

Risk Management System for Agricultural Production



Maria Curie Skłodowska University is the largest university in Eastern Poland, with a tradition of over 70 years of teaching excellence. From the beginning, it has been considered a leader in the education sector, providing students with a world-class education. Over the years, more than 210,000 students graduated from UMCS.

Maria Curie Skłodowska University is constantly developing through a variety of initiatives and activities and research projects. The University, in association with Cognitum, is about to offer a new curriculum focusing on semantic technologies for students studying information technology. Cognitum's Ontorion Server™ with Fluent Editor™ will form the key part of the technology infrastructure that will be used in the program.

The Goal

Agriculture is the sector of the economy, which is highly susceptible to the influence of natural factors (temperature, rainfall, sunshine, etc.), as well as economic factors. The main objective of the project was to reduce risk within the process of agricultural production by increasing farmers'

access to knowledge about natural processes and market forces. In order to accomplish this, researchers used Fluent Editor 2014 to create an ontology of risks in agricultural production using the example of hops cultivation, facilitated by Fluent Editor's powerful Controlled Natural Language (CNL) feature.

The Challenge

Farms are often deprived of the opportunity to adapt to rapidly changing economic and growing conditions. For this reason, it is extremely important to correctly interpret the relationship between natural conditions, markets, and farm production in order to best allocate resources and achieve the best economic results.



Customer

Maria Skłodowska Curie University
<http://www.umcs.pl/>

Challenge

Transform and manage large unstructured data from multiple sources

Solution

Controlled Natural Language supported ontology modeling environment

Benefits

Higher productivity and convenient environment for ontology modeling

Software

- Fluent Editor™ 2014
- Ontorion™ Server with SDK

More information:

www.cognitum.eu/semantics/

In order to provide the most comprehensive risk management system, researchers from Maria Curie Skłodowska University were faced with the challenge of transforming into structured data the vast amount of data concerning agricultural production and the factors that influence it. With data scattered across the web and various local databases, researchers needed to semantically analyze the data by identifying entities, parsing the data, extracting the core information, and classifying the results.

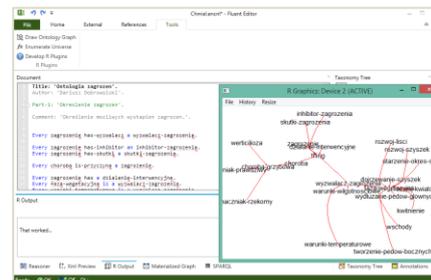
The Solution

Researchers from Maria Curie Skłodowska University used Fluent Editor 2014, a comprehensive tool developed by Cognitum for creating, editing and manipulating complex ontologies in Controlled Natural Language, to create an ontology of

risks that may occur during the process of commercial hops cultivation.

This approach dramatically simplifies access to the data, making it significantly more accessible and valuable for the end user.

Here is a small example of ontology risk and the relation between different factors in the process of hops cultivation.



The researchers at the University were impressed with the results. "The use of a Controlled Natural Language

(CNL) in the ontology creation seems to be a solution that can significantly simplify and speed up the creation of both the ontology and knowledge systems," says Dariusz Dobrowolski, researcher at Maria Curie Skłodowska University. "The results show that the use of Fluent Editor 2014 with CNL is a solution that, in the near future, may help to create and manipulate large ontologies and thereby will allow for easier access and exchange of knowledge."

Thanks to that, in the near future, we will be able to create a comprehensive and very powerful database that will warn the end user, in this case, the farmer, about the possibility of risks under specific conditions, for example, temperatures higher than [the specified value] + humidity higher than [the specified value] + diseases.

Learn more at: <http://www.cognitum.eu/semantics/solutions/>

About Maria Curie Skłodowska University

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About Cognitum

Cognitum is an innovative, technological company that delivers high-end IT services in the area of Software Development, Cloud Computing & Big Data solutions as well as Knowledge Management tools and Semantic Technologies. We help organizations retain, manage and leverage their information assets, even unstructured and legacy with tailored software solutions and our flagship platform – Ontorion™ Information Management System.

<http://www.cognitum.eu/>



Cognitum delivers high-end IT services in the area of **Cloud Computing & Big Data** solutions as well as **Knowledge Management** tools and **Semantic Technologies**. We seek our competitive advantage with constant innovation through own investment in R&D activities and cooperation with major academics within multiparty research projects.

We build our strong competences within several technological areas:

- Big Data processing and analysis
- Cloud Solutions and core Business Applications
- Knowledge Management and Semantic Web
- Ontology Engineering
- Heterogeneous Data Acquisition & Analysis
- Formal Systems
- Cloud Computing and Cloud Testing

We are present on several vertical markets (industry, telco, health, government, legal services, media) and deliver services to customers from many countries.

Our mission is to deliver high-end, scalable and future-ready solutions for data acquisition, storage, searching and processing. No matter how big or complex they are.

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Cognitum Sp. z o.o.

NIP: PL5213574584 (EU VAT code)
ul. Wał Miedzeszyński 630
03-994 Warszawa
Poland

<http://www.cognitum.eu/>
office@cognitum.eu

tel: +48 22 250 2541
fax: +48 22 250 2898

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