

Thesis subject: Secure Internet of Everything (IoE) architecture for Systems of Systems

PhD Advisors:

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Context of the thesis:

The thesis is part of the project activities of the Laboratory of Excellence (LABEX) at the Université de Technologie de Compiègne (UTC) in France on the Control of Technological Systems of Systems (MS2T) (www.labexms2t.fr). It is more specifically part of the Research topic 3: Optimized design of technological SoSs.

PhD thesis description:

Internet of Things (IoT) emerged as a new paradigm in which the network connects several physical objects that have the ability to collect and transfer/exchange data over a network and collaborate in order to perform high level tasks without requiring human-to-human or human-to-computer interaction. These objects can be engaged in complex relationships including the composition and collaboration with other independent and heterogeneous systems in order to provide new functionalities, thus leading to the so-called systems-of-systems (SoS). As things add capabilities like context awareness, increased processing power, and energy independence, and as more people and new types of information are connected, IoT becomes an Internet of Everything (IoE).

In the context of integrating IoE-based systems in order to compose complex, large-scale SoS, the goal of this thesis is twofold. On the one hand, the research work will be devoted to the study the IoE based SoS key challenges and the development of secure IoE based systems architecture. This architecture, which includes heterogeneous objects, will consider evolutionary development in order to take into consideration situations where the SoS may evolve over time to respond to changing characteristics on its environment or on the constituent systems. On the other hand, the research work will be devoted to the implementation of the IoE architecture for a specific application domain. In particular, this part will be devoted to the development of an IoE based SoS which will be used in the context of car driver supervision.

Candidate's profile:

Master 2 or engineer in informatic, knowledge in networks or/and in security

Documents required to apply:

Send to Abdelmadjid.bouabdallah@hds.utc.fr :

- Curriculum vitae
- Motivation letter
- At least two references and/or recommendation letters
- A statement of research experience and interests

Location:

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