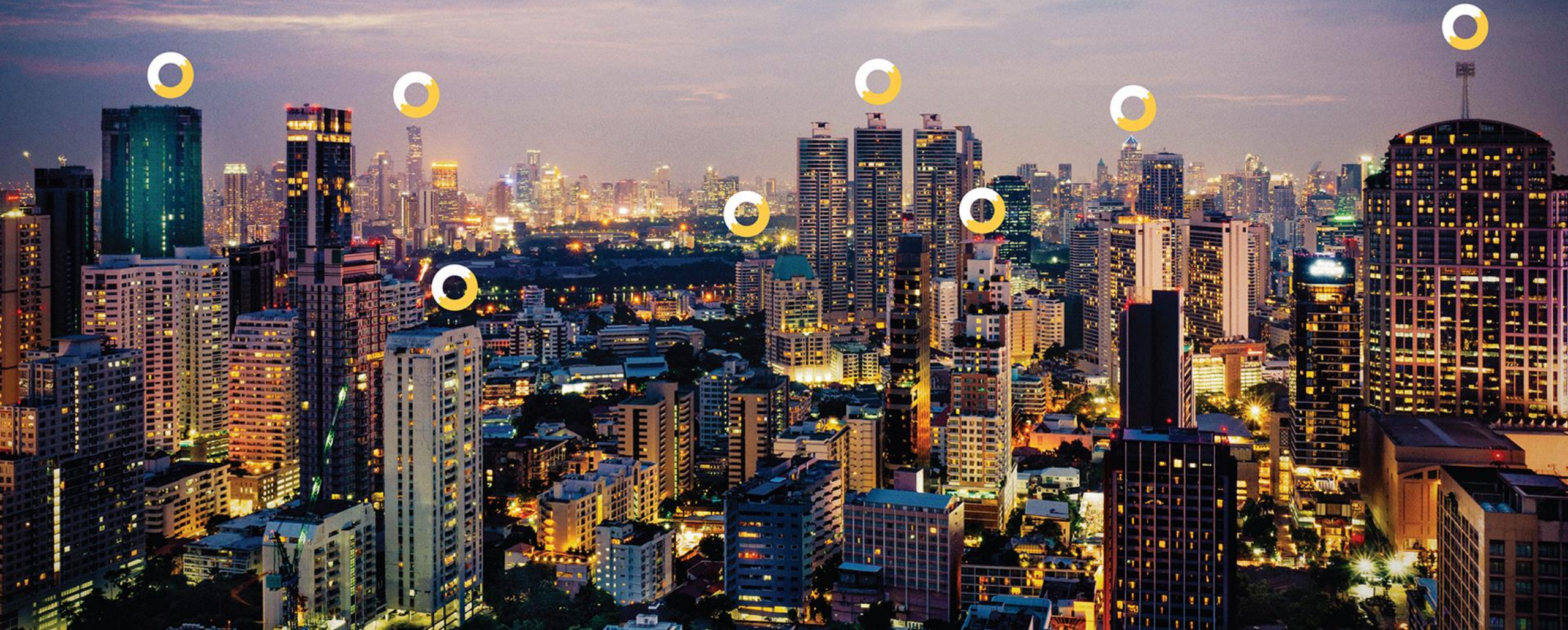


interconnect

interoperable solutions
connecting smart homes,
buildings and grids





WP 6

Task 6.2.3

Deliverable 6.8 V2

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Aug 2021



Introduction

- This document is a first in a series of 10 documents that will be used to follow-up pilot activities and to assess their status within WP6 .
- Updates will be provided in:
 - M21: Evaluation period Apr. 2021 to Jun. 2021 – Expected delivery (Jul. 2021) – this document
 - M24: Evaluation period Jul. 2021 to Sep. 2021 – Expected delivery (Oct. 2021)
 - M27: Evaluation period Oct. 2021 to Dec. 2021 – Expected delivery (Jan. 2022)
 - M30: Evaluation period Jan. 2022 to Mar. 2022 – Expected delivery (Apr. 2022)
 - M33: Evaluation period Apr. 2022 to Jun. 2022 – Expected delivery (Jul. 2022)
 - M36: Evaluation period Jul. 2022 to Sep. 2022 – Expected delivery (Oct. 2022)
 - M39: Evaluation period Oct. 2022 to Dec. 2022 – Expected delivery (Jan. 2023)
 - M42: Evaluation period Jan. 2023 to Mar. 2023 – Expected delivery (Apr. 2023)
 - M45: Evaluation period Apr. 2023 to Jun 2023 – Expected delivery (Jul. 2023)
 - M48: Evaluation period Jul. 2023 to Sep 2023 – Expected delivery (Oct. 2023)
- These deliverables are complementary to deliverables 6.1 to 6.7 where the performance and the impact on the various KPI's will be discussed in more details.



Summary

- This deliverable is a collection of the progress reports of all the pilots. The following deliverable, D6.9 is planned for M24 (Oct 2021)
- The report of the Portuguese pilot is not included.
- Most pilots are still in construction/development stage and are aiming to be ready to include the first whitegoods by September/October 2021. The distribution of the whitegoods for the Italian pilot will start earlier due to strict timeline constraints.
- 4 different categories of bottlenecks in installation have been identified by the pilots:
 1. Unclear information regarding whitegoods in the project
 2. Ongoing construction of legacy infrastructure (e.g. smart metering)
 3. Low maturity level of Interoperability framework
 4. Strict timeline constraints
- The pilots generally contribute towards interoperability by SAREFizing existing and/or new services. All the pilots participate in the overarching flexibility use case organized by CYBERGRID.



Pilot List

- **16 Pilots, 7 Countries:**

- I. **Belgium:**

- 1. BE 01 Antwerp - Student Dormitory
 - 2. BE 02 Genk - ThermoVault
 - 3. BE 03 Genk - Thorpark
 - 4. BE 04 Gent - Nieuwe Dokken
 - 5. BE 05 Hasselt - Cordium
 - 6. BE 06 Kobbegem - Nanogrid
 - 7. BE 07 Oud-Heverlee - 3E
 - 8. BE 08 Zellik - Green Energy Park

- II. **France:** FR 01 - Toulon

- III. **Germany:**

- 1. DE 01 - Hamburg
 - 2. DE 02 - Norderstedt

- IV. **Greece:** GR 01 - Volos

- V. **Italy:** IT 01 - Milano

- VI. **Portugal:** PT 01 - Portugal

- VII. **Netherlands:** NL 01 – Eindhoven

- VIII. **Overarching:** OV 01 - Cybergrid

Belgium BE.01



| | |
|-------------------|--|
| Pilot ID | BE.01 |
| Pilot Name | Antwerpen – IMEC Pilot – Student Dormitory |
| Pilot Responsible | esteban.municio@imec.be |

| | |
|------------------|---|
| Progress* | 10% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|---|----------------------------|--------------------------|--|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 2 | Q3 2022 | Smart Meters | | Q3 2021 |
| Dishwasher | | | | | |
| Dryer | 2 | Q3 2022 | | | |
| EV charger | | | | | |
| Heat pump | | | | | |

Bottlenecks in installation

Currently arranging installation of the smart meters for the first monitoring year (Q3 2021 – Q3 2022)

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.01



| | |
|--------------------------|--|
| Pilot ID | BE.01 |
| Pilot Name | Antwerpen – IMEC Pilot – Student Dormitory |
| Pilot Responsible | esteban.municio@imec.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|---|---|
| Peak sheaving and energy consumption reduction in a student dormitory of the University of Antwerpen. | | Access to the grid status and prediction through the Interconnect Interoperability Layer to foresee the best hours to consume energy. SAREFize the DYAMAND platform and make it compatible with devices and gamification platform. |
| Pilot use cases | | |
| UC1 Gamification of use of common appliances: UC1.1 Consumption Guidance (inform the students about best times to use electricity) UC1.2 Consumption Monitoring (inform the students of the overall building consumption) UC1.3 Collective usage (allows the students to collaboratively use the common appliances) | | |
| Risk | Mitigations | |
| <ul style="list-style-type: none">Low engagement of students.Bureaucracy with the University of Antwerpen is slow (data management, devices' billing, connectivity provision, etc.). | <ul style="list-style-type: none">Make the gamification platform attractive and make sufficient dissemination (posters, social networks, UAntwerpen support, etc.).Start University of Antwerpen related processes with several months in advance. | |

Belgium BE.02



| | |
|-------------------|------------------------------|
| Pilot ID | BE.02 |
| Pilot Name | Genk Apartments ThermoVault |
| Pilot Responsible | pol.olivella@thermovault.com |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|--------------------------|---|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 10 | September/October 2021 | Battery | 1 | 2022 |
| Dishwasher | 10 | September/October 2021 | | | |
| Dryer | 10 | September/October 2021 | | | |
| EV charger | 0 | September/October 2021 | | | |
| Heat pump | 5 | September/October 2021 | | | |

| Bottlenecks in installation | | | | | |
|---|--|--|--|--|--|
| Waiting for information regarding whitegoods and heat pump installation and maintenance. Waiting for information regarding interoperability for batteries. | | | | | |

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.02



| | |
|--------------------------|------------------------------|
| Pilot ID | BE.02 |
| Pilot Name | Genk Apartments ThermoVault |
| Pilot Responsible | pol.olivella@thermovault.com |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|---|--|
| Enable demand response to increase community-level self-consumption, reduce peak consumption penalties and increase individual-level energy efficiency. | | Testing interoperability at cloud level subscribing to PV forecasting service, prosumption forecasting service, and day-ahead price forecasting service. |
| Pilot use cases | | |
| PUC 1 – Maximum comfort PUC 2 – Community peak shaving PUC 3 – Community self consumption PUC 4 - Community peak shaving and self-consumption | | |
| Risk | Mitigations | |
| Whitegoods logistics, installation and maintenance running late due to a supplier. | Regular follow up directly with manufacturers. | |
| ThermoVault can not manage to establish communication with the devices through their portal. | ThermoVault could subscribe to a control service provided by another partner. | |

Belgium BE.03



| | |
|-------------------|------------------------|
| Pilot ID | BE.03 |
| Pilot Name | Genk Thorpark |
| Pilot Responsible | dominic.ectors@vito.be |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|---|----------------------------|--------------------------|----|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 2 | September/October 2021 | EV Chargers | 27 | Already available |
| Dishwasher | 2 | September/October 2021 | Heat pump | 1 | Already available |
| Dryer | 2 | September/October 2021 | Chiller | 1 | Already available |
| EV charger | | | | | |
| Heat pump | | | | | |

Bottlenecks in installation

Data capturing platform:

On time. Data capturing platform for EV smart charging is available. Interface to interact with the platform is being added.

BEMS/DEMS application platform:

On time. Platform instance has been deployed. Services are being added.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.03



| | |
|--------------------------|------------------------|
| Pilot ID | BE.03 |
| Pilot Name | Genk Thorpark |
| Pilot Responsible | dominic.ectors@vito.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|---|---|
| <p>Minimize the energy invoice at building level by means of peak shaving, maximizing RES self-consumption and adapting to dynamic tariffs.</p> <p>Coordinate the energy consumption and production at district level by means of flexibility negotiation, all within grid constraints set by a (simulated) DSO.</p> <p>Offer flexibility at district level to a flexibility aggregator (Cybergrid).</p> | | <p>Operational testing of Interoperability Layer concept with the focus being on interoperability at service level.</p> <p>Multiple SAREFized services (PV forecaster, Day-ahead price forecaster, wind-forecaster, flexibility service, ...) communicating via the Interoperability Layer.</p> <p>Day-ahead price service as an InterConnect downloadable docker service.</p> <p>Contributing to the overarching Cybergrid pilot by providing flexibility.</p> |
| Pilot use cases | | |
| Community Cost optimization – district & building level: See D1.3 | | |
| Risk | Mitigations | |
| Operational aspects of the Interoperability Layer like stability, performance, security, might not operate smoothly. | Pre-testing of services' interaction without performing real actions should discover potential Interoperability Layer flaws before the pilot site goes operational. | |
| Not ideal timing of the availability of the Service Specific Adapters. | Partial tests can be started in case not all SSAs are on time. | |

Belgium BE.04



| | |
|-------------------|--------------------------------------|
| Pilot ID | BE.04 |
| Pilot Name | Ghent Nieuwe Dokken |
| Pilot Responsible | lieven.demolder@cleanenergyinvest.be |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|--------------------------|---------|--|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 30 | September 2021 | Battery 240 kWh | 1 + X | 1 in 2020 + additional potentially in 2024 |
| Dishwasher | 30 | September 2021 | PV | 80 kWp | 30 kWp in 2019 + 50kWp in 2021 + potential additional 200kWp in 2024 |
| Dryer | 30 | September 2021 | EV charger 22kW | 20 +16 | 20 in 2020 + 16 in 2022 |
| EV charger | | | Heat pump | 125kWth | 2020 |
| Heat pump | | | | | |

Bottlenecks in installation

Construction of the houses in different phases: first part of the project already delivered (90 units). Most people already have (regular) household devices. Delivery of Northfield (122 residential units+ 3 commercial spaces) is the most promising target audience for Interconnect. First buildings of 2nd development phase will be delivered by spring 2022.

** Overall status: ■ On time
■ Behind schedule - but still reachable
■ Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.04



| | |
|--------------------------|--------------------------------------|
| Pilot ID | BE.04 |
| Pilot Name | Ghent Nieuwe Dokken |
| Pilot Responsible | lieven.demolder@cleanenergyinvest.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|--|--|
| This use case comprises several objectives with the final aim being the cost and environmental impact minimization associated with energy usage at the community level. Besides the minimization of the electricity invoice, other objectives are also considered, namely, peak shaving, maximization of self-consumption, maximization of RoI related to the investments in battery storage, solar panel and EV chargers. | | Implementation of knowledge engine instances and services for the use and operation of a BMS and white goods devices from different manufacturers. |
| Pilot use cases | | |
| Minimize energy acquisition costs Minimize penalties associated with brief incursions above the contracted capacity Minimize power peaks Minimize environmental impact of energy used on site Maximize RES self-consumption | | |
| Risk | Mitigations | |
| Whitegoods logistics, installation and maintenance running late due to a supplier. | Regular follow up directly with manufacturers. | |
| Tenants prefer not to choose/use Interconnect devices | Launch information folders + overview on available appliances by the summer of 2021, delivery on site by the end of 2021/beginning 2022. | |

Belgium BE.05



| | |
|-------------------|------------------------|
| Pilot ID | BE.05 |
| Pilot Name | Hasselt Cordium |
| Pilot Responsible | dominic.ectors@vito.be |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|---|----------------------------|--------------------------|---|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 5 | September 2021 | Wind turbine | 1 | Installed |
| Dishwasher | | TBD | PV(-T) | | TBD |
| Dryer | 4 | September 2021 | Heat pump | 1 | Already available |
| EV charger | 1 | September 2021 | | | |
| Community battery | 1 | September 2021 | | | |

Bottlenecks in installation

Data capturing platform: On time. Data capturing platform has been deployed. Data gateway (PLC) at Cordium site installed in June 2021.

BEMS/DEMS application platform: On time. Platform instance has been deployed. Services are being added.

Smart appliances: Yet to be delivered.

Installation of additional sensors and gateways in some selected apartments: Yet to be installed.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.05



| | |
|--------------------------|------------------------|
| Pilot ID | BE.05 |
| Pilot Name | Hasselt Cordium |
| Pilot Responsible | dominic.ectors@vito.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|---|---|
| <p>Minimize DHN operating costs :</p> <p>Manage flexibility at community level to reduce emissions (i.e. minimize the use of the gas-fired heatpump). Optimally coordinate the operation of the resistive booster heater of the hot tapwater vessels to make the most effective use of local generation</p> <p>Manage flexibility at community level to mitigate local grid congestion problems.</p> <p>Efficient operation of the DHN (lowering the temperature)</p> <p>Minimize electricity invoice by means of peak shaving, maximizing RES self-consumption and adapting to dynamic tariffs</p> | | <p>Operational testing of Interoperability Layer concept in a micro-district heating network context fed by a heatpump, in combination with other additional flexibility coming from electric boosted for hot water production, an EV, a community level battery, and some whitegoods.</p> <p>Multiple SAREFized services (PV forecaster, Day-ahead price forecaster, wind-forecaster, flexibility service, ...) communicating via the Interoperability Layer.</p> <p>Contributing to the overarching Cybergrid pilot by providing flexibility.</p> |
| Pilot use cases | | |
| <p>Community cost optimization of efficient heat generation. See D1.3</p> | | |
| Risk | Mitigations | |
| <p>Operational aspects of the Interoperability Layer like stability, performance, security, might not operate smoothly.</p> <p>Not ideal timing of the availability of the Service Specific Adapters.</p> <p>Delays in delivery of smart appliances.</p> | <p>Pre-testing of services' interaction and of interaction with whitegoods should discover potential Interoperability Layer flaws before the pilot site goes operational. Partial tests can be started in case not all SSAs are on time. However, for interaction with smart appliances no alternative is available (no EEBUS SPINE endpoint is foreseen).</p> <p>Smart appliances are part of the pilot, but they are not the main focus of the pilot.</p> | |

Belgium BE.06



| | |
|-------------------|-------------------|
| Pilot ID | BE.06 |
| Pilot Name | Kobbegem NANOGRID |
| Pilot Responsible | arnor@think-e.be |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|---|----------------------------|--------------------------|------|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 1 | September 2021 | Battery | 1 | September 2021 |
| Dishwasher | 1 | September 2021 | PV | 15kW | Already installed |
| Dryer | 1 | September 2021 | EV charger | 1 | September 2021 |
| | | | Heat pump | 1 | September 2021 |
| | | | | | |

| Bottlenecks in installation | | | | | |
|---|--|--|--|--|--|
| Waiting for device information from manufacturers. 1 possible heat pump might be put out of scope in light of the timeline of the adapter. Further discussions at pilot level is ongoing. Replacement heat pump outside of the project has already been identified. | | | | | |

** Overall status:
 ■ On time
■ Behind schedule - but still reachable
■ Late

* Progress:
 0% Not started
 >0% Started
 100% Completed

Belgium BE.06



| | |
|--------------------------|-------------------|
| Pilot ID | BE.06 |
| Pilot Name | Kobbegem NANOGRID |
| Pilot Responsible | arnor@think-e.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|--|--|
| Give freedom to the user to join and leave the energy community. Maximize the energy efficiency of the household and of the community through automatic smart energy decisions with impower. | | This pilot aims to demonstrate interoperability through a software platform which is not part of Interconnect. The pilot will engage in energy trading within a “virtual” peer-to-peer energy community. |
| Pilot use cases | | On top of this, this pilot aims to implement a non-energy use case focused on energy communities. The ambition is to make this use case interoperable through the interoperability framework. |
| HLUC1: "Connectionless" maximization of flexibility in Energy Community HLUC2: Voluntary (non-) participation in Energy Community HLUC3: Peer to peer exchange between (virtual) Energy Community | | |
| Risk | Mitigations | |
| Delay on the information regarding device models. | Check with device manufacturers directly and timely. | |

Belgium BE.07



| | |
|-------------------|--------------------|
| Pilot ID | BE.07 |
| Pilot Name | New pilot (TBD) 3E |
| Pilot Responsible | MEL@3e.eu |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div><div></div><div>X</div><div></div></div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|--|----------------------------|--------------------------|--|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | | | Battery | | |
| Dishwasher | | | | | |
| Dryer | | | | | |
| EV charger | | | | | |
| Heat pump | | | | | |

Bottlenecks in installation

As the current pilot doesn't have the minimum requirements for implementation of the use case, a new one is to be arranged.

** Overall status: ■ On time
■ Behind schedule - but still reachable
■ Late

* Progress: 0% Not started >0% Started 100% Completed

Belgium BE.07



| | |
|--------------------------|--------------------|
| Pilot ID | BE.07 |
| Pilot Name | New pilot (TBD) 3E |
| Pilot Responsible | MEL@3e.eu |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|--|--|
| Monetizing flexibility resources of a community of tertiary buildings | | Interoperable explicit flexibility service provision in the context of USEF framework to CyberGrid as the Aggregator |
| Pilot use cases | | |
| Flexibility resources are monitored, managed and controlled and subsequently, monetized as per the operator’s preferences for local use (Increase RES for self-consumption, E-Mobility Services for Energy Communities, Energy Monitoring and Management, Peak Shaving, Tariff/Price-based Usage Management) and/or grid use (Flexibility Aggregation and Disaggregation). Accordingly, objectives are: 1. Maximize RES self-consumption; 2. EV charge infrastructure Management; 3. Energy Monitoring and Management; 4. Peak Shaving; 5. Tariff/Price-based Usage Management considering incentives/constraints (ToU, FiT, dynamic tariff, etc.); 6. Flexibility Aggregation and Disaggregation | | |
| Risk | Mitigations | |
| Regulatory context may hinder some of the community applicability to provide grid oriented services. As the DSO is not part of the consortium, grid-centric services are hard to be justified. Also communities cannot participate directly into the high voltage flexibility markets and no local market is in place. Remote controllability of storage and HVAC units is a key. | It is expected (but not confirmed) that a regulatory framework surrounding citizen energy communities and collective self-consumption will be available. CyberGrid will have a simulated DSO model to close the market and operation loop at operational planning and real-time operation stages. Close collaboration with DAIKIN and ABB to have required functionalities | |

Belgium BE.08



| | |
|-------------------|--------------------------|
| Pilot ID | BE.08 |
| Pilot Name | Zellik GEP |
| Pilot Responsible | Thierry.Coosemans@vub.be |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|---|----------------------------|--------------------------|--|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | | | Battery | | |
| Dishwasher | 2 | Q4 2021 | | | |
| Dryer | | | | | |
| EV charger | 2 | Q4 2021 | | | |
| Heat pump | | | | | |

| Bottlenecks in installation | | | | | |
|--|--|--|--|--|--|
| Supplier delays outside of Interconnect: the Green Energy Lab is still under construction and is planned to be finalized in Q4 2021. EMS and BMS and EVS still to be decided. Details of whitegoods not yet available. | | | | | |

** Overall status:
 ■ On time
■ Behind schedule - but still reachable
■ Late

* Progress:
 0% Not started
 >0% Started
 100% Completed

Belgium BE.08



| | |
|--------------------------|--------------------------|
| Pilot ID | BE.08 |
| Pilot Name | Zellik GEP |
| Pilot Responsible | Thierry.Coosemans@vub.be |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|---|---|
| Peer-to-peer trading between houses. Use white goods and EV charger devices to test a specific use case. | | Demonstrate a specific Use case by using the Interconnect Interoperability layer, a BMS and EMS with the necessary adapters and SAREF ontology. |
| Pilot use cases | | |
| HLUC 1. Energy community based on P2P energy trading | | |
| Risk | Mitigations | |
| BMS and EMS and EVS compatibility issues or supply issues. | Use BMS and EMS from other pilots or similar for which adapters are being developed. Follow up with EVS Wirelane or external suppliers. | |
| Construction delay. | Follow up with concerned project manager and suppliers of devices. | |

France FR.01



| | |
|-------------------|-------------------------|
| Pilot ID | FR.01 |
| Pilot Name | Toulon Metropole |
| Pilot Responsible | Stephane.vera@yncrea.fr |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|--------------------------|--|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 78 | Q4 2022 | | | |
| Dishwasher | 78 | Q4 2022 | | | |
| Dryer | 78 | Q4 2022 | | | |
| EV charger | 5 | Q4 2022 | | | |
| Heat pump | 10 | Q4 2022 | | | |

Bottlenecks in installation

- Missing information from dishwasher and dryer manufacturers.
- Heat pump => still question if the heat pump can be delivered if the EEBUS protocol is not implemented natively in Engie's devices.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

France FR.01



| | |
|--------------------------|-------------------------|
| Pilot ID | FR.01 |
| Pilot Name | Toulon Metropole |
| Pilot Responsible | Stephane.vera@yncrea.fr |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|---|---|
| <ul style="list-style-type: none">• Maximize the potential of renewable energy• Reduce the environmental impact• Reduce the bill of the customer• Validate social and technological acceptance among different types of users | | EV platform flexibility provider, EV platform EMS command service mapping; EV platform grid info retrieval service mapping; EV platform forecaster service mapping; EV platform infrastructure commands service mapping; EV platform production site info retrieval service mapping; EV platform traffic light service mapping; EV platform infrastructure monitoring service |
| Pilot use cases | | |
| Dynamic Tariff : (24 different tariffs per day) allows users to benefit from lower electricity tariffs by automatically acting on their consumption to reduce their bill and their carbon footprint Maximize use of RES: Manage the different customer uses by maximizing renewable energy consumption via smart meter consumption and production data | | |
| Risk | Mitigations | |
| <ol style="list-style-type: none">1. Strong timeline constraints to deliver solutions on time and connected in an interoperable way for demo 12. Difficulties to synchronize the different partners of the pilot in terms of technical, functional and responsibility scopes3. Lack of visibility on the quantities and deliverable dates of white goods.4. Lack of understanding of the implementation of the services from the white goods manufacturers. | <ol style="list-style-type: none">1.& 2.Arbitration meetings:<ol style="list-style-type: none">a)Between Engie/TV about the recruitmentb)Between Enedis/Engie about the usage of the “smart metering platform” and the “power limitation “servicesc)Rework on the Grant Agreement ongoing.3.& 4. Await contact from white goods manufacturer from WP6. | |

Germany DE.01



| | |
|-------------------|--------------------------------|
| Pilot ID | DE.01 |
| Pilot Name | Hamburg |
| Pilot Responsible | fischedick@keo-connectivity.de |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|--------------------------|---|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | | TBD | Energy mgt device | 6 | September 2021 |
| Dishwasher | | TBD | SMGW from Theben | 6 | September 2021 |
| Dryer | | TBD | | | |
| EV charger | 10 | September 2021 | | | |
| Heat pump | | TBD | | | |

Bottlenecks in installation

Legal Framework (work in progress) which describes the Service for the Hotels and the interaction between the responsible parties isn't finalized yet.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Germany DE.01



| | |
|-------------------|--------------------------------|
| Pilot ID | DE.01 |
| Pilot Name | Hamburg |
| Pilot Responsible | fischedick@keo-connectivity.de |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|--|--|
| Five Hotels in the area of Hamburg. Each Hotel with Smart Meter Gateway, added Value Module including local EMS and two Wallboxes. | | Grid interaction services by using InterConnect Knowledge Engine and SAREF Ontology on top of the BSI SMGW infrastructure. |
| Pilot use cases | | |
| Flexibility Protection Service and Variable Tariff Calculation Service via Grid interaction. Local fuse protection service and Fair Share Algorithm on local EMS. | | |
| Risk | Mitigations | |
| Delays in signing contracts. | Monitoring and adapting the timeline for the contract finalization and the signing of the documents by the Hotels. | |

Germany DE.02



| | |
|-------------------|-------------------|
| Pilot ID | DE.02 |
| Pilot Name | Norderstedt |
| Pilot Responsible | bartsch@eebus.org |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|--------------------------|----|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 50 | September 2021 | Energy mgt device | 75 | September 2021 |
| Dishwasher | 50 | September 2021 | SMGW from Theben | 75 | September 2021 |
| Dryer | 50 | September 2021 | Solar PV system | 1 | September 2021 |
| EV charger | 10 | October 2021 | | | |
| Heat pump | 10 | October 2021 | | | |

Bottlenecks in installation

The contracts with partners is not signed yet. Negotiations ongoing.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Germany DE.02



| | |
|--------------------------|-------------------|
| Pilot ID | DE.02 |
| Pilot Name | Norderstedt |
| Pilot Responsible | bartsch@eebus.org |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|---|---|
| Realize smart and intelligent connection between up to 75 residential buildings/apartments with the DSO Stadtwerke Norderstedt via standardized German SmartMeterGateway (SMGW) infrastructure. Manage the property via sarifized EEBUS Use Cases for tariff management and capacity management via the transparent CLS communication channel. Provide information platform for the pilot user and push manual load shift via tariff notifications. | | Use of the backend EMS and local EMS with the same SAREFized data as in the Hamburg pilot. Use of manufacturers interoperable EEBUS use cases with all appliances. |
| Pilot use cases | | |
| Grid stability via power limitation @grid connection point. Max utilization of renewable -wind- energy @grid connection point (general generation). Maximize flexible energy consumption in premises with-/out PV. Provide dashboard to inform user about status and stimulate to use opportunities. | | |
| Risk | Mitigations | |
| The smart devices will not have the expected functionality/use cases. We will not find pilot participants for the HVAC installations. | We are planning the installation of the devices and appliance with the current functionality and feature set and update all components with the local HVAC service partner we want to take planned. | |

Greece GR.01



| | |
|-------------------|---------------|
| Pilot ID | GR.01 |
| Pilot Name | Greek Pilot |
| Pilot Responsible | ds@gridnet.gr |

| | |
|------------------|---|
| Progress* | 0% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|----|----------------------------|---|---|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 20 | September 2021 | Smart-Meters | COSMOTE(17/20) GRIDNET(25/50) HERON(71/200) | September 2021 |
| Dishwasher | 20 | September 2021 | Water Boilers | COSMOTE(1/4) GRIDNET(5/10) HERON(2/5) | September 2021 |
| Dryer | 20 | September 2021 | smart-plugs/switches/sockets | COSMOTE(40/50) GRIDNET(5/20) | September 2021 |
| Heat pump | 10 | Q1 2022 | temperature/humidity (pressure) sensors | COSMOTE(15/20) GRIDNET(50/100) | September 2021 |
| | | | door/window sensors | COSMOTE(18/25) GRIDNET(25/50) | September 2021 |

Bottlenecks in installation

Constraints due to covid-19 could delay the planned installations.

** Overall status: ■ On time
■ Behind schedule - but still reachable
■ Late

* Progress: 0% Not started >0% Started 100% Completed

Greece GR.01



| | |
|--------------------------|---------------|
| Pilot ID | GR.01 |
| Pilot Name | Greek Pilot |
| Pilot Responsible | ds@gridnet.gr |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|--|---|
| The Greek pilot of the InterConnect project will be conducted in three different cities: Athens, Volos and Thessaloniki. We will pursue to enroll residential consumers in our pilot and offer them the opportunity to familiarize with new technologies focused on the digitalization of the energy sector. | | The operation of multiple services from Interconnect Service Store and implement them in three locations. Using different suppliers for additional sensors and equipment and different energy management systems to demonstrate and use interoperability. |
| Pilot use cases | | |
| Energy Monitoring & Management - Home Comfort - Flexibility Provision - Data analytics Services - Security services -Increase CO2 savings and become eco-friendly - User Engagement - Unified User Interface Application - Appliances' energy efficiency | | |
| Risk | Mitigations | |
| Deployment of Project's planned appliances could be affected by shipment delays or covid-19 related delays. Planned home smart-meter installations will not have finished by September 2021 (M24). | Already deployed appliances/devices could be used for most of the use cases If some of the smart-meters will not be installed on-time, measurements by similar households will be used for training the forecasting models. | |

Italy IT.01



| | |
|-------------------|----------------------|
| Pilot ID | IT.01 |
| Pilot Name | Milano |
| Pilot Responsible | s.fava@planetidea.it |

| | |
|------------------|---|
| Progress* | 15% |
| Overall status** | <div> <div></div> <div>X</div> <div></div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|-----|------------------------------|--------------------------|--|----------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 250 | September 2021 to early 2022 | | | |
| Dishwasher | 50 | September 2021 to early 2022 | | | |
| Dryer | | September 2021 | | | |
| EV charger | | | | | |
| Heat pump | | | | | |

Bottlenecks in installation

The Social dwelling owner have initially asked to intervene without substituting any device by providing the whitegoods right before the end users would have entered the apartments (July 2021). The request was suddenly changed and the engagement activities have been reactivated to accomplish the recruitment of 250 single apartments targeting the end of 2021 for Whirlpool's washing machines and the beginning of 2022 for BOSCH washing machines and dishwashers.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Italy IT.01



| | |
|--------------------------|----------------------|
| Pilot ID | IT.01 |
| Pilot Name | Milano |
| Pilot Responsible | s.fava@planetidea.it |

| Pilot objectives | | Pilot contributions towards interoperability |
|---|---|---|
| Test and demonstration of an interoperable Energy Management System (@ district level, through the PlanetApp), involving different manufacturers of appliances | | Seamless data exchange between different producers, leveraging on standardized communication protocols. |
| Pilot use cases | | |
| Testing of digital services supporting the electricity grid (<u>control capability and Energy Management system to promote flexibility services</u>) leveraging on a set of interoperable connected devices Demonstration of a seamless data exchange, data aggregation and capability control (App and digital platform) to validate business and technical cases | | |
| Risk | Mitigations | |
| Procurement activities and contractual agreement to assign the devices are not aligned. Digital services not aligned in time with ontologies, data format and authentication protocols therefore not available at the time of purchase of the devices | The production of white goods will be split into several batches. Engagement strategy over the time to collect participation and to train end users to use the digital service | |

Netherlands NL.01



| | |
|-------------------|---------------------------|
| Pilot ID | NL.01 |
| Pilot Name | Eindhoven |
| Pilot Responsible | wbeelen@volkerwessels.com |

| | |
|------------------|---|
| Progress* | 20% |
| Overall status** | <div> <div></div> <div></div> <div>X</div> </div> |

| Devices provided through Interconnect | | | Other devices (optional) | | |
|---------------------------------------|-----|---|--------------------------|-----|------------------------------------|
| Planned devices | | Expected installation date | Planned devices | | Expected installation date |
| Washing machine | 85 | Q2 2022 | Gateways | TBD | Q2-Q3 2021 + Q3 2021-Q1 2022 |
| Dishwasher | 130 | 99 devices in Q3 2021 (in use Q2, 2022) | Sensors | TBD | Q2-Q3 2021 + Q3 2021-Q1 2022 |
| Dryer | 85 | Q2 2022 | Air ventilation system | 99 | Q2-Q4 2021 in residential building |
| EV charger | 3 | Q2 2022 | | | |
| | | | | | |

Bottlenecks in installation

For the residential pilot, the integration in building process is complex cause of strict agreements between kitchen supplier and contractor. So alignment and technical integration is complex/time consuming.

For the commercial pilot. There is a lot of old devices/equipment already in place, but not all documented. So installation and alignment is time consuming. Also alignment with different stakeholders (building owner, facility management, community manager, users/tenants) is needed.

** Overall status:

- On time
- Behind schedule - but still reachable
- Late

* Progress: 0% Not started >0% Started 100% Completed

Netherlands NL.01



| | |
|--------------------------|---------------------------|
| Pilot ID | NL.01 |
| Pilot Name | Eindhoven |
| Pilot Responsible | wbeelen@volkerwessels.com |

| Pilot objectives | | Pilot contributions towards interoperability |
|--|---|---|
| Redeveloping domestic and multi-tenant buildings to boost new IoT based energy services to consumers. | | Different vendors/brands of hardware installed in two different types of pilots (so also different type of users/stakeholders and use cases). |
| Pilot use cases | | |
| Energy and non-energy services. Integrated privacy and security protection design for households. EV charging and battery storage: implementation for connecting EV-chargers/grids and battery storage. Grid interaction between devices and EV and local storage using IoT technologies, and considering DSO grid constraints and RES. | | |
| Risk | Mitigations | |
| Integration with (old) charging stations and not (yet) functioning battery, cause of lacking battery management system. | Early start of project management and contact with developer/manufacturer of hardware to investigate missing software integrations. And alignment with different suppliers of hardware/software to have back up scenario for replacement of components. | |



Conclusions

- This document is a first in a series of 10 for the follow-up of the pilot activities and to assess their status within WP6 .
- 5 pilots indicate a lack of information regarding the whitegoods delivery and type in the project as the main bottleneck for installation. Pilot information sessions have been planned to mitigate this barrier.
- 3 pilots are waiting for previous infrastructure to be completed (such as smart metering) in order to continue with installation of devices.
- 3 pilots indicate the lack of maturity of the interoperability framework as an important risk for the installations.
- Lastly, three pilots have very strict time constraints for the installation of devices which poses a risk as developments in the project have been delayed.
- The pilots contribute to interoperability by participating in the overarching cybergird flexibility use case. Next to this, they SAREFize existing and/or new services in order to make them interoperable. Several pilots will make use of services provided by other pilots (such as forecasters) in order to demonstrate interoperability. More details can be found in the individual dashboards for the pilots.

interconnect

interoperable solutions
connecting smart homes,
buildings and grids

FINANCING



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