Sirris Internship (ULB)

Design and realization of a proof-of-concept environment for secure gathering and analysis of industrial IoT systems data

1. Internship description

Many companies provide products (typically machines) that are deployed at their customers' premises. Traditionally, once these products were in production, the link between the product builder companies and their products was broken, and companies could not easily understand how their products were actually operating and performing in the field. Recent advances in sensing and communication technologies are making it increasingly possible to instrument machines and remotely gather operational data from these machines in a continuous way.

In this context, Sirris is investigating how to support companies in the optimal use of sensing and communication technologies in order to capture qualitative information from products in the field on the one hand, and to derive actionable insights in view of improving product and service offering on the other hand. This encompasses the study of industrial condition monitoring solutions specifically targeting sensing approaches, secure communication and data acquisition aspects, overall architecture design, in-product intelligence, etc.

During this internship you will focus on designing and building a secure, user-friendly and customizable proof-of-concept environment enabling to intelligently gather and analyze data from different sensors (e.g. temperature, accelerometer, pressure, vibration, humidity, …) installed on an IoT system and present relevant insights extracted from that data. The first phase of the internship will focus on the design of the proof-of-concept environment, including the security aspects that could be considered to secure the communication between the proof-of-concept environment and the IoT system. The identification of the authentication, authorization and sensor data protection mechanisms are also part of this first phase of the internship. The second phase will mainly focus on exploring and analyzing gathered data and on extracting from that data relevant insights. Finally, the third phase will consist in bringing the results of the two previous phases together into the envisioned environment.

2. Practical Details

Prior knowledge related to sensor programming is not required. We assume the student has basic knowledge about security principles and data analysis techniques.

The internship is not paid and takes place in Sirris premises in Brussels (Bluepoint, Boulevard A. Reyers 80, 1030 Brussels) or at another agreed working facility. Sirris has an informal and social working environment with flexible office hours. English will be the main working language.

Sirris is a non-profit and industry-driven knowledge center founded by Agoria, the federation of the Belgian technology industry. Sirris helps Belgian companies in the implementation of technological innovations, by providing companies with technological advice, by supporting companies in the definition and realization of innovation projects,

and by setting up and participating in European R&D projects. Sirris is active in several domains, among which Software Engineering and ICT.

3. Contact information

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