operations. The board document Indexes are also included in the model as concepts so they can be classified to facilitate search.

The transportation knowledge model is published and used by Semaphore Classification and Language Services (CLS) to automatically classify board documents and indexes. Semaphore Semantic Integration Services (SIS) creates high-speed indexes that are integrated with downstream applications and power the website.

CLS uses rulebases derived from the model and combines them with Natural Language Processing, machine learning and sophisticated semantic strategies to produce precise, complete and consistent metadata tags. The content and processing require some unique modelling and classification strategies to support accurate tagging:

- Date filtering using board member names – Create a Modelling and classification strategy to examine a board member name within a document, determine if he/she is a concept in the model and has a date range that coincides with the document publish date. For example, If Jane Doe served on the board from 1/1/11 to 1/1/12 and is mentioned in one or more documents published in that time period then she should be tagged. If however, she is mentioned in a document that is outside of the time period she served on the board then she should not be tagged.
- Date logic in the rule bases to identify terms in the model they want to deprecate and no longer use. However, if a report had been published ***before the terms were deprecated,*** the tags should be preserved for reclassification. The process looks at ***publishing*** date of the document, considers all possible classification tags, and then determines if the concept was depreciated ***before,*** on, or after the published date.
- Name extraction to identify people in the documents who are not present in the model. Examine each document with PERSON entity recognition to spot names of people (this is done in specific parts of the doc). Anything recognized as a person is compared to concepts already in the model. If it is not in the model, the name is then entered into a field for use in search filtering.

They worked with Smartlogic's Professional Services to develop an application that synchronizes (once each day and on-demand) the published Semantic Integration Services indexes to a 3rd-party application using a subset of concept preferred labels in the knowledge model. It additionally provides automatic notifications to additional downstream systems when complete to keep that system up-to-date and accurate.

The Semaphore Advantage

Today the organization is using a secure cloud-based model management and auto-classification platform that supports a rich and robust user search experience. Users no longer spend time manually classifying documents and see that precise, complete and consistent metadata tags drive relevant and contextual results. The platform supports existing operations and provides a seamless integration with existing 3rd-party applications and systems.

To learn how Semaphore, our Semantic AI platform, enables a rich and robust user experience, contact us at info@smartlogic.com .

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