

CLF ENERGY SUMMIT 2023

Deep Decarbonization



Unleash the Power of Flexibility with Shapeshifter

A Universal Flex Trading Protocol



Robben Riksen, Product Manager
GOPACS



Daniel Wich, Python Developer
Enexis



Introduction



Robben Riksen

Product Manager GOPACS – The grid operator platform
for congestion solutions in the Netherlands



Daniel Wich

ENEXIS – Python Developer
Innovations: InterFlex (a Horizon 2020 Project) - 2017 - 2019
Products: Enexis - Grid Management System (GMS) - 2019 - Now



Trends in the Energy Transition

- ✓ Centralized to decentralized
- ✓ Increased simultaneity
- ✓ Increasing electrification

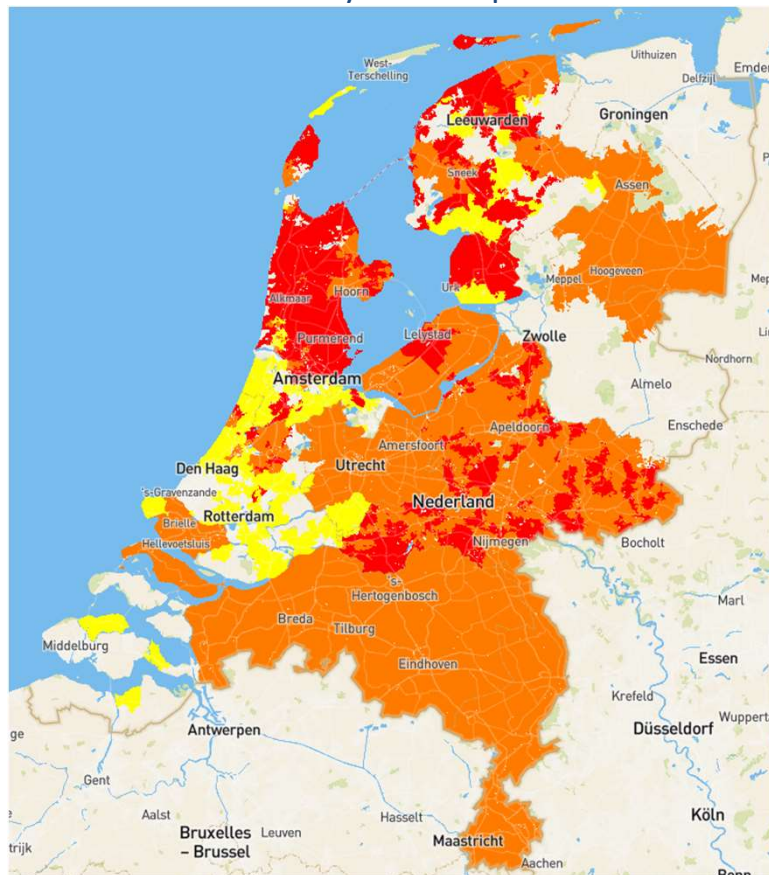


The Dutch grid is at its limits

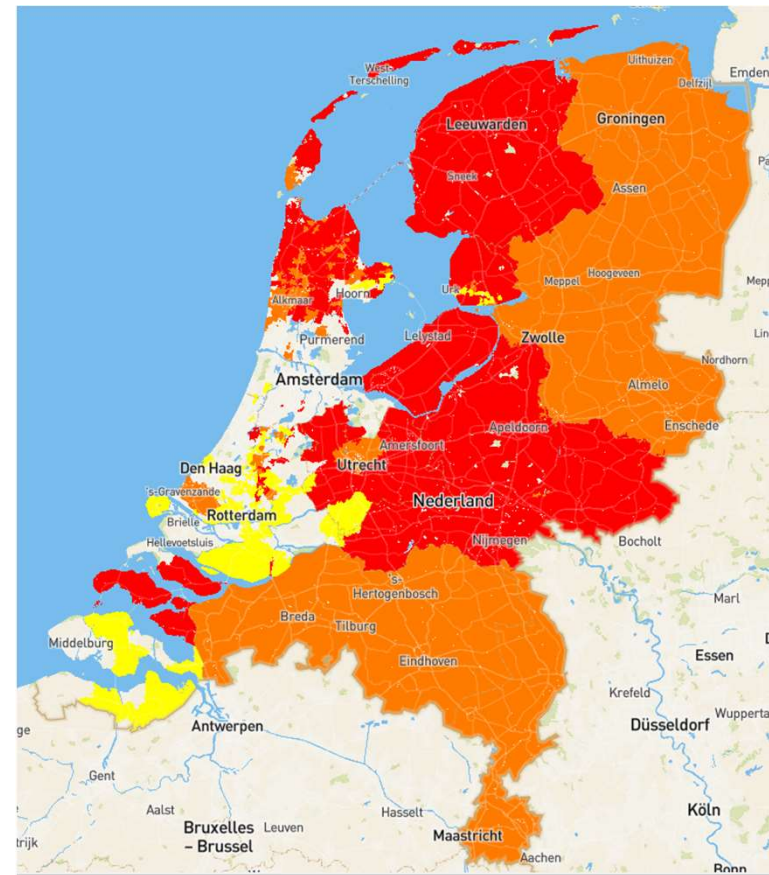
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Electricity Consumption



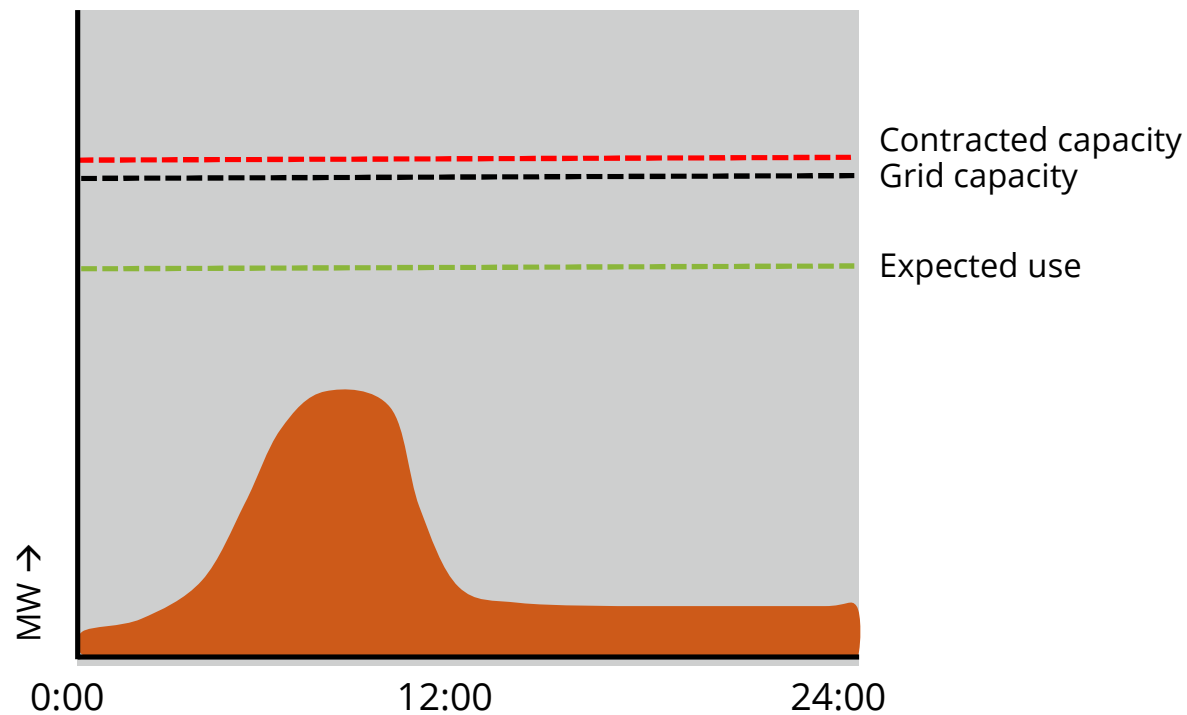
Electricity Production



Source: <https://capaciteitskaart.netbeheernederland.nl>, May 26th 2023

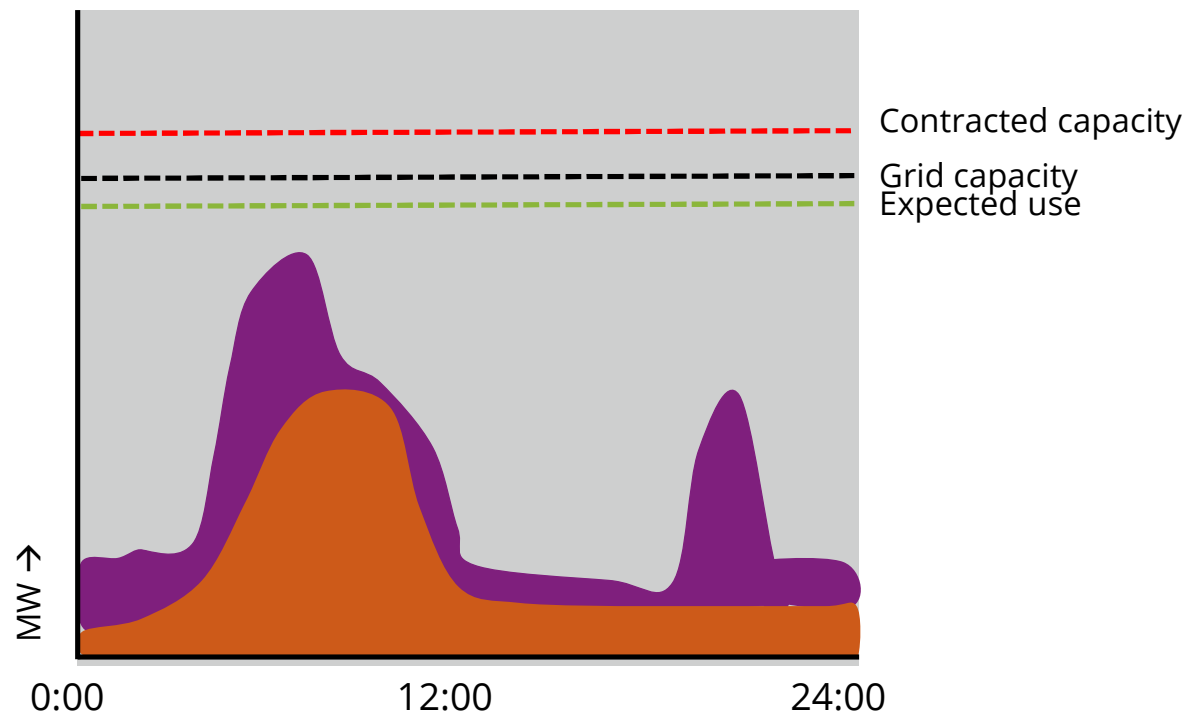
Flex optimizes grid utilization

Daily grid load



Flex optimizes grid utilization

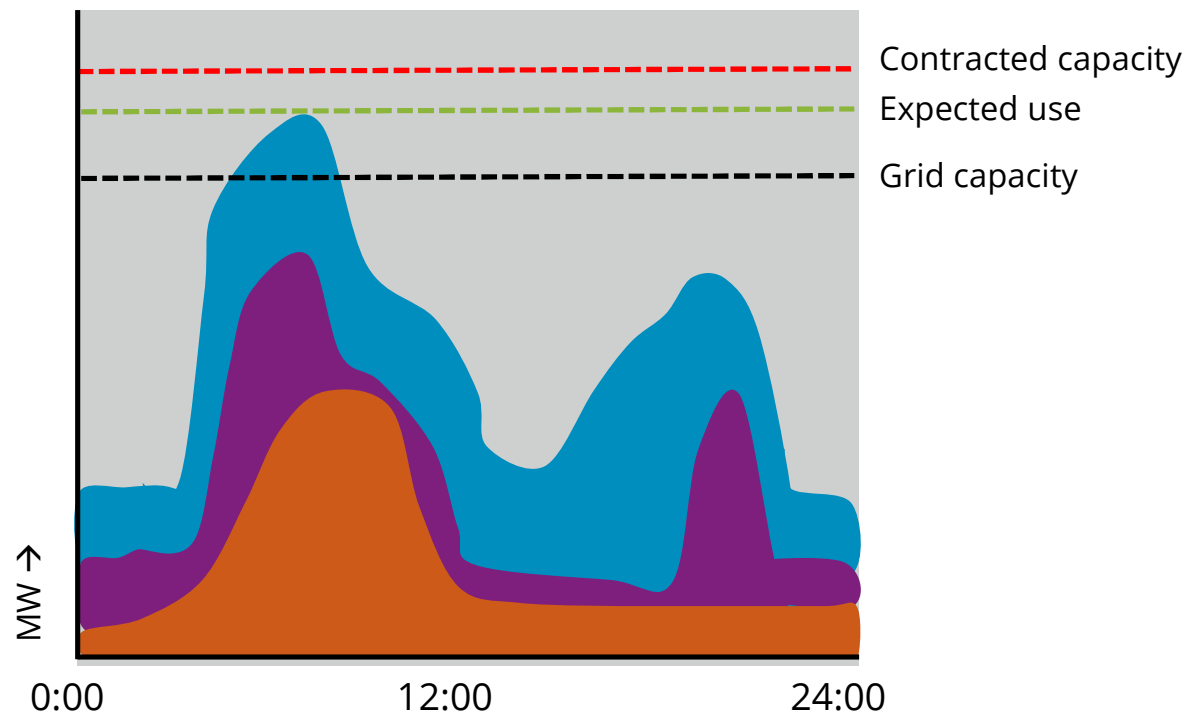
Daily grid load



Flex optimizes grid utilization

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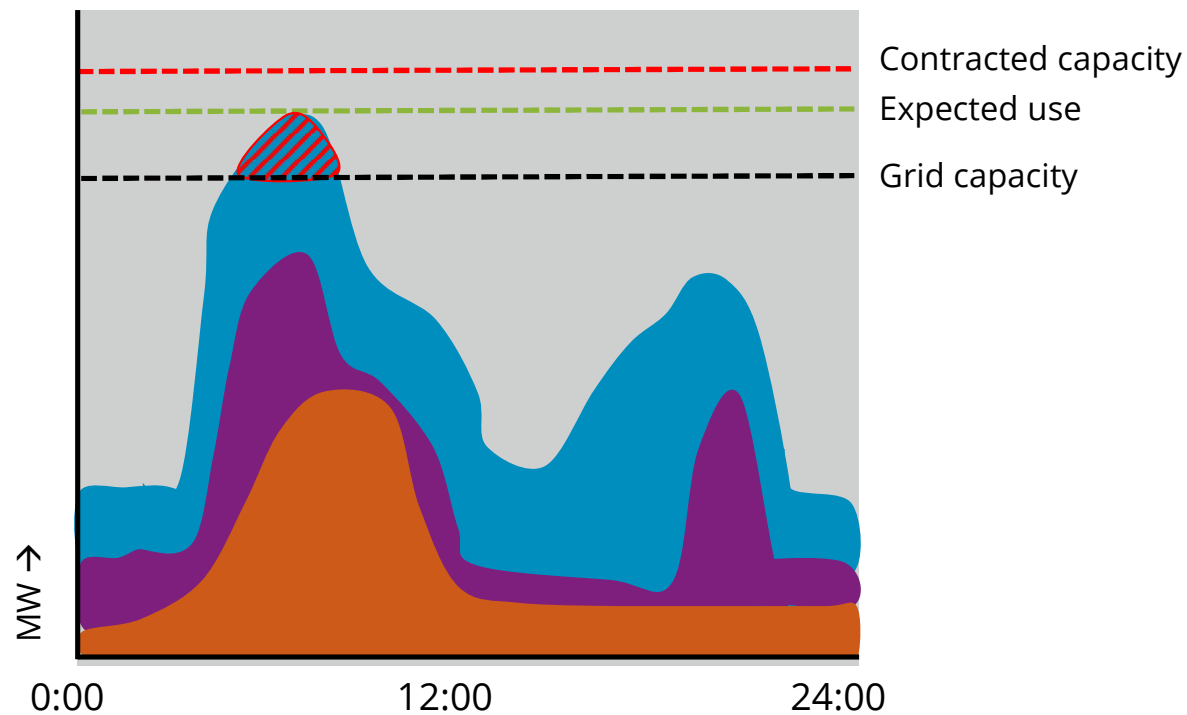
Daily grid load



Flex optimizes grid utilization

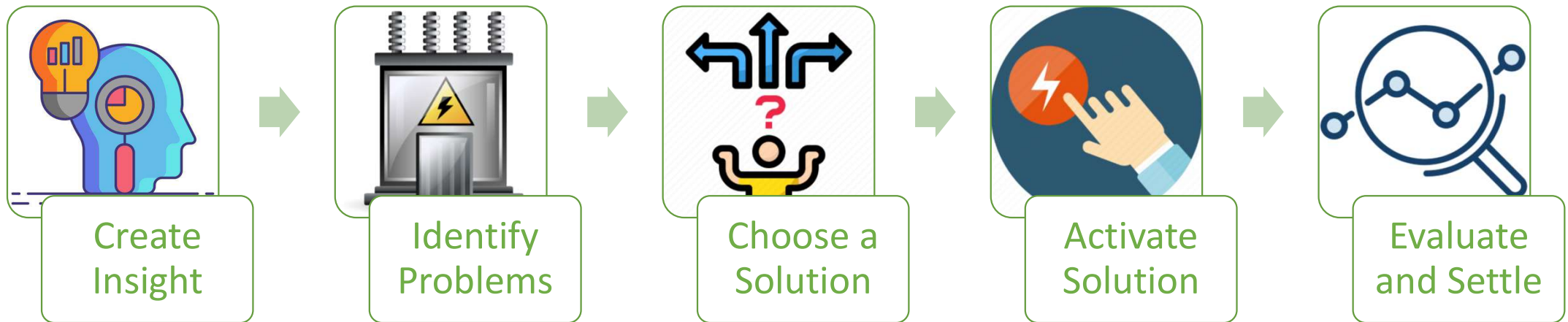
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Daily grid load



Congestion management

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Introducing Shapeshifter

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Shapeshifter implements the [Universal Smart Energy Framework](#) for flexibility forecasting, offering, ordering, and settlement processes

USEF was founded in 2014 with the common goal of developing a smart energy system that benefits all participants

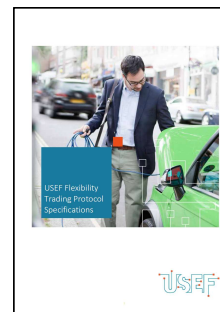


USEF has been put into practice by Dutch DSO's. And in other European countries USEF has also been used and/or implemented as a reference



Update on framework in January 2020 based on learning experiences from implementations and in collaboration with DSO's and aggregators.

USEF Flex Trading Protocol (UFTP) is a subset of USEF and specifically aimed at flexible trading between the Aggregator and DSO or TSO.

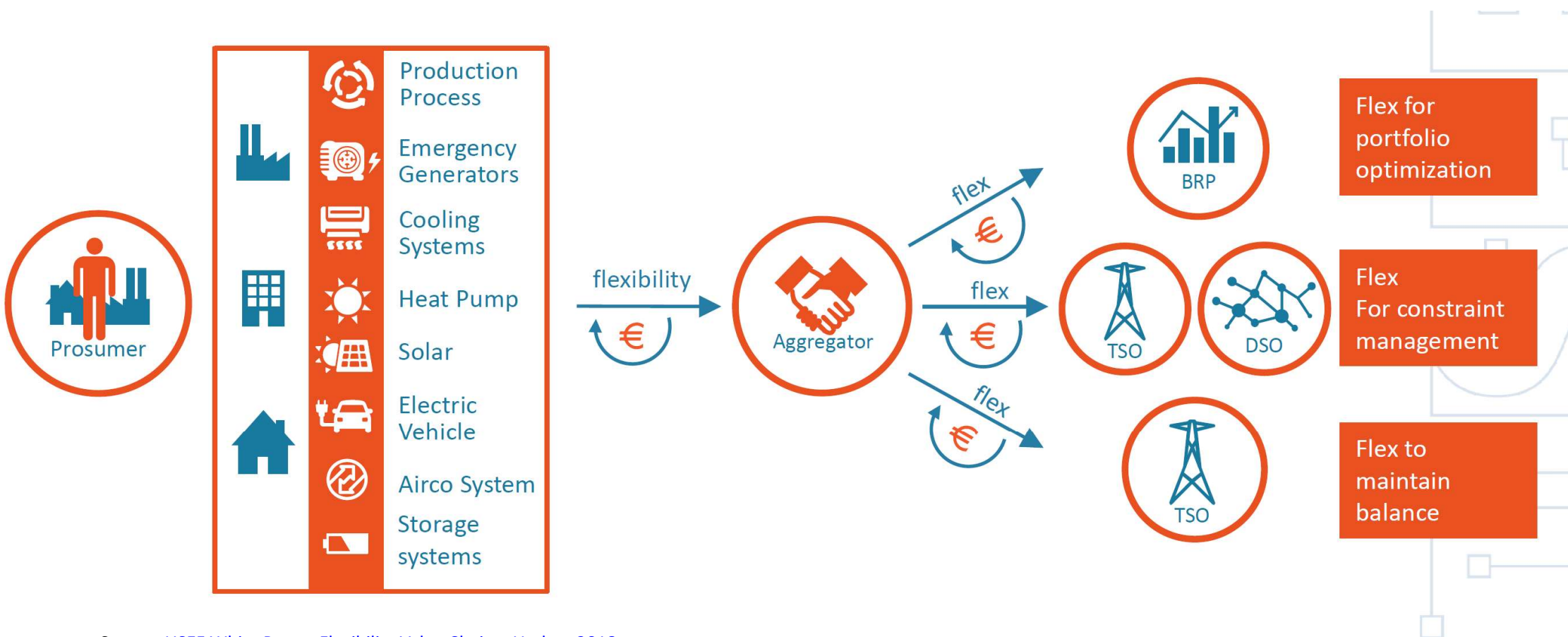


In 2021 UFTP is part of the Linux Foundation Energy Flexibility Suite as Shapeshifter.

To increase community involvement, Shapeshifter will be present at the LFE Summit in June 2023



Flexibility value chain



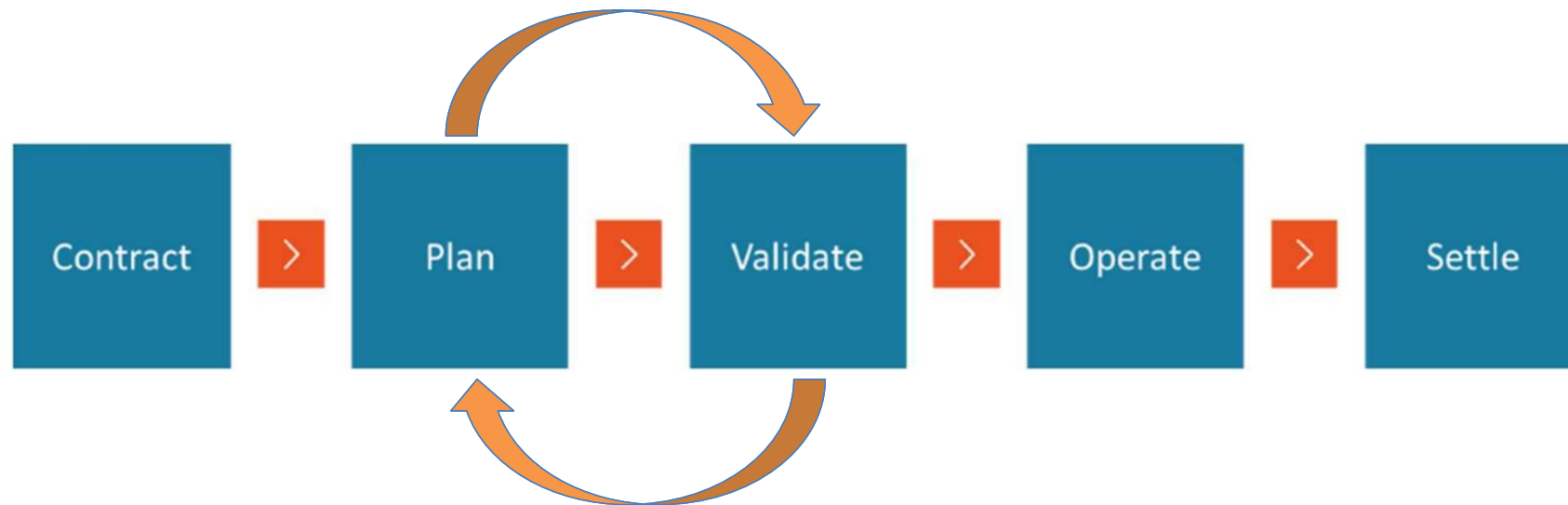
Source: [USEF White Paper: Flexibility Value Chain – Update 2018](#)

Importance of open source

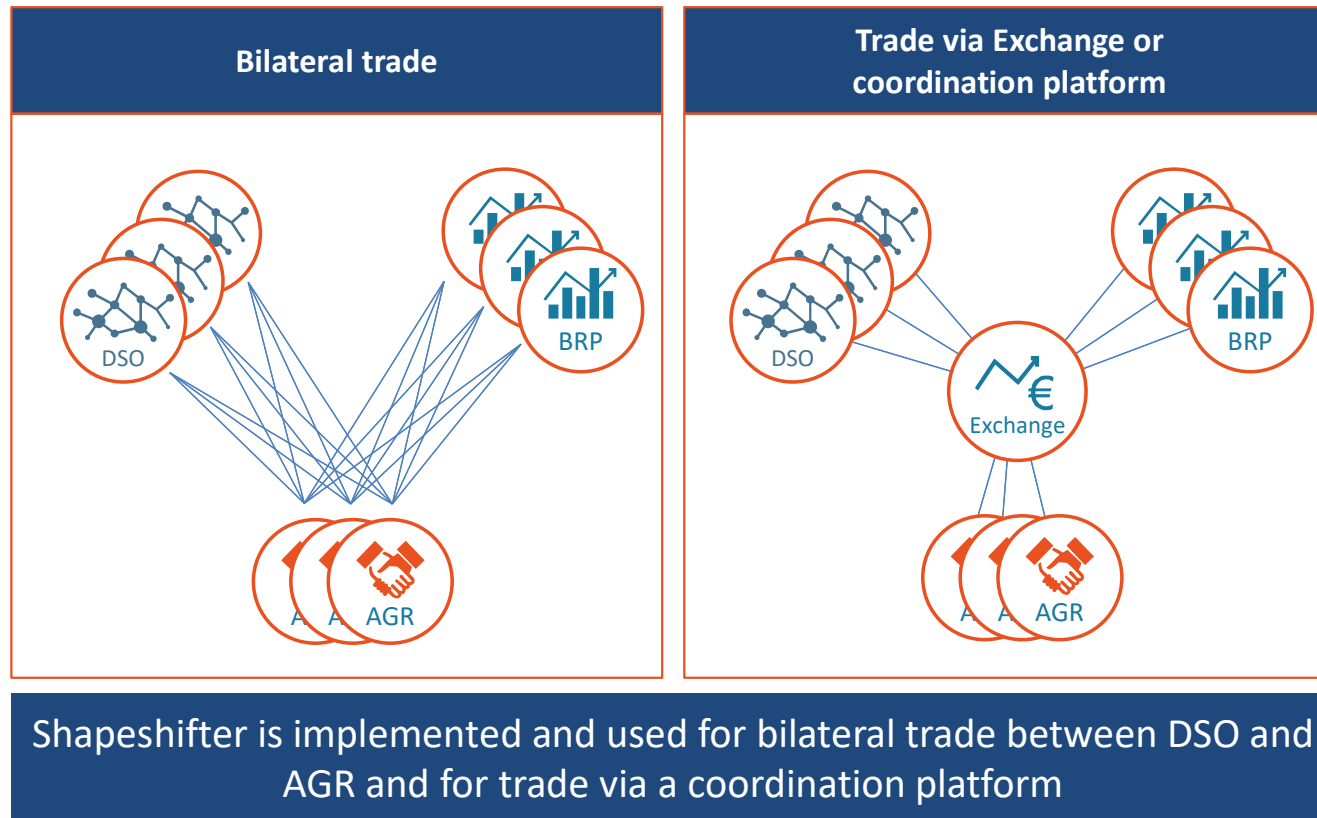
- Easier access
- Increased transparency
- Larger adoption by aggregators and grid operators



Five Phases

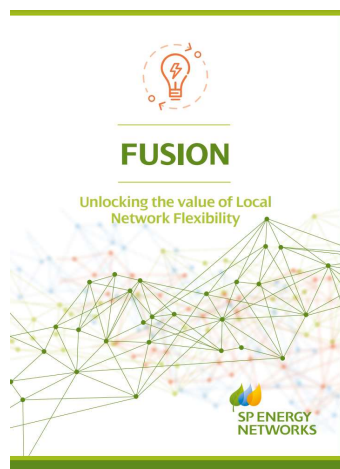


Flex trading options



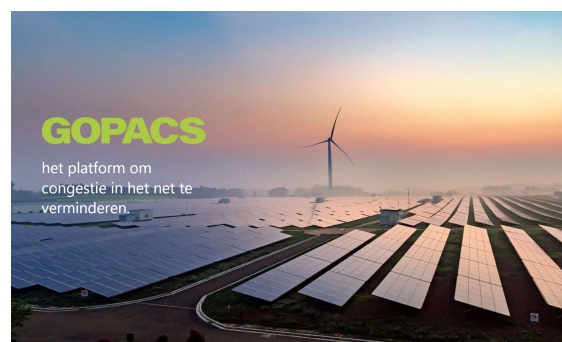
Implementations

Fusion



Shapeshifter is implemented in the UK for congestion management in a demonstration project

GOPACS



Shapeshifter is also used to activate capacity limit contracts at GOPACS in the Netherlands

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Past – Present - Future

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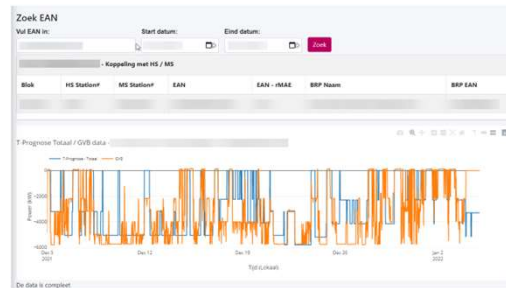
From 2017 to 2019 we participated in a Horizon 2020 project to develop a first version of a Grid Management System based on UFTP:
Innovation/Experimentation

InterFLEX

PARTNERS

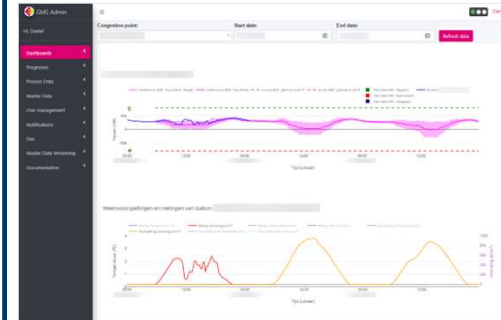


GMS 0.1



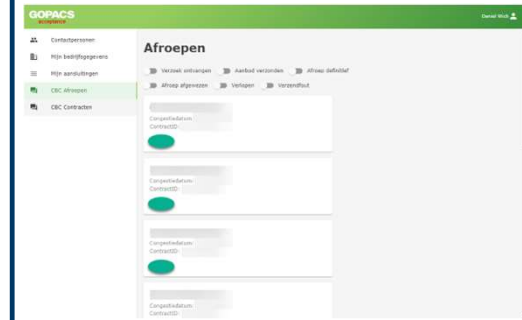
From 2020 – now we're in the process of integrating Shapeshifter as the DayAhead solution mechanism for CLC into our modular GMS

GMS 1.x



2023 – now we're in the process of connecting our GMS Shapeshifter implementation to the GOPACS implementation

GMS 1.x + CLC



ENEXIS Process

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Innovation

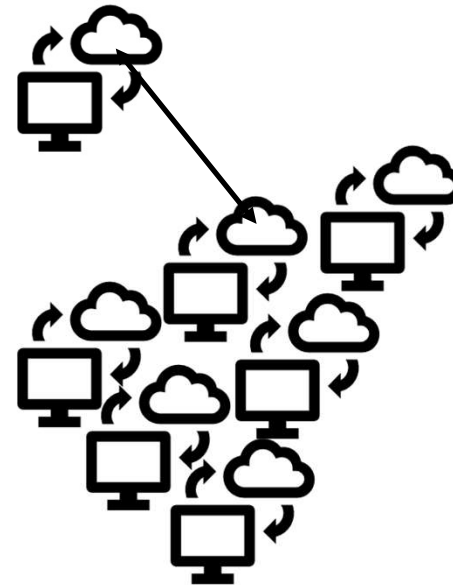
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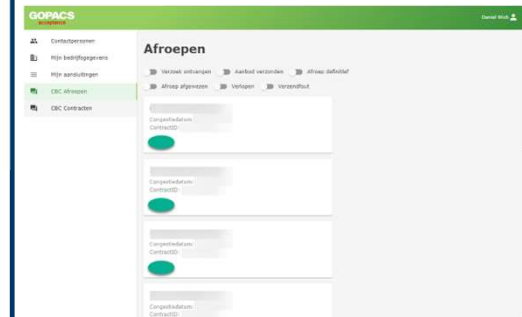


"It works on
my machine..."



2023 – now we're in the process of connecting our GMS Shapeshifter implementation to the GOPACS implementation

GMS 1.x + CLC



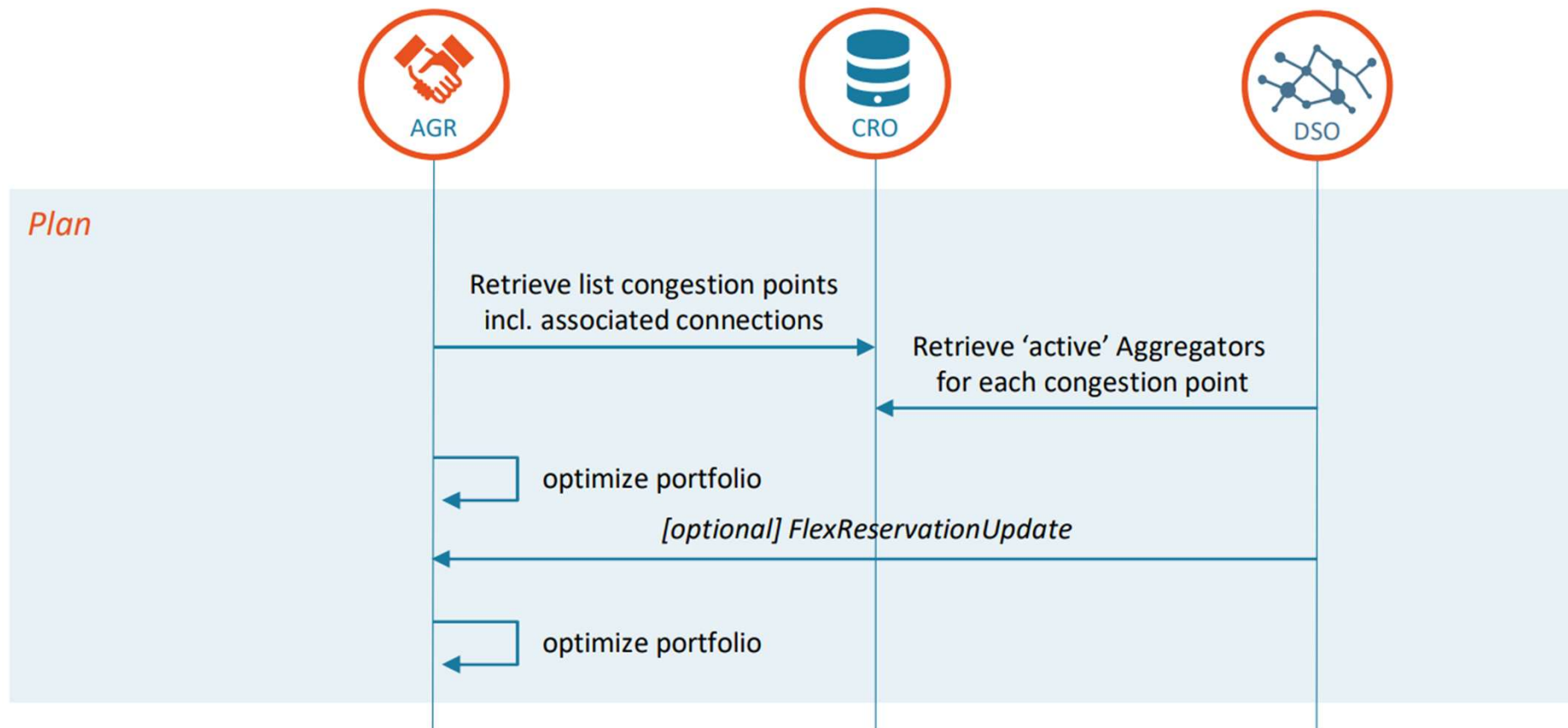
Want to know more?

- Subscribe to the mailing list or join a TSC meeting at <https://lfenergy.org/projects/shapeshifter/>
- See [Shapeshifter \(github.com\)](https://shapeshifter.github.com) or the Shapeshifter specification at <https://shapeshifter.github.io/shapeshifter-specification/>

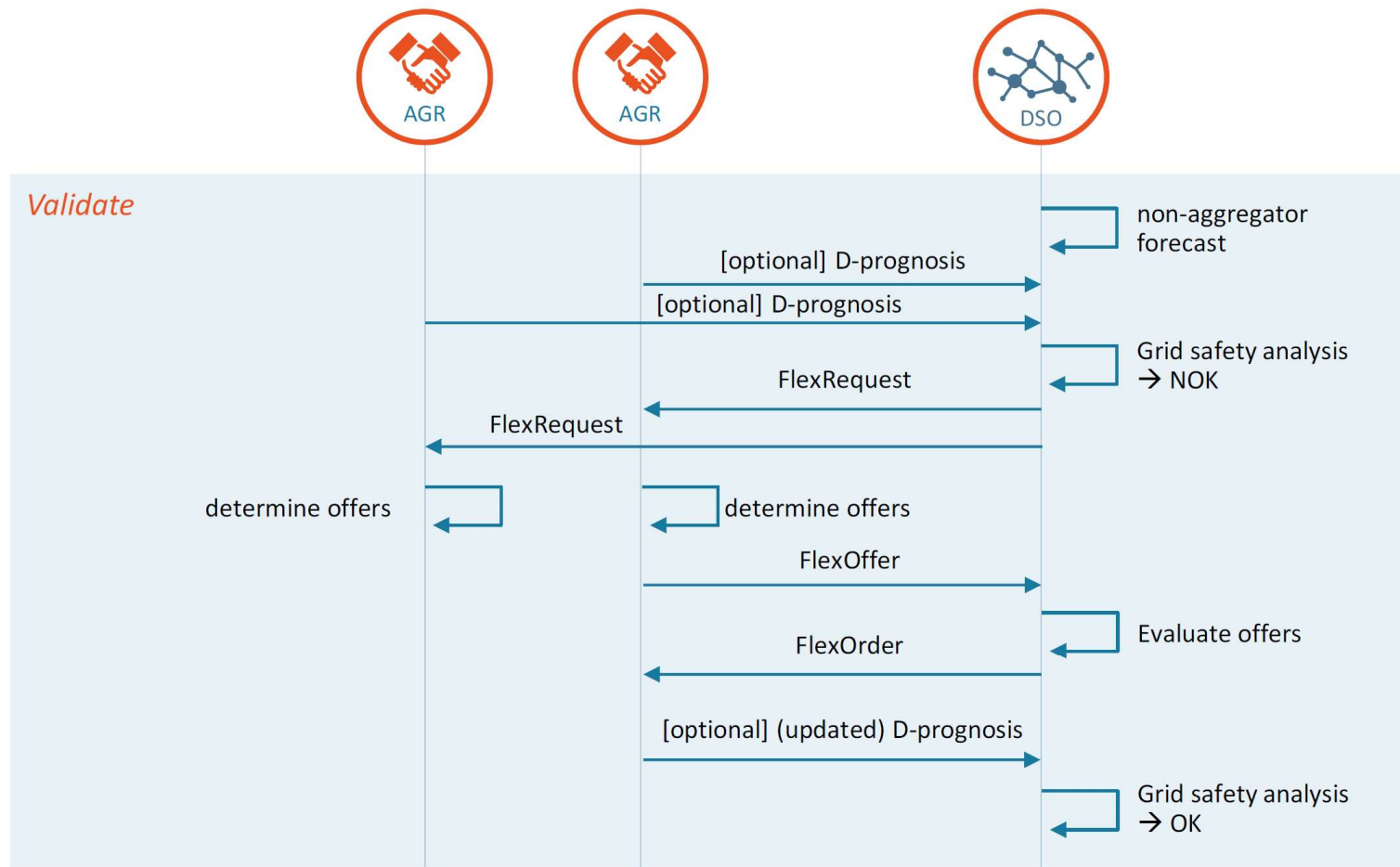


Or talk to us today!

Plan Phase



Validate Phase



Operate Phase

