

## Experiment #10

# Remote Management of Wildfire Sprinklers [ADAI]

### Overview and Objectives

The **Association for the Development of Industrial Aerodynamics (ADAI)** is a private, non-profit organization headquartered in Coimbra. Affiliated with the Department of Mechanical Engineering at the Faculty of Science and Technology of the University of Coimbra, ADAI promotes a range of activities including research, development, training, industry monitoring, and service provision. One of its primary goals is to foster both fundamental and applied research aimed at enhancing business competitiveness. This is achieved through initiatives focused on energy efficiency and safety within industrial companies, forestry-based enterprises, fire prevention and firefighting organizations, and personal protective equipment manufacturers. Given ADAI's connection to the forestry environment and its focus on developing technologies to protect forests, particularly from wildfires, they have developed a set of sprinklers, as shown in the Figure 1.

Onesource had the opportunity to integrate these sprinklers into the 5G-EPICENTRE platform via the Mobitrust platform network application integration elements (demonstrated by the diagram shown in Figure 2), leveraging the ALB testbed. This integration made it possible to activate/deactivate and monitor sprinklers remotely through the Mobitrust dashboard, using a 5G mobile network. The goal of this integration is to prevent lives from being put at risk by eliminating the need to travel to fire zones, which is avoided by performing this process remotely.



Figure 1: ADAI Sprinklers

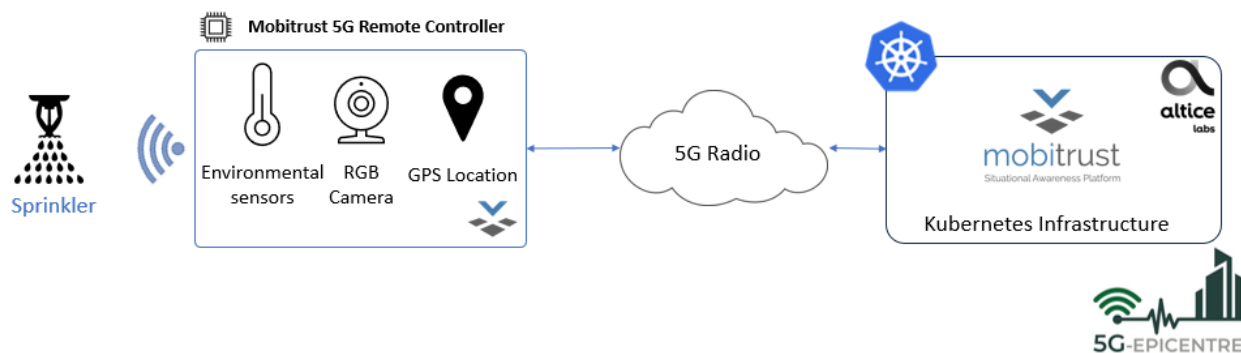


Figure 2: Sprinklers' integration with 5G-EPICENTRE



To enable remote activation, ADAI's devices were integrated with a OneSource 5G-enabled device (Figure 3) and incorporated into the Mobitrust platform. This device is installed at the location of the sprinklers and enables real-time video transmission with remote PTZ camera control and the activation/deactivation of the sprinklers.



Figure 3: 5G enabled device for sprinklers monitoring and management

## Testbed Readiness and Deployment

For the integration with the ADAI sprinklers system, a dedicated deployment of the Mobitrust application was performed at the Altice Labs testbed facility, leveraging the 5G-EPICENTRE Portal (see Figure 4). Since the sprinklers system are physically located at ADAI's forest fires laboratory, at Lousã mountain, the ALTICE 5G mobile network was leveraged.

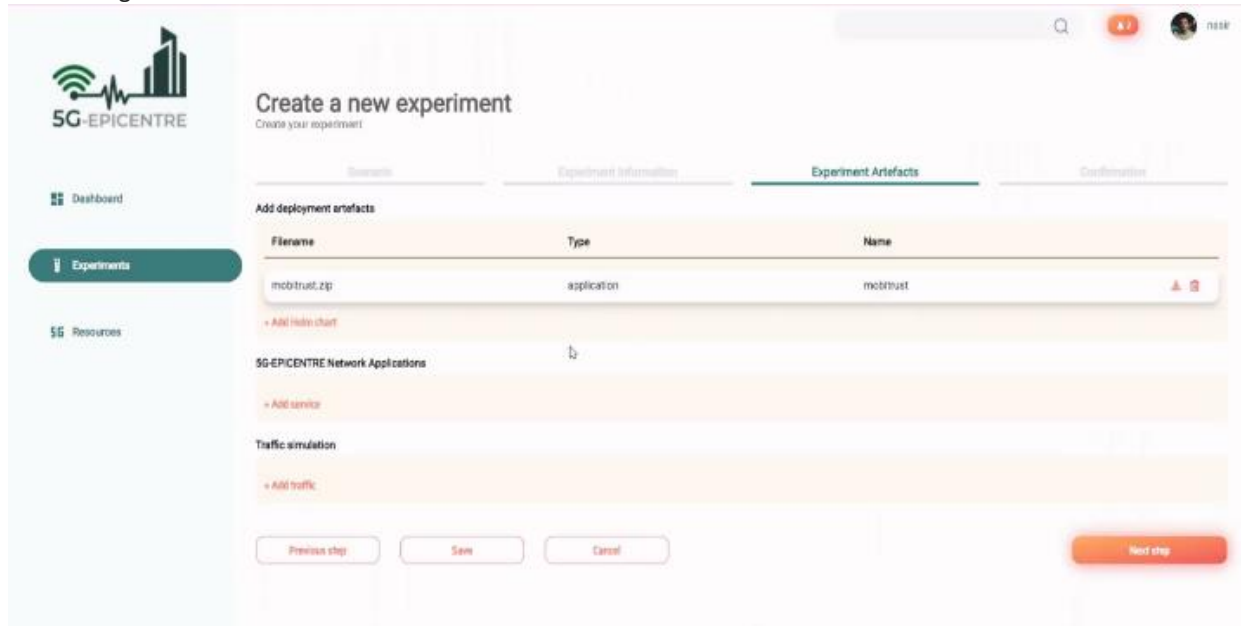


Figure 4: ADAI sprinklers integration: customized Mobitrust platform deployment

## Experiment Execution and Results

To carry out this experiment and analyse the results, several tests were performed at ADAI's laboratories in Lousã. As depicted in Figure 5, the sprinklers were controlled by the Mobitrust dashboard using a tablet.

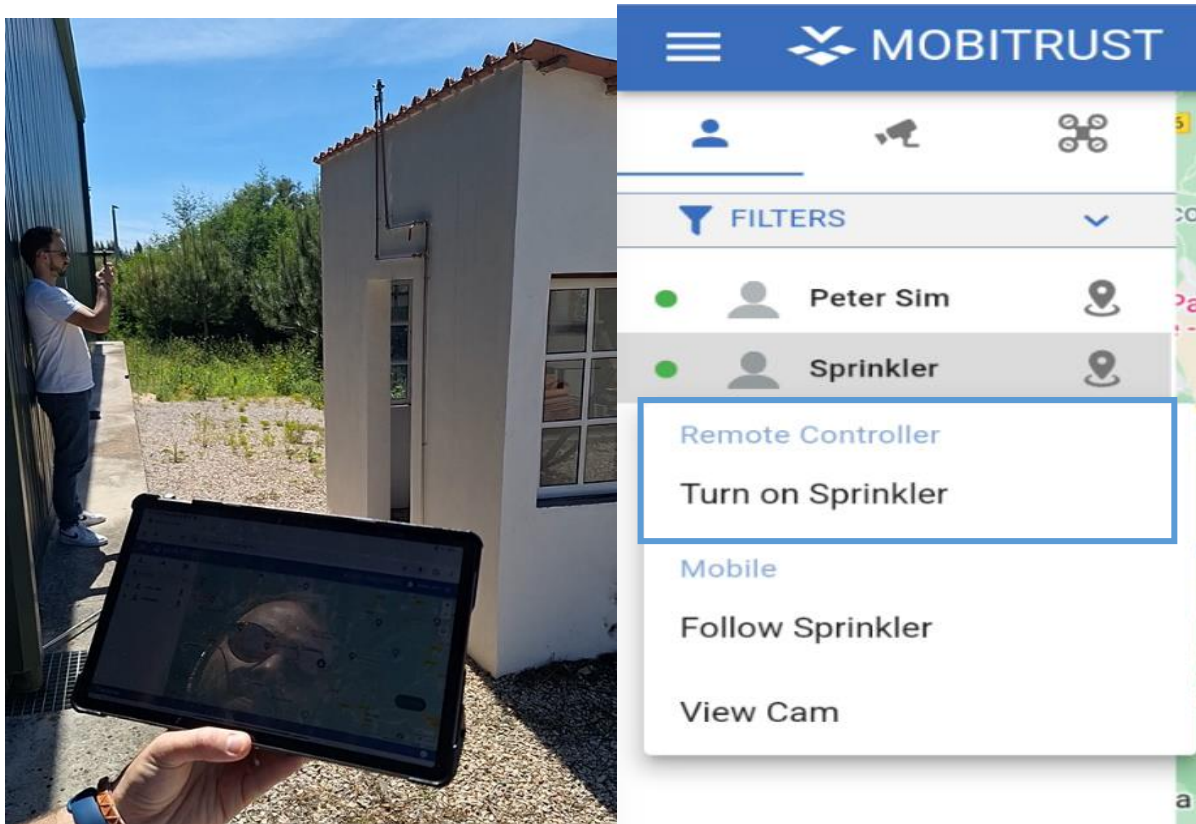


Figure 5: ADAI's Lousã Lab with remote control of sprinkler

## Overall evaluation

Based on the objective of remotely controlling a set of sprinklers using the 5G mobile communications and the 5G-EPICENTRE platform, it is possible to affirm that this goal was successfully achieved, resulting in a viable solution for wildfire prevention and combat. The control of the sprinklers via the 5G-enabled device and the Mobitrust dashboard demonstrates the capability and flexibility of 5G-EPICENTRE technologies to assist in the most adverse conditions, such as in wildfire prevention and combat. Remote control of the sprinklers not only allows a faster response time in fighting fires, but also reduces the need for personnel to travel to the site to activate the sprinklers, thereby avoiding putting themselves at risk.

For more information, do not hesitate to visit the website <https://www.5gepicentre.eu/> and/or contact the 5G-EPICENTRE team.

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