Multi-cluster Migration of MEC Applications

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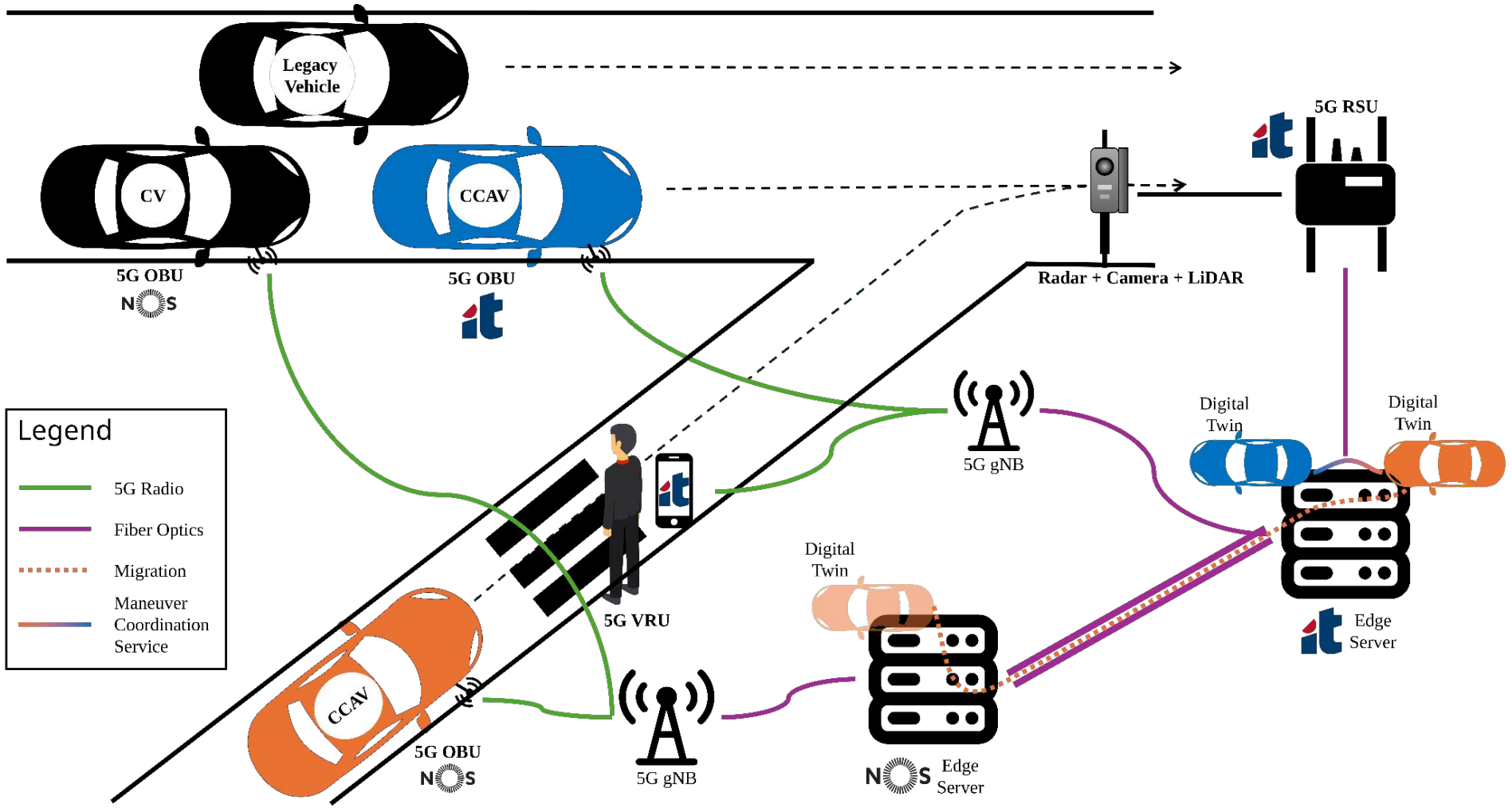
Summary: Nowadays, more and more devices are connected to the internet, generating a lot of data and requiring constant and fast communication with remote servers. This data is usually processed far from the user that consumes it, leading to high latency and low-efficiency problems. **Multi-access Edge Computing (MEC)** aims to improve this by bringing **cloud-like** computation closer to the network's edge. To achieve this, it is being used **Software Defined Networks (SDN)** and **Network Functions Virtualization (NFV)** to push the **development of MEC** as these technologies offer many **reusable features** that can do **MEC workloads**.

The main goal of this work is to introduce new functionalities that improve the **integration of NFV and MEC**, specifically enabling the automatic **migration of MEC applications** between different **MEC clusters**.

Why is this relevant?



Work done / results

- Started analyzing the state of the art and standards on **MEC**, **NFV**, **orchestration**, **management**, **migration** and **5G**.

- Studied the architecture and functioning of **Open Source MANO (OSM)** testing some of its features, more precisely working with **VIMs (Virtual Infrastructure Managers)**, **kubernetes** clusters and **Helm** repositories, and creating and instantiating **NSs (Network Services)**, **VNFs (Virtual Network Functions)** and **CNFs (Cloud-Native Functions)**.

- Contributed to some projects by creating some **CNFs** to instantiate applications using **OSM**.

- Developed and deployed the **Portfolio of Activities** on GitHub Pages (https://magalhaesd77.github.io/master-thesis-portfolio/).

Future work / challenges

- Continue the analysis of the state of the art and standards on MEC.
- Get latency metric from a **5G NEF (Network Exposure Function) Emulator** to ensure more realistic migration decisions and results, and to ensure that the platform would work in a real-world scenario.
- Start working with **MEC Applications** and the **MEC Application Orchestrator (MEAO)** to understand what is done, needs to be improved and how can the Multi-Cluster migration solution be integrated.