

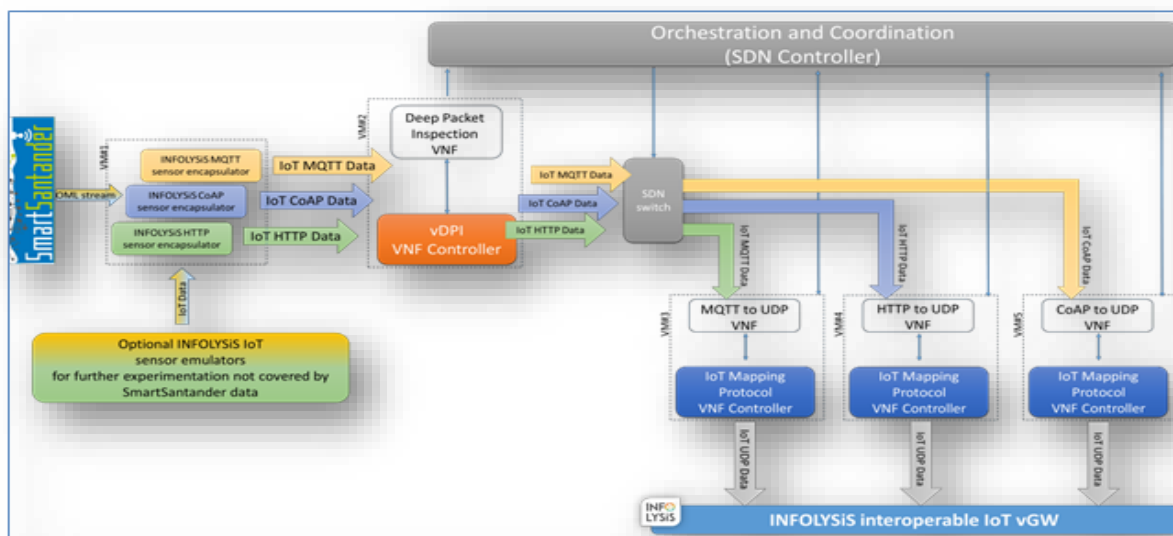
## EXPERIMENT OVERVIEW

ANGEL experiment successfully addresses the IoT interoperability challenge within the framework of 5G networks through the agility brought by the combination of virtualization and SDN, which allows network services to be automatically deployed and programmed, along with a virtual Deep Packet Inspection (vDPI) function for automating the data protocol detection process.

ANGEL experiment is deployed on top of OFELIA/i2CAT island and retrieves for the execution of its experiments real IoT data from SmartSantander Data Repository in order to validate the INFOLYSIS interoperable IoT virtual GW and the virtual Deep Packet Inspection (vDPI) function, while also testing the operational efficiency of each IoT mapping function for different data protocols.

The main contribution of ANGEL experiment to Fed4FIRE+ project is the introduction of SDN-based network self-organisation, which is capable of applying a self-configuration process at newly deployed IoT nodes (sensors) by automatically applying the necessary installation procedures (with the assistance of the appropriate SDN-based traffic steering) in order to achieve the necessary IoT interoperability for system operation.

## EXPERIMENT SETUP



## EXPERIMENT RESULTS

ANGEL experiment successfully met and documented the following results:

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- ✓ Automatic sensing by the vDPI of CoAP, MQTT, HTTP IoT protocols
- ✓ Success rate >95% in the SDN-based traffic steering to mapping VNFs
- ✓ Mapping of each IoT data flow to UDP data protocol with zero packet loss
- ✓ Successful self-organization of the ANGEL platform for the 4 different protocol combinations (CoAP-MQTT, CoAP-HTTP, MQTT-HTTP, CoAP-MQTT-HTTP)
- ✓ Design and development of an SDN-app suitable for providing an automatic way of IoT interoperability for 3 different data protocols
- ✓ Provision of SDN-app capable of adapting on the fly, once new IoT data flows have been detected with a delay <2 sec
- ✓ Successful service chaining of each mapping function and the vDPI of the ANGEL platform for the 4 different protocol combinations.