GIFT

Storage concepts & interoperability

Sustainable Places 2020

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The GIFT project

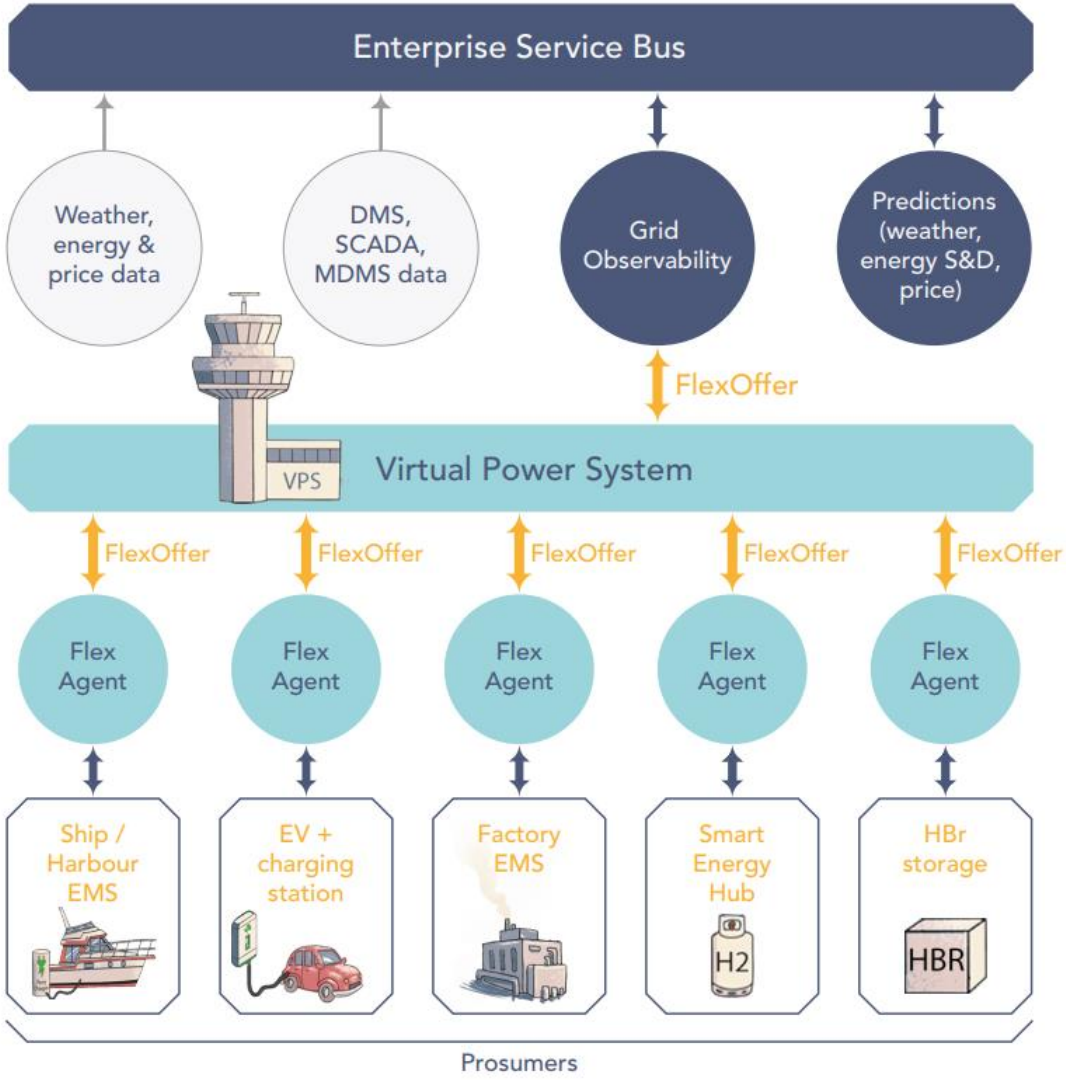
2.5 demonstrator islands

2 follower islands

17 partners

4 years

12M



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GIFT Objectives

O1 Allow a high level of local renewable energy sources penetration

O2 Provide visibility of the energy grid to better manage its flexibility and plan its evolutions

O3 Develop synergies between the electricity, heating, cooling, water and, transport networks

O4 Reduce the use of hydrocarbon-based energies

O5 Ensure the sustainability of the solutions and their replicability in other islands

GIFT Demonstrators

Hinnøya, Grytøya (NO)

Procida (IT)

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What is Energy Storage?

“Energy storage is the capture of energy produced at one time for use at a later time”

Storage is defined the following important characteristics:

- Capacity
- Power
- Ramp-up and ramp-down
- Lifetime
- Efficiency

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2 Types of Energy Storage

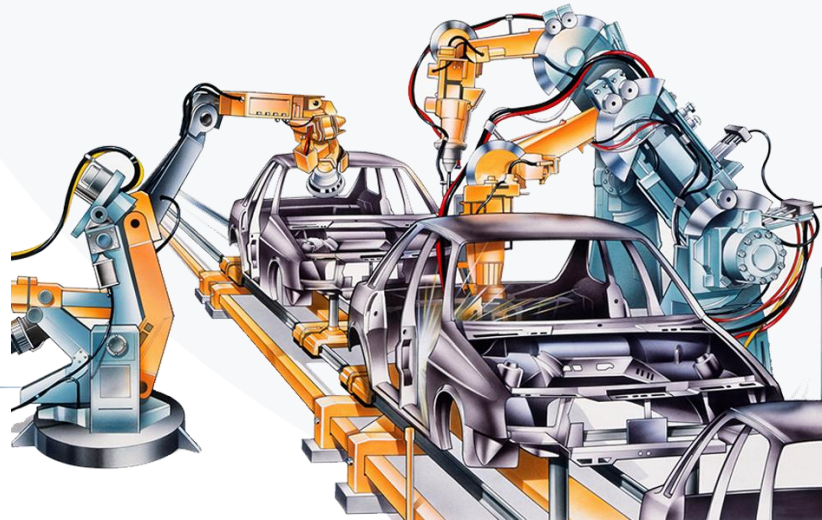
- Explicit

  Mechanical, electrical, chemical, thermal,…

- Virtual

  Storage created by changing the dynamics of a process

  Implicit conversion



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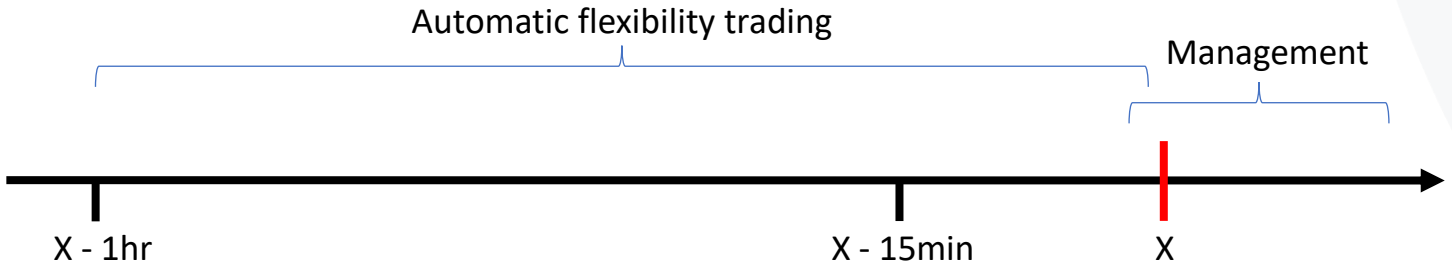
Storage Dynamics



Use case:

Distribution grid management (congestion avoidance, balancing)

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Storage and sector coupling

GAS GRID

Positive storage
(not consuming = producing)

District Heating

Negative storage
(consuming = not producing)

Electric Grid

Negative storage
(not producing)

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Storage and sector coupling

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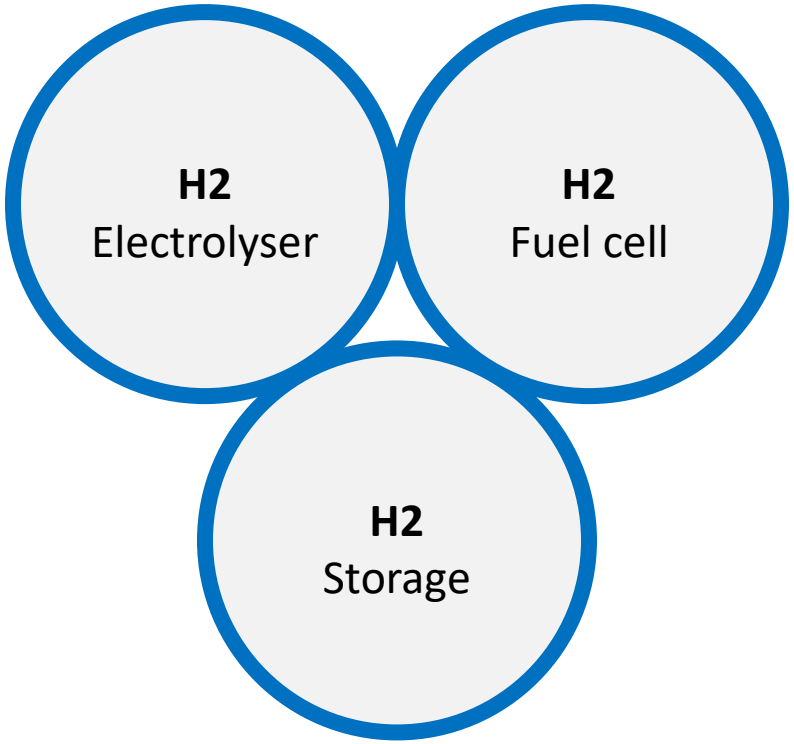
Storage and sector coupling



Electric Grid

Electric Grid

Industrial O2 use

District/local Heating

GAS GRID

H2 as a side product

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Interoperability

- Management vs Automatic Trading
  - Adoption
  - Business case
  - Reliability and visibility
- Flexibility
  - Ability to change behavior of explicit or virtual storage
- FlexOffer
  - De-facto standard for assessing, trading and validating flexibility

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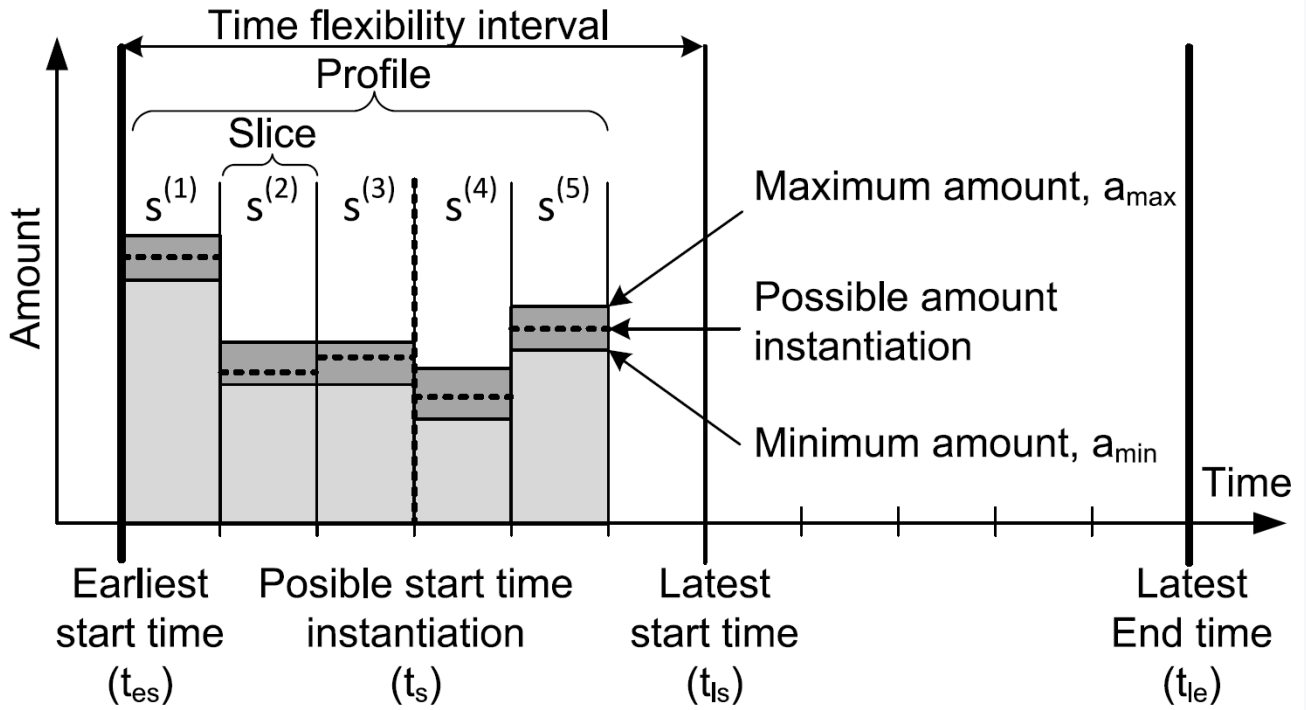
FlexOffer
flexoffer-community.eu



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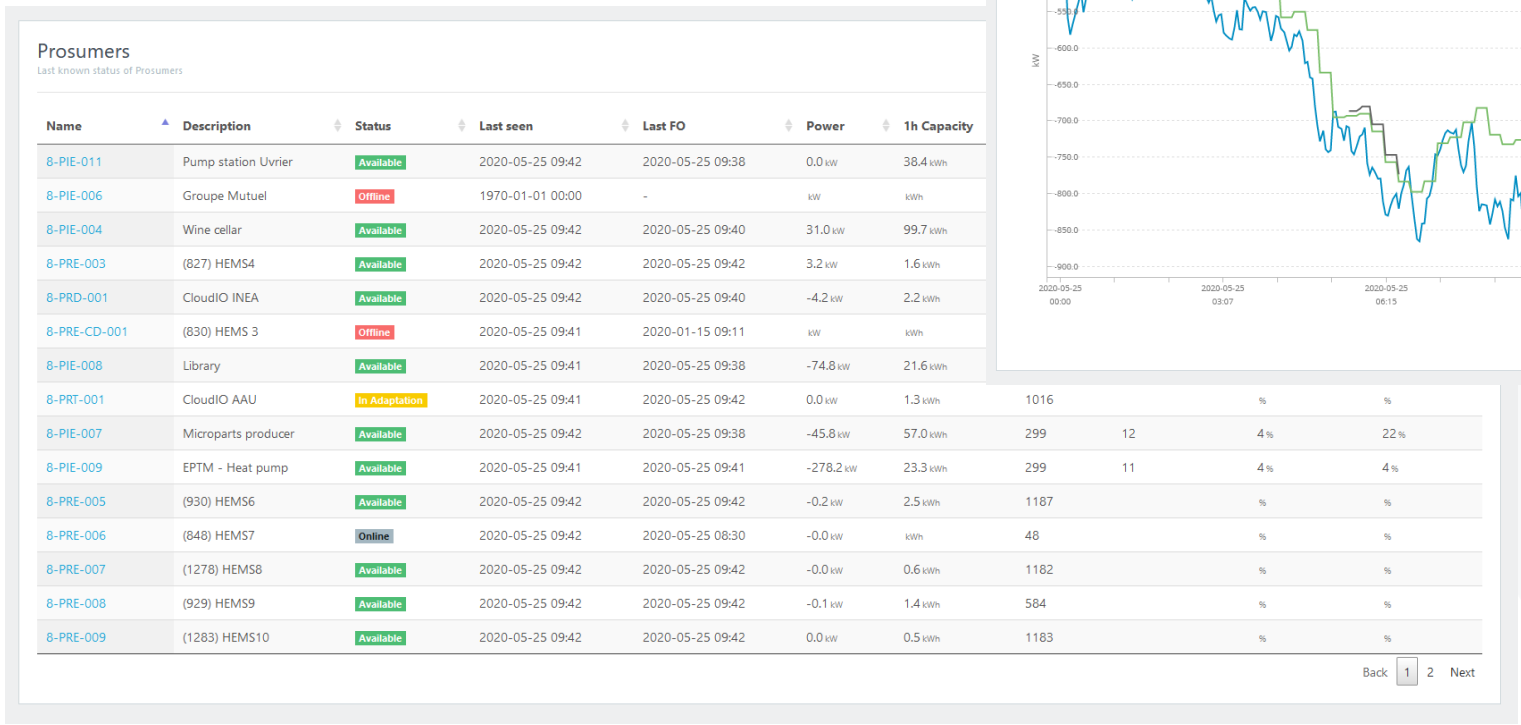
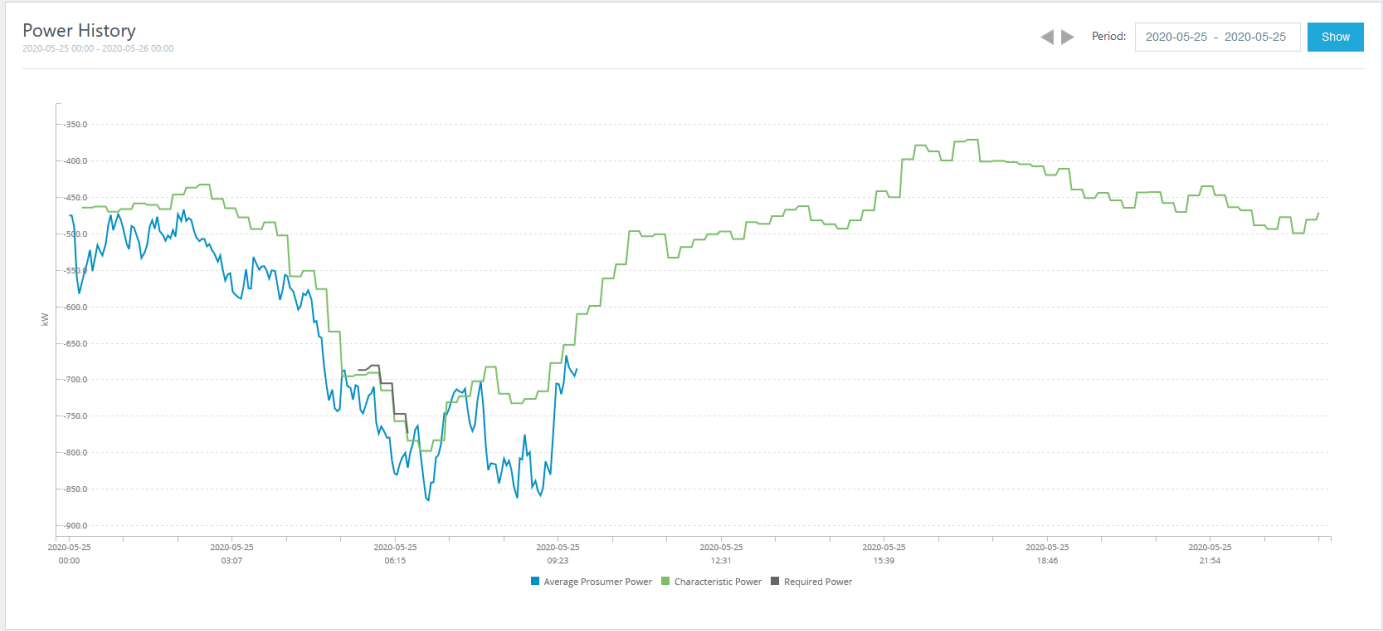
Back to GIFT





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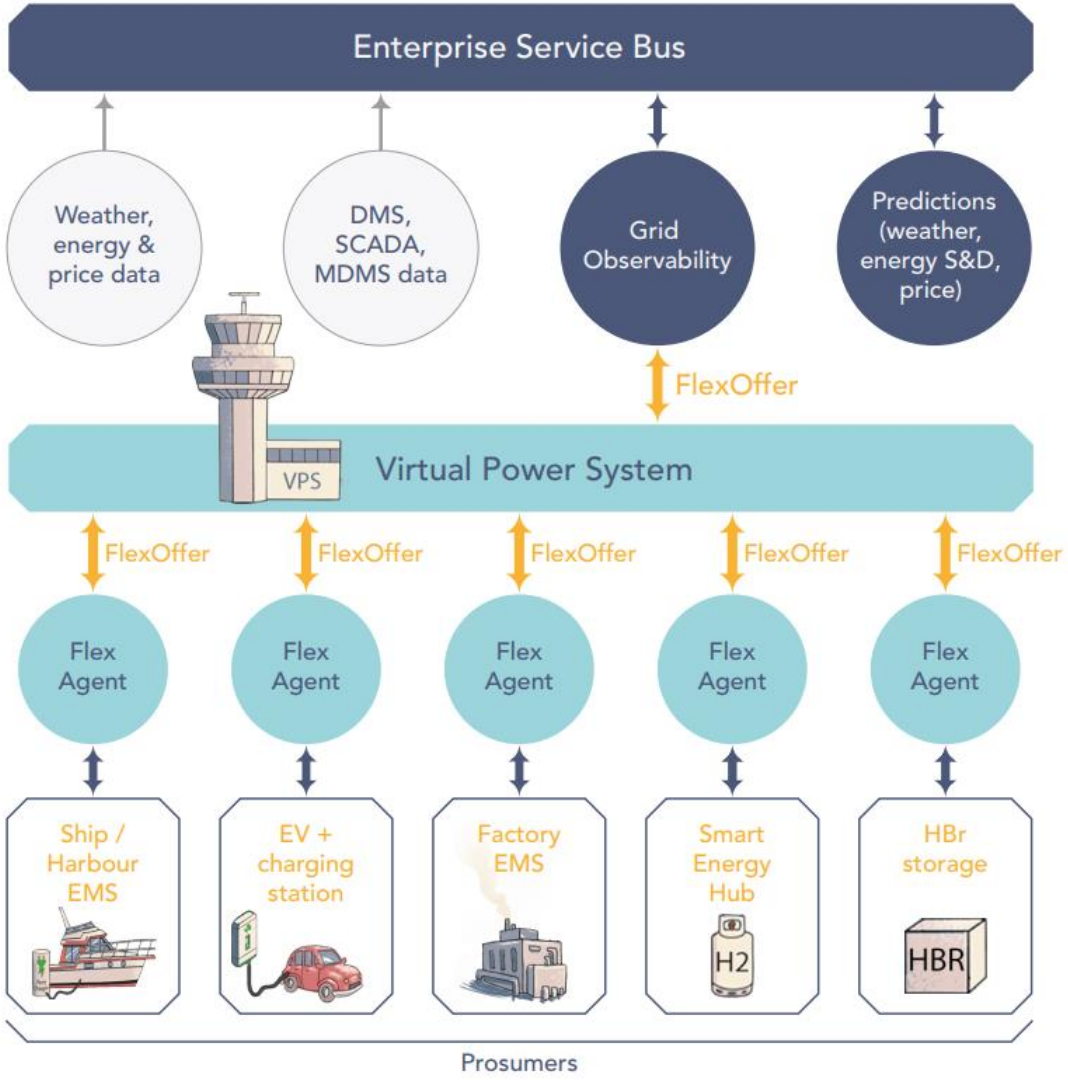
Where is our storage?

- E-ferry
- EVs
- H2-based CHP
- HBr Flow-battery
- Fish farms
- Hospital, several buildings, hotels
- Sewage treatment plant
- …



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Thank you!

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