# **Environment, Social, Governance (ESG)**

##### Session 3.2 (SEMANTiCS)

#### Time: Friday, September 22, 2023 - 10:30 to 12:00

#### Chair: Chair: Ute John, Managing Director, GfWM

## **Talks**

### Knowledge Graph based immersive ESG data visualization using metaphoric representations

As companies start to focus more on sustainable and responsible business practices in the light of Sustainability Development Goals set by the United Nations, proper documentation of reports, sustainability narratives and policies is therefore of importance. The ESG framework is a framework that enables companies to get insights into their environment, society and governance structures and assess their performance across these three components taking the aforementioned documentation as input.

ESG framework data is often stored in structured formats like spreadsheets and databases, or unstructured formats like text documents or visualizations. However, these formats have limitations. They lack a high-level summary of the ESG framework and fail to depict underlying links between its components, potentially hindering the discovery of meaningful relationships.

To overcome these challenges, we propose an immersive 3D metaphoric representation powered by a graph-based data model in Virtual Reality (VR). This solution incorporates the ESG framework taxonomy into the data model, allowing easy access to specific data points, efficient information retrieval, and extraction of ESG-related data elements. It facilitates data exploration, validation, and comprehensive analysis of ESG data.

Additionally, the immersive 3D metaphoric representation provides a comprehensive and accurate portrayal of data lineage at varying abstract levels within the ESG framework. Users can navigate and explore data lineage in an engaging and intuitive VR environment, enhancing their understanding of the ESG framework and its relationships.

| Sohail El Sabrouty | Ali Khalili |
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### Extracting ESG (Environment, Social, Governance) Knowledge from Global News using TextDistil

Presentation covers the technology used to automate knowledge extraction from Text. This novel technology blends large language models, semantic technology, rule systems, linguistic theory to achieve reliable performance. Specifically, the dicussion will focus on the integration with Dow Jones/Factiva news service, involving the extraction of facts buried in news articles, news letters and reports about the subject area of ESG (Environmental, Social and Governance) through the application of ESG taxonomy and ontology. Extracted facts are output as RDF triples and ingested into a Semantic Knowledge Graph. Knowledge Graph powers a verifiable and reliable search that is more a multi question answering interface. Users get to directly interrogate the text corpus (news corpus) to get answers that are assembled from snippets of text from multiple underlying articles.

| Prasad YalamanchiCEO at Lead Semantics |
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### MALENA – New IFC’s virtual analyst supporting ESG due diligence

The International Finance Corporation (or IFC) is a member of the World Bank Group that works with the private sector to create markets and jobs for people in developing countries. We strive to unlock new, innovative opportunities for the communities in which we work, but we are also accountable to the people that are affected by the projects we finance. We are accountable to our partners, clients, and communities as we aim to achieve our development objectives in an environmentally and socially responsible manner.

MALENA (Machine Learning ESG Analyst) is an Artificial Intelligence model developed by the International Finance Corporation (a member of the World Bank Group). MALENA uses Natural Language Processing techniques to identify environmental, social and governance (or ESG) risks and analyze its significance.

MALENA leverages long standing corpora of IFC ESG data and institutional knowledge to identify and assess ESG risks. By applying an in-house adapted Sentiment Analysis methodology, MALENA provides easy-to-access project and portfolio insights. MALENA complements investment project ESG due diligence by our Specialists and supports better-informed decision making.

IFC’s Malena project has the potential to revolutionize ESG investment in emerging markets by using a data-driven approach to attract investors to invest in emerging market capital markets. By accessing the MALENA AI emerging market investors can screen target companies using IFC’s ESG Standards as the risk management framework powered by AI. This is expected to increase the amount of investment in emerging market capital markets and, in doing so, advance ESG integration globally to achieve environmental, social and climate friendly outcomes.

The MALENA AI model was developed using supervised machine learning, an effective but time and data intensive approach that demands a lot of interaction between the “supervisors” (data analysts and data scientists) and the algorithm. Supervised machine learning requires the creation of large sets of labeled data to train the model to classify data and replicate outcomes on new datasets. These labeled datasets prepared by a team of ESG analysts support data scientists who train and finetune the NLP model. MALENA sentiment analysis required the development of a methodology that must be consistently applied to training data to then train the NLP model. We will discuss the methodology, rules and metrics used for creating a training dataset of 150,000+ ESG analyst-annotated data points for tense-based sentiment analysis and severity assessment which is derived from historical sustainability corpus data and expertise acquired by IFC experience of 20+ years conducting ESG due diligence for its investing projects.

| Carlos Arias |
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