

CASE STUDY

SustainHub Applies RapidMiner Data Mining for Risk Analysis in Supply Chains

Customer

SustainHub

Location

Germany

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The Situation

Established in 2012, with the project lead headquartered in Stuttgart, Germany, SustainHub provides a systematic and efficient approach to collect compliance and sustainability data for products and manufacturing processes through the supply chain, and integrates these into the internal systems and processes of companies. This leads to better management of supply chain data and sustainability data, and improves the eco-efficiency performance of product design and production. SustainHub is a collaborative project within the 7th Framework Programme of the European Commission (Grant Agreement No: 283130, Topic ENV.2011.3.1.9-1, Eco-innovation). The consortium consists of 15 partners from seven countries, ranging from component suppliers to trade associations.

"There's a common problem among environmentally conscious European manufacturers and OEMs. They'll ask suppliers for product and substances information, including levels of hazardous materials that may have been used. But the suppliers often

don't provide this information readily, or may make mistakes or omissions in the information they provide," said Simon Fischer, SVP of Engineering at RapidMiner, which provides data mining and predictive analytics technology to build a platform that allows industrial partners and suppliers to share information. "One solution for these manufacturers is an online service for OEMs to collaborate with suppliers about restricted and declarable substances for regulatory compliance, including ROHS."

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The Solution

"We wanted to develop a complementary service, because it can be expensive and time consuming for OEMs and suppliers to test some materials more, and agree on what and how to do the testing. Using RapidMiner's data mining functionality, we can do risk analysis, checking for errors or omissions, flagging certain substance or products, and searching for alternatives," he said. "We also applied RapidMiner on an automobile re-manufacturer's supply chain data, after Fraunhofer IPA created a database schema searchable by substances, materials, BOMs (bills of materials), and regulations. This helped automobile manufacturers' that needed an easier way to work with the tire data."

For another part of the SustainHub project, Fischer and his team are working with iPoint, an environmental product compliance sustainability firm that helps its customers manage, track and report throughout the supply chain, from product concept to complete. The company provides communication tools that work between suppliers and material data management systems, improving companies' sustainability. iPoint and researchers from Ulm University managed the expansion of sustainability indicators, which were developed by the University of Graz and denksta. Those indicators are embedded into iPoint's platform for a SustainHub prototype. "iPoint integrates well with RapidMiner Server, which can automatically execute a process to perform plausibility checks—operations that verify if indicator data seems reasonable or probable. These plausibility checks analyze entered indicator data from the SustainHub platform, based on historically observed data, and calculate how plausible the input data is," he said.

For example, the SustainHub data mining platform facilitates the exchange of BOM data between manufacturers and suppliers. The configuration of substances is required to ensure that products meet regulatory requirements, so it's essential to check if BOM data, provided by the supplier or manufacturer, is plausible. If any signs of implausibility are found at the time of creation of bill of materials data, then RapidMiner can automatically alert users to verify the data, and prompt them to initiate further tests, if required. "We're using RapidMiner Server more and more, because it can automate data mining processes, execute them over time (as products and materials data changes), and provide easy to use web services for the SustainHub platform," said Fischer.