

# Lodz University of Technology Student Partners with WhoisXML API to Create a DNS Filtering System

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As part of our continuous call for academic partnerships, we recently collaborated with Damian Kania, a student at Lodz University of Technology in Poland. We are honored to be a significant part of his engineering studies project, titled “A System Supporting Home User Protection against Unsafe Domains.”

## The Challenge: Developing an Economical and Low-Maintenance System for Home Users

Internet access has made everyone vulnerable to cyber attacks and scams. While large businesses can afford to invest in cybersecurity solutions, most home users don't have the same ability. In addition, the average Internet user doesn't usually have basic cybersecurity training and may easily get lured into visiting fake and malicious websites.

Analyzing domain security is a highly technical and data-intensive process that requires massive processing power, storage, and, therefore, development cost. As such, DNS filtering systems designed for corporations and large organizations are mostly beyond the reach of regular Internet users.

Kania's project aimed to create a DNS filtering system that is cheaper to implement and maintain than commercial-grade solutions. But the data processing and analysis required to make the project work could overload his computer.

On the one hand, purchasing a more powerful computer would also entail additional costs, forfeiting the goal of providing an affordable DNS filtering system. Kania thus had to find a balance between cost savings and data accuracy.

## **The Solution: External APIs with Standardized Results**

Kania integrated Domain Reputation API and Web Categorization API into his custom system that used the JSON format. Relying on these tools saved him time and made system implementation and maintenance easy and cost-effective.

With the help of Web Categorization API, he didn't have to make his system analyze the content and categorize thousands or millions of websites. "Relying on Web Categorization API for this process had a very positive effect on the system's function. Another advantage is the ability to configure the acceptable confidence of the results," Kania said.

The system also heavily relied on Domain Reputation API for domain security analysis. The tool became the deciding factor in blocking or allowing a domain not initially found on public lists of unsafe domains into networks.

Kania said, "The main advantage of Domain Reputation API is the large number of tests it performs on domains. They provide a lot of useful information, also summarized in a single value—the reputation score. Of course, the score is not the only data point used. The results contain detailed information on which the reputation score value was based. Those are also useful for later analysis of the logs the system collects."

## **Affordable Security for Home Users**

Kania aimed to develop a DNS filtering system specifically for home users with a limited budget and little Internet safety knowledge. He also wanted to allow users to block websites under selected categories. For example, parents can choose to block gambling websites at home. He said, “The project primarily aimed to ensure the safe and peaceful use of the Internet for home users and protect their privacy and personal data.”

The computer science student’s goal aligns with WhoisXML API’s mission to help make the Internet a safer place. As our CEO Jonathan Zhang says, “We fully support projects like this by providing accurate and comprehensive threat data and analytics in simplified formats. With threat actors finding more ingenious ways to infiltrate not only organizations but our homes, high-quality and accurate DNS filtering systems that are easy to implement and maintain are urgently needed.”

***We are constantly on the lookout for joint research projects and investigations. Please feel free to [contact us](#) for inquiries.***