



Storage concepts & interoperability

Sustainable Places 2020
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The GIFT project

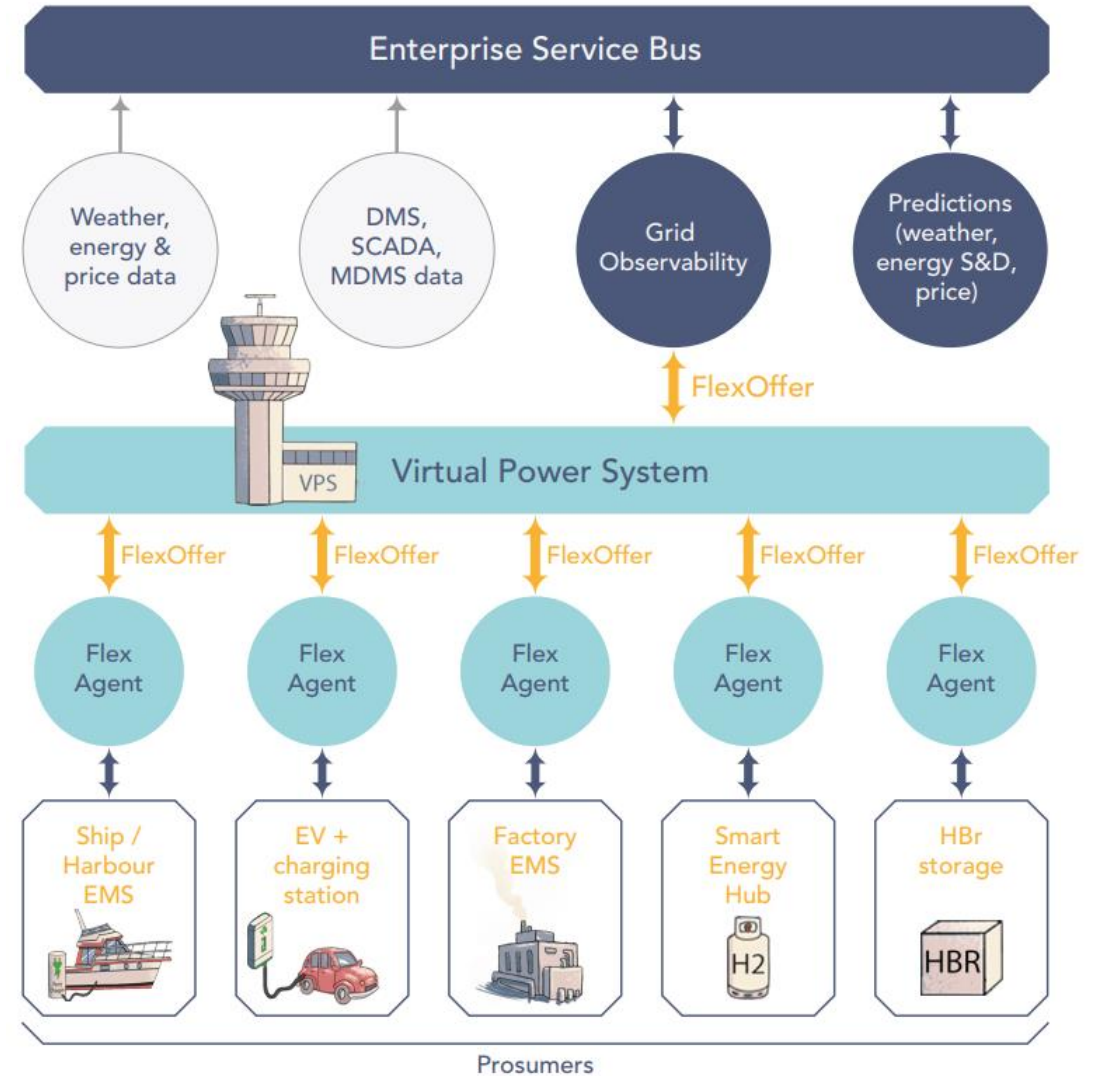
2.5 demonstrator islands

2 follower islands

17 partners

4 years

12M



GIFT Objectives

- 01** Allow a high level of local renewable energy sources penetration
- 02** Provide visibility of the energy grid to better manage its flexibility and plan its evolutions
- 03** Develop synergies between the electricity, heating, cooling, water and, transport networks
- 04** Reduce the use of hydrocarbon-based energies
- 05** Ensure the sustainability of the solutions and their replicability in other islands

GIFT Demonstrators



Hinnøya, Grytøya (NO)



Procida (IT)

What is Energy Storage?

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

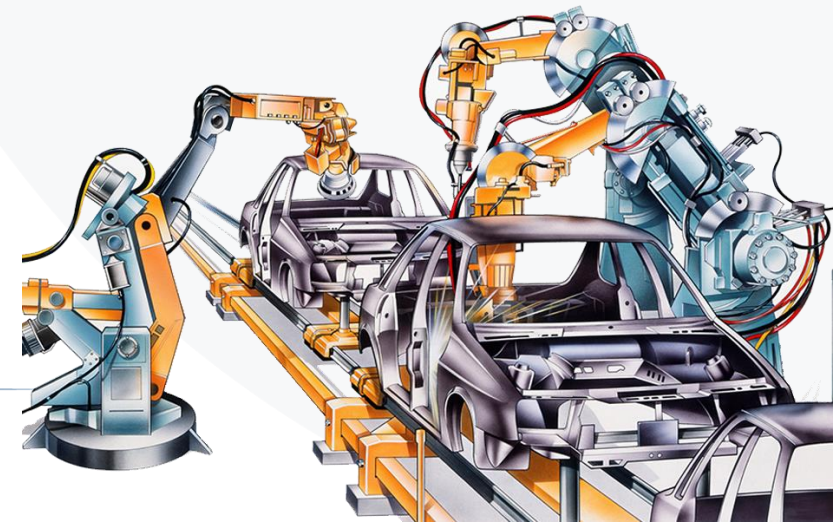
Storage is defined the following important characteristics:

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



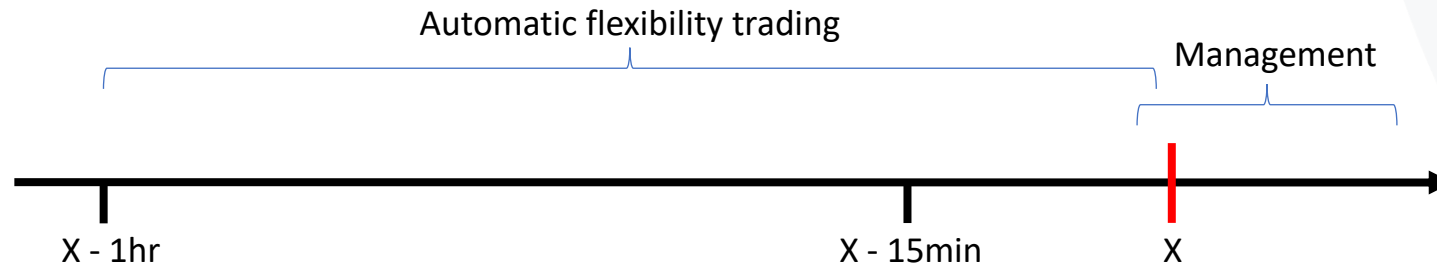
2 Types of Energy Storage

- **Explicit**
Mechanical, electrical, chemical, thermal,...
- **Virtual**
Storage created by changing the dynamics of a process
Implicit conversion

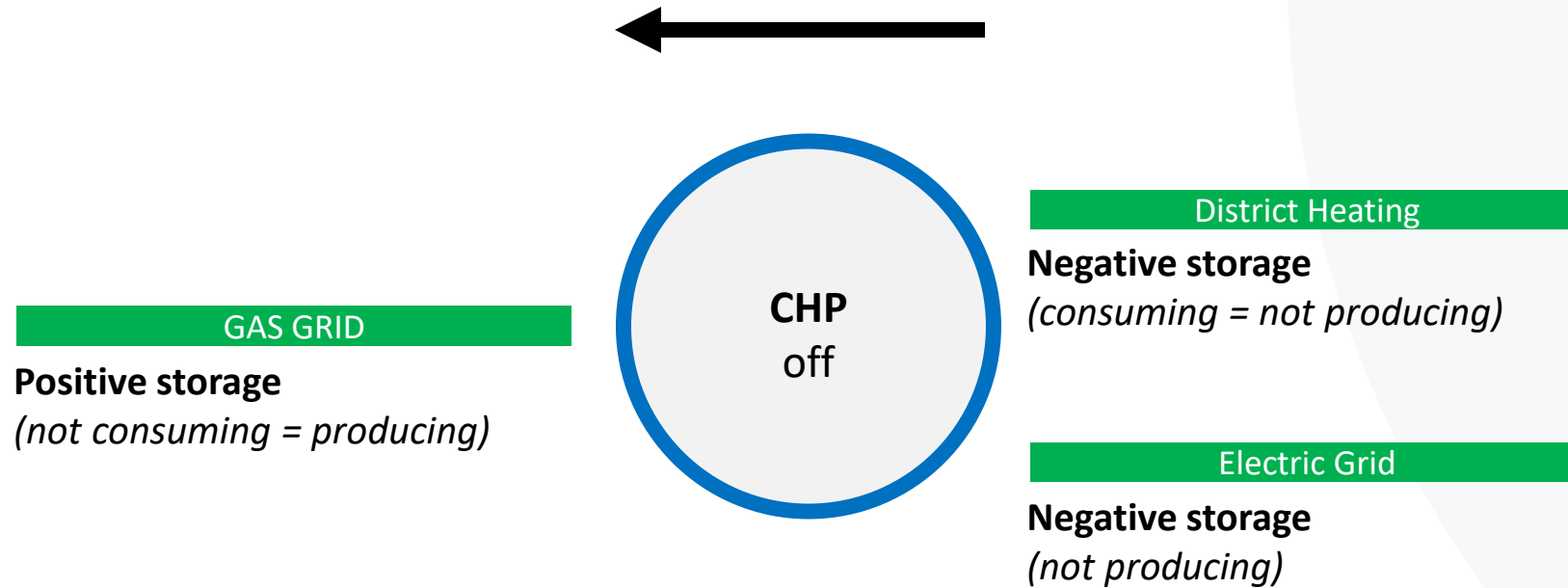


Storage Dynamics

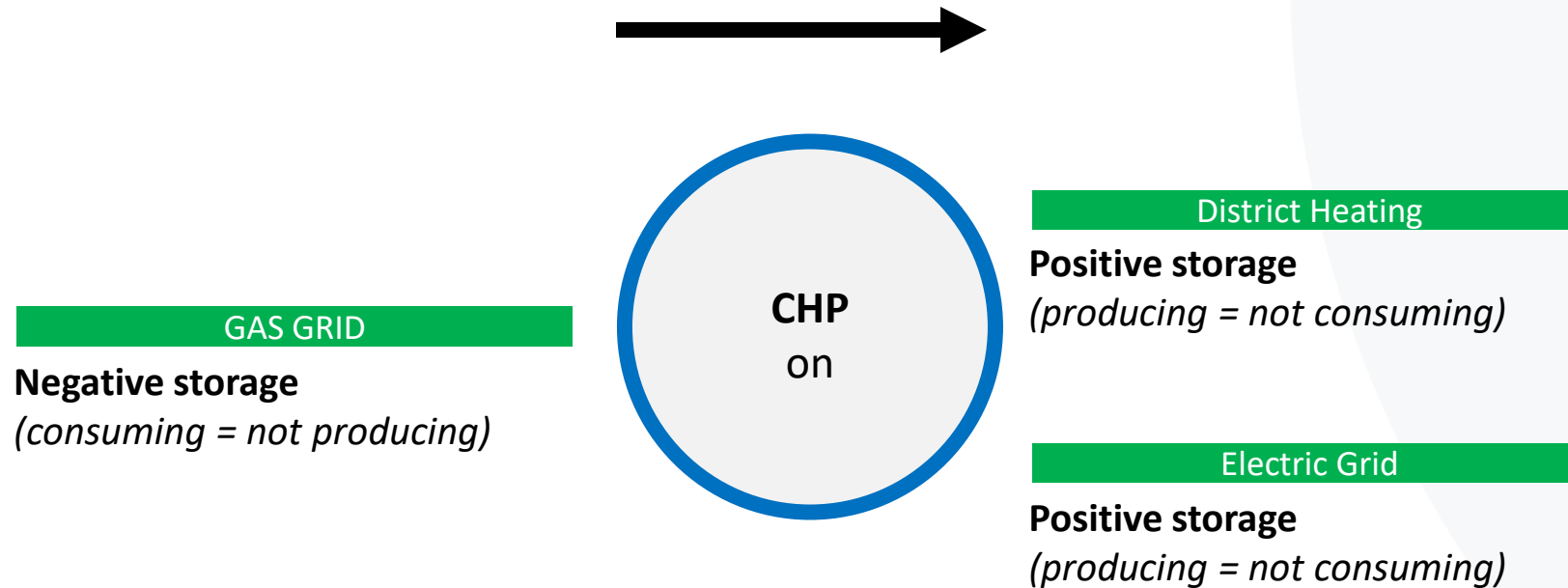
Use case:
Distribution grid management
(congestion avoidance, balancing)



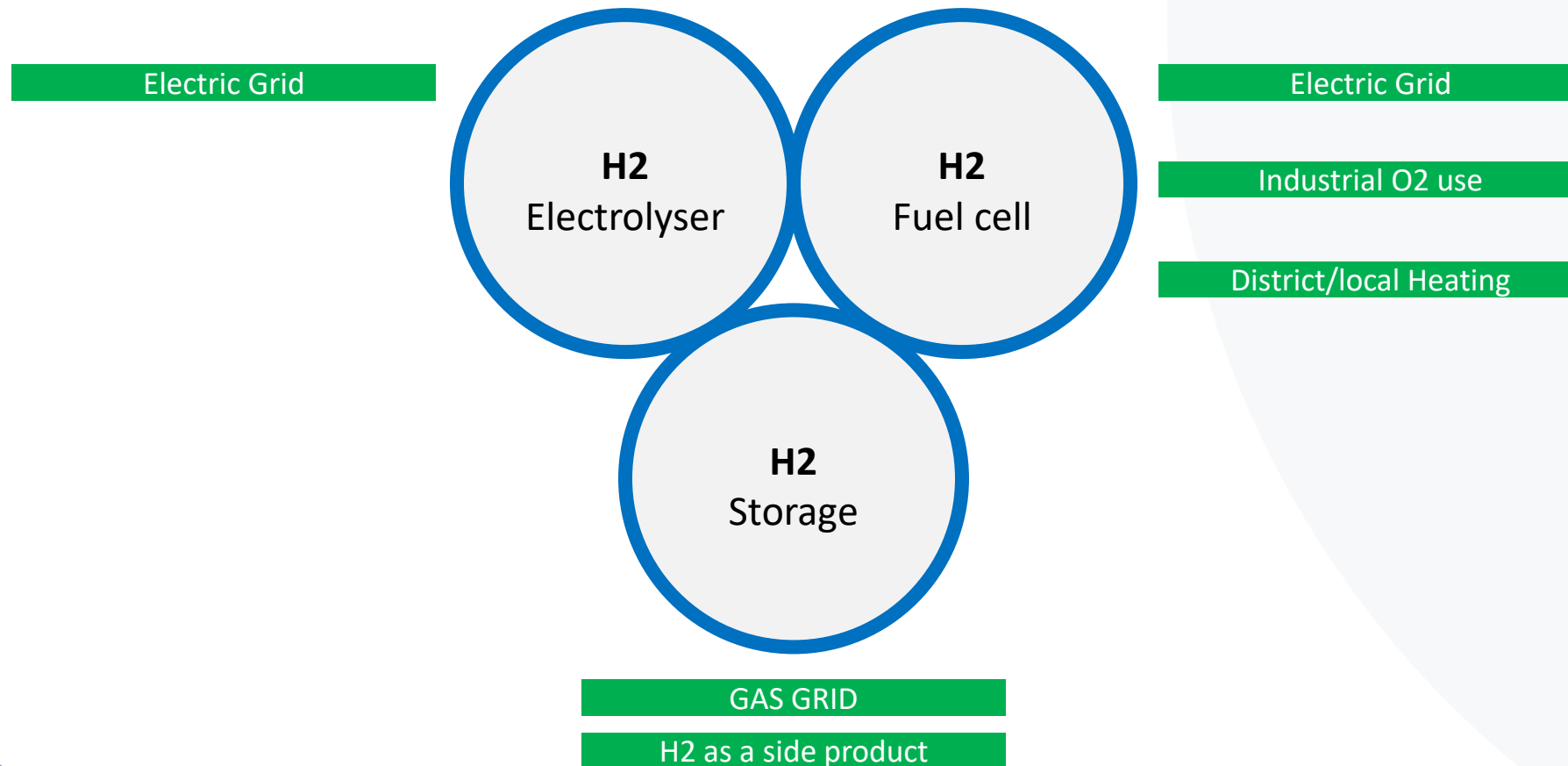
Storage and sector coupling



Storage and sector coupling



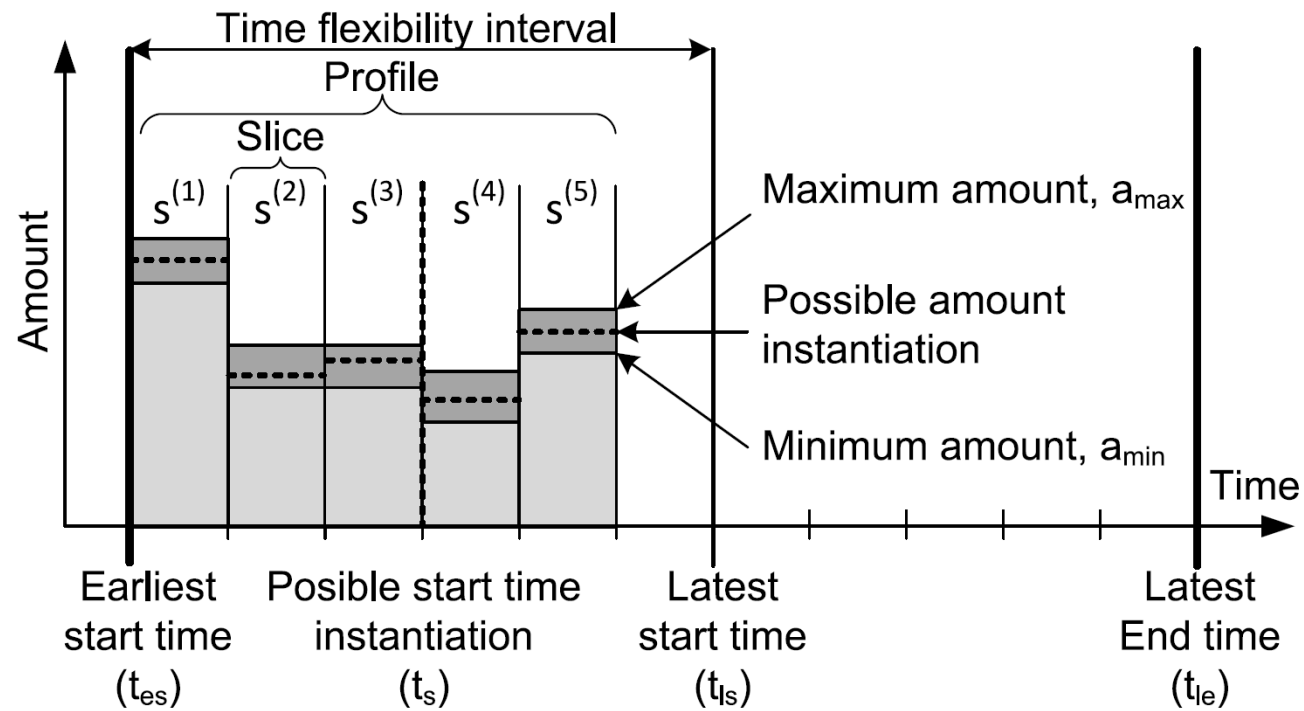
Storage and sector coupling



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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Prosumers

Last known status of Prosumers

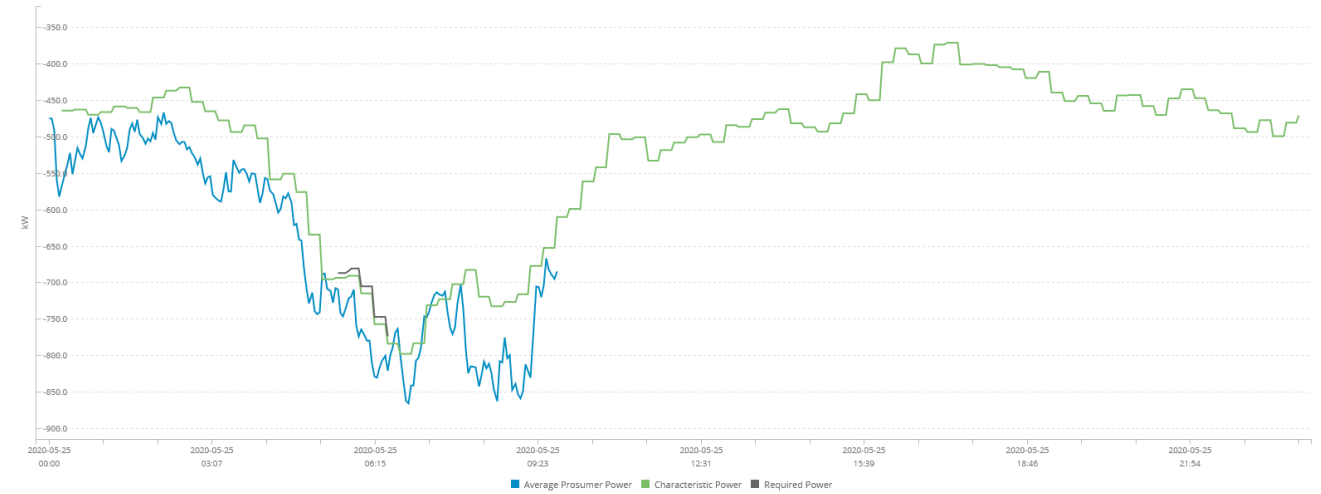
Name	Description	Status	Last seen	Last FO	Power	1h Capacity				
8-PIE-011	Pump station Uvrier	Available	2020-05-25 09:42	2020-05-25 09:38	0.0 kW	38.4 kWh				
8-PIE-006	Groupe Mutuel	Offline	1970-01-01 00:00	-	kW	kWh				
8-PIE-004	Wine cellar	Available	2020-05-25 09:42	2020-05-25 09:40	31.0 kW	99.7 kWh				
8-PRE-003	(827) HEMS4	Available	2020-05-25 09:42	2020-05-25 09:42	3.2 kW	1.6 kWh				
8-PRD-001	CloudIO INEA	Available	2020-05-25 09:42	2020-05-25 09:40	-4.2 kW	2.2 kWh				
8-PRE-CD-001	(830) HEMS 3	Offline	2020-05-25 09:41	2020-01-15 09:11	kW	kWh				
8-PIE-008	Library	Available	2020-05-25 09:41	2020-05-25 09:38	-74.8 kW	21.6 kWh				
8-PRT-001	CloudIO AAU	In Adaptation	2020-05-25 09:41	2020-05-25 09:42	0.0 kW	1.3 kWh	1016	%	%	
8-PIE-007	Microparts producer	Available	2020-05-25 09:42	2020-05-25 09:38	-45.8 kW	57.0 kWh	299	12	4 %	22 %
8-PIE-009	EPTM - Heat pump	Available	2020-05-25 09:41	2020-05-25 09:41	-278.2 kW	23.3 kWh	299	11	4 %	4 %
8-PRE-005	(930) HEMS6	Available	2020-05-25 09:42	2020-05-25 09:42	-0.2 kW	2.5 kWh	1187		%	%
8-PRE-006	(848) HEMS7	Online	2020-05-25 09:42	2020-05-25 08:30	-0.0 kW	kWh	48		%	%
8-PRE-007	(1278) HEMS8	Available	2020-05-25 09:42	2020-05-25 09:42	-0.0 kW	0.6 kWh	1182		%	%
8-PRE-008	(929) HEMS9	Available	2020-05-25 09:42	2020-05-25 09:42	-0.1 kW	1.4 kWh	584		%	%
8-PRE-009	(1283) HEMS10	Available	2020-05-25 09:42	2020-05-25 09:42	0.0 kW	0.5 kWh	1183		%	%

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Power History

2020-05-25 00:00 - 2020-05-26 00:00

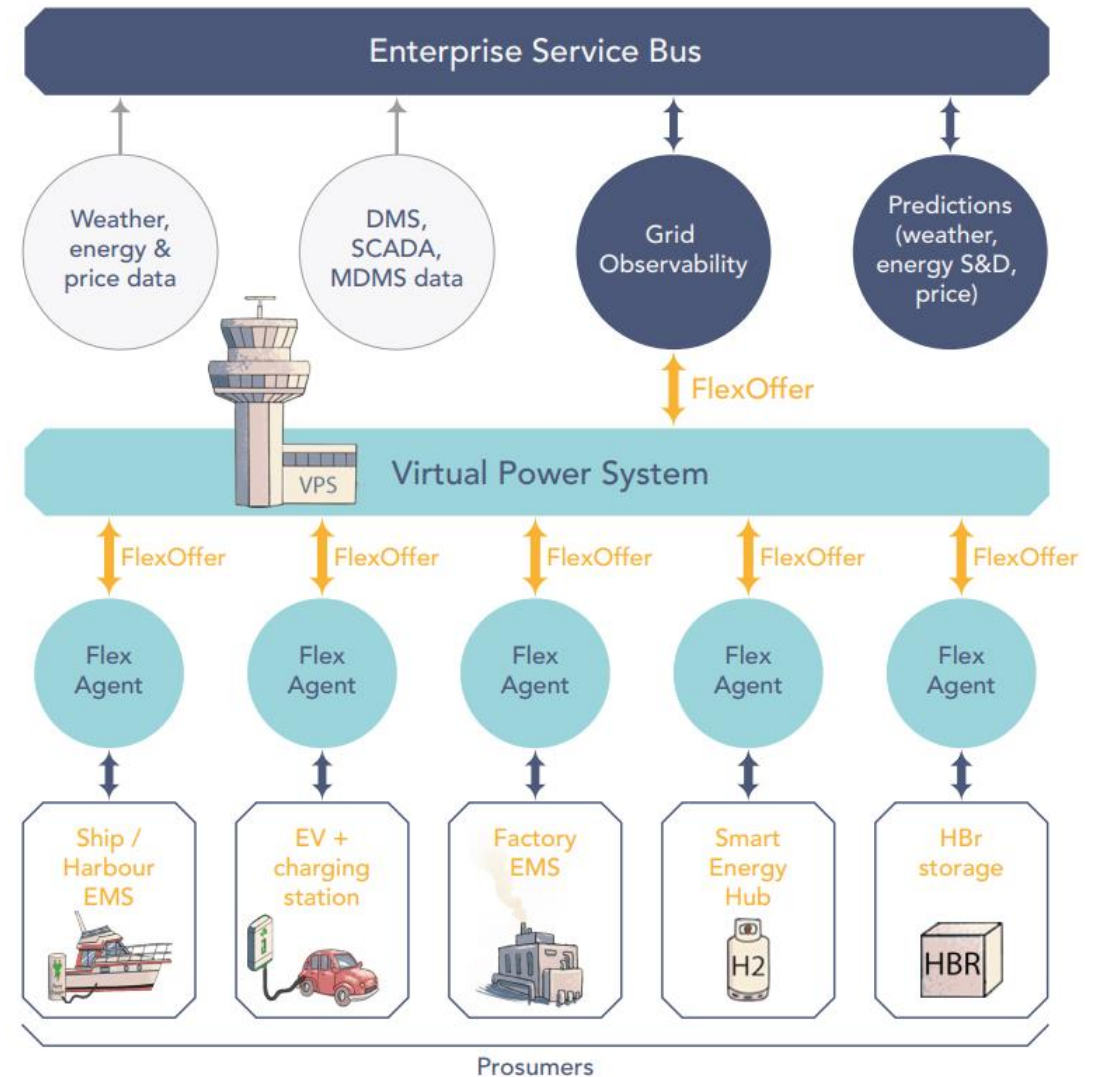
Period: 2020-05-25 - 2020-05-25 Show



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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
- ...





G I F T

Thank you!

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