Flexity and the Digital meter

What is Flexity:

Flexity is one of the leading Use Cases within the IO.Energy Ecosystem[1] and is a collaboration of several well-known players in the energy market (ENGIE, Fluvius, CGI and Elia) strengthened with some promising start-ups that offer new groundbreaking digital services (Jedlix, TIKO, Voltalis) to the end-consumer. Flexity's ambitions are twofold:

- Test which household assets (EV, boilers) can technically be operated and investigate what value can be offered (reduction in energy bill) to the end-consumer (ex. via ToU tariffs).
- Test how the digital meter facilitates the settlement of residential flexibility in the balancing market.

Why have/use a digital meter?

Flexity aimed to investigate if this digital meter can be used to settle different services offered on individual assets (EV, boiler, heat pump). Therefore, we need to take a closer look at two user ports of the digital meter:

- **P1 port:** user port for consumption information providing basic measurement on a **1-second basis**. (ex. instant active power generated, voltage and current).
- **S1 port:** user port designed to provide access to detailed information (voltage, current) at a **high frequency** up to 2-4 kHz data. This allows a CEMS[2] to make advanced calculations allowing for detailed feedback and control.

1. an Ecosystem built by the system operators to facilitate the development of new energy services by market parties to drive the power system towards consumer centricity
2. Central Energy Management System

Smart meter of Fluvius

What did we test?

One of Flexity's first objectives was to find a **hardware device** that **extracts data** from both the P1 and S1 port of the digital meter and **publishes** this data continuously to the **IO. Platform**. Such device is called a **dongle** and was developed together with Greenwatch. Flexity developed and tested a **prototype dongle** that collects, processes and publishes measurement data (both P1 and S1) from the digital meter.

Our results after several intensive development workshops are:

What did we test?	P1-port	S1 data	Result
Physical connection between both user ports and the dongle	V	V	• The dongle device easily connects with both user ports (P1 and S1 port) of the digital meter with a DIN connector cable
The **collection** and **processing** of measurement data by the dongle device	V	X	• **P1 Port:** Collection and processing of raw P1 data successful • **S1 Port:** Processing the S1 raw data locally (i.e. compression) was not successful due to the very high volume of data (2-4 kHz data). A robust local processing would most likely require advanced and expensive electronics (out of scope of Flexity)
Publishing of measurement data to the **IO. Platform**	V	X	• **P1 Port:** Publishing of P1 (1" basis) to IO. Platform successful • **S1 Port:** Publishing of S1 to IO. Platform not successful, it would require local processing to reduce the overall communication cost

Conclusion and moving forward

Flexity successfully developed a **dongle prototype** to collect data from **the P1 port** of the digital meter and publish it to IO. Platform. Two end-consumers were connected during the sandboxing phase, enabling Flexity to investigate how P1 data can be used to put in place a cross-checking mechanism. With respect to the S1 data, Flexity observed/ witnessed **substantial challenges** (both economically and technically) related to the collection and publication primarily linked to the excessive amount of data.

JEDLIX CGI ENGIE fluvius. Voltalis tiko