Fraunhofer Institute for Intelligent
Analysis and Information Systems IAIS

VoCoReg Enterprise

Platform for collaborative development of vocabularies and beyond

Platform for collaborative development of vocabularies and beyond

VoCoReg Enterprise

Effective management of enterprise data provides additional value for customers and enterprises through real-time answers and performing analytical assays. Towards this goal, enterprises face a major obstacle of collaboratively creating models and interlinking the existing disconnected data sources. To this end, semantic vocabularies are needed as a backbone to structure data in a standardized and meaningful way. Applying this solution brings together domain experts and knowledge engineers to work collaboratively in order to develop such vocabularies in an efficient way. Fraunhofer IAIS developed »VoCoReg« which is inspired by agile software and content development. It is a registry and a tool that enables collaborative vocabulary development in a dynamically changing environment (GIT) via its various components such as Documentation, Visualization, SPARQL endpoint, and Evolution tracking. VoCoReg goes to great lengths to boost the efficiency and productivity of enterprises.

Get in touch

Let's discuss how vocabulary-based smart data integration can boost digitization in your organisation:
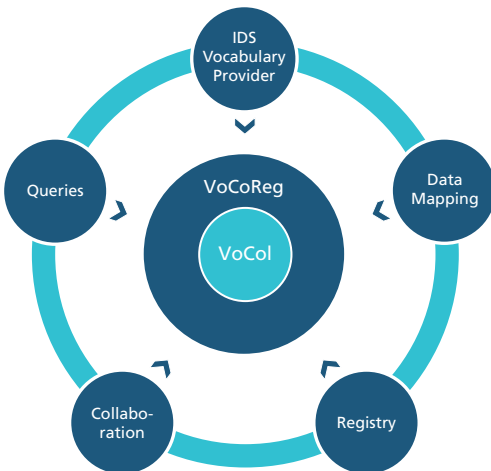
https://www.vocoreg.org/

Use Case

Answering questions such as »Is the economic model for repairing malfunctioning components of washing machines less than purchasing new ones?«, makes it possible for companies to act more efficiently and flexibly and opens up new ways of providing companies with further analytical questions. Linking existing data silos and developing vocabularies is the first step toward achieving this goal. VoCoReg provides seamless interfacing between humans and knowledge, easy access, explore, browse, reuse, and improve vocabularies in a collaborative fashion

Customizable solution

VoCoReg operates as an integrated ecosystem for collaborative vocabulary development, quality assurance and deployment. It provides a suite of tools and services, ranging from vocabulary documentation to visualization, term search and evolution tracking. VoCoReg allows enterprises to develop with ease comprehensive and smart information models that prevent the emergence of disparate data silos. These vocabularies are further evolved in a coherent collaborative work environment.
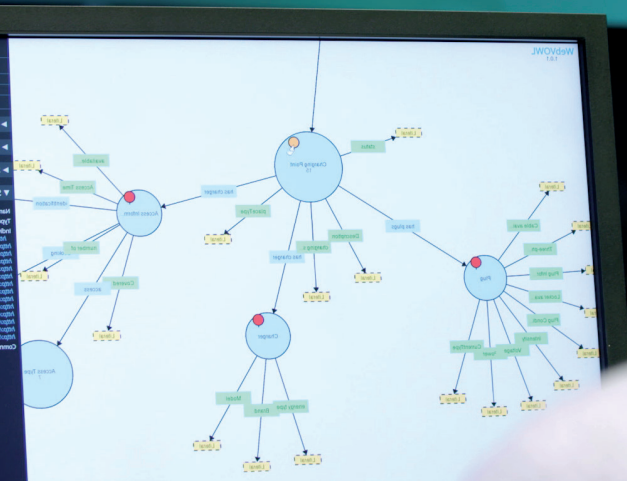
Boost digitization

Digitization increases data heterogeneity, formats, structures and schemas. It is of central importance for enterprises to link existing data silos and integrate and structure data in a machine-readable way i. e., vocabularies so it can be systematically processed. The development of vocabularies involved stakeholders with different backgrounds and levels of expertise. Fraunhofer IAIS offers VoCoReg as a vocabulary registry and an integrated environment for distributed development of vocabularies based on version control systems. Thus, facilitating strategic decision-making for enterprises and beyond. It accelerates digitization and leads to enhanced traceability throughout the supply and value chain.

Emerging companies challenges

Enterprises organize data in various formats and schemas to fulfill their needs. This leads to an increase in the volume of unstructured and semi-structured data; therefore, in such settings, it is challenging to:

- collaboratively creating efficient and coherent vocabularies

- performing analytics and decision-making on disconnected data silos

- understanding and managing data in a transparent way

Reference projetcs

- Licensing VOcabulary COllaborative development REGistry (VocoReg) to Robert Bosch GmbH

- International Data Spaces: Digital Sovereignty over Data (initiative with more than 100 industrial partners funded by the Federal Ministry of Education and Research). https://internationaldataspaces.org

- bIoTope – Building an IoT Open Innovation Ecosystem for Connected Smart Objects (research project funded by the European Commission). https://biotope-project.eu

- Individual research projects with different industrial partners in the automation, manufacturing and consumer electronics domain.

References

[1] L. Halilaj, N. Petersen, I. Grangel-González, Ch. Lange, S. Auer, G. Coskun, S. Lohmann: VoCol: An Integrated Environment to Support Version-Controlled Vocabulary Development. Proceedings of the 20th International Conference on Knowledge Engineering and Knowledge Management (EKAW 2016), pp. 303-319, LNAI vol. 10024, Springer, 2016.

[2] L. Halilaj, I. Grangel-González, G. Coskun, S. Lohmann, S. Auer: Git4Voc: Collaborative Vocabulary Development Based on Git. International Journal of Semantic Computing (IJSC), pp. 167-192, vol. 10, no. 2, 2016.

[3] A. Khiat, L. Halilaj, A. Hemid, S. Lohmann: VoColReg: A Registry for Supporting Distributed Ontology Development using Version Control Systems. 14th International Conference on Semantic Computing (ICSC 2020), pp. 393-399, IEEE, 2020.

[4] S. R. Bader, J. Pullmann, C. Mader, S. Tramp, C. Quix, A. W. Müller, H. Akyürek, M. Böckmann, B. T. Imbusch, J. Lipp, S. Geisler, C. Lange: The International Data Spaces Information Model - An Ontology for Sovereign Exchange of Digital Content. The Semantic Web - ISWC 2020 - 19th International Semantic Web Conference, Greece, pp. 393-399, 2020.

Contact

Abderrahmane Khiat
Team Lead Internet of Things (IoT)
Integration
Phone: +49 2241 14-2814
abderrahmane.khiat@iais.fraunhofer.de

Tasneem Tazeen Rashid
Research Associate
Phone: +49 2241 14-2858
tasneem.tazeen.rashid@iais.fraunhofer.de

Fraunhofer Institute for Intelligent
Analysis and Information Systems
Schloss Birlinghoven
53757 Sankt Augustin

www.iais.fraunhofer.de