

## Sujet de stage au laboratoire Heudiasyc UMR 7253 :

Titre/Title	Energy efficient network softwarization for Internet of Things
Encadrant(s) / Supervisor(s)	Hicham Lakhlef
Descriptif du sujet/ Project description	<p>The diversity and heterogeneity of Internet of Things data and devices compared to traditional networks in addition to the need of security, privacy, storage and processing means that IoT networks require dynamic solutions for management, configuration, and flow scheduling solutions. Network softwarization in the form of Software Defined Networks (SDN) and Network Function Virtualization (NFV) have emerged in order to overcome several challenges.</p> <p>Networks softwarization consists in transforming telecommunication processing to a software-based environment. It is based on SDN which separates the control plane of the network and the data plane and thus separates the control from the forwarding in the network. The IoT network devices are employed for forwarding the data while the network controllers define the forwarding policies for the devices. These controllers can be organized in a centralized manner or in a hierarchical manner in order to prevent the controller from becoming a single point of failure and enhance the system's fault tolerance. SDN integrated IoT can offer smart routing and load balancing as well as intelligent network traffic management and analysis. SDN can also provide a global view of IoT networks and improve the scalability and security of the networks. Network softwarization is also based on NFV which decouples the functions of network from the network hardware and runs it as virtual machines on containers. Network softwarization schemes such as NFV aim to replace energy consuming network hardware and improve the performances and capabilities of IoT systems. However, it is important to mention that these network functions are often run on servers which are the predominant energy consumers.</p> <p>The objective of this internship is to study how does network softwarization affect the overall energy consumption of IoT networks and how can we reduce and optimize its energy consumption.</p>
Pré-requis	
Possibilité de poursuite en thèse/ Possibility of continuing in PhD	Yes