interconnect

interoperable solutions
connecting smart homes,
buildings and grids

WP 6
Task 6.2.3
Deliverable 6.10 V2

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Report Overview

- This document is a third 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) – D6.8
  - M24: Evaluation period Jul. 2021 to Sep. 2021 – Expected delivery (Oct. 2021) – D6.9
  - M30: Evaluation period Oct. 2021 to Dec. 2021 – Expected delivery (Mar. 2022) – D6.10 This document
  - M33: Evaluation period Jan. 2022 to Mar. 2022 – Expected delivery (Apr. 2022)
  - M36: Evaluation period Apr. 2022 to Jun. 2022 – Expected delivery (Jul. 2022)
  - M39: Evaluation period Jul. 2022 to Sep. 2022 – Expected delivery (Oct. 2022)
  - M42: Evaluation period Oct. 2022 to Dec. 202 – Expected delivery (Jan. 2023)
  - M45: Evaluation period Jan. 2023 to Mar. 2021 – Expected delivery (Apr. 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.

Pilot List

- **16 Pilots, 7 Countries:**

I. **Belgium**:
BE 01 Antwerp - Student Dormitory
BE 02 Genk - ThermoVault
BE 03 Genk - Thorpark
BE 04 Gent - Nieuwe Dokken
BE 05 Hasselt - Cordium
BE 06 Kobbegem - Nanogrid
BE 07 Vinkenbos - 3E
BE 08 Zellik - Green Energy Park

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

III. **Germany**:
DE 01 – Hamburg
DE 02 – Norderstedt

IV. **Greece**: GR 01 – Volos

V. **Italy**: IT 01 – Milano

VI. **Portugal**: PT 01 – Portugal
PT 02 – Portugal

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

VIII. **Overarching Pilot:** OV 01 – Cybergrid

Report Content

- The planning of the deliverables has slightly shifted due to recent project interventions. D6.10 was due in January 2022 but has moved to March 2022 and has been combined with D6.11. The same periodicity of 3 months will be kept from this month on.
- This reporting period has seen a focus on the re-starting of the pilots and their development and preparations, the implementation of the KPI measurements at each pilot and an increased coordination of the manufacturers.
- Most, but not all pilots were able to finalize the KPIs that they will measure. This finalization will continue in the next period.
- Most, but not all KPIs have been selected across all pilots. For example, the methodology to measure Cybersecurity KPIs has only been finalized at the end of this period. Workshops with the pilots have started and will continue in the next period. All of the pilots will include the cybersecurity KPIs.
- The summary of the KPI spreadsheet and all contributions from the pilots have been posted on the project drive here: https://drive.inesctec.pt/f/21079161
- Almost no KPIs could be measured yet since most pilots haven't started yet.
- There is a plan from WP5 to automate the KPIs into the IF. Possibly, this will warrant a change in the format of this report.

General Overview

- KPIs have been presented to and reviewed by the pilots.
- A total of 39 KPIs are going to be measured across 17 pilots.
- There are 6 Subject Groups
- One pilot (FR.01) has opted to add a number of new KPIs which are being finalized.
- The details and descriptions of these KPIS are shown in the next slides.

KPI Subject Groups	Total KPI's
6	39
INTEROPERABILITY	8
ENERGY	8
USER_INVOLVEMENT_AND_ACCEPTANCE	6
CYBERSECURITY	3
BUSINESS	3
DEPLOYMENT/RESULTS	11

KPI Numbers and Descriptions

KPI Nr	Name
INT 1	# services registered in the Service Store of Interconnect, developed by the project partners
INT 2	# services registered in the Service Store of Interconnect, developed/ adapted as result of open calls
INT 3	# Instances/runtimes per service
INT 4	# Instances/runtimes of the interoperability layer
INT 5	# messages and datapackets per service
INT 6	# DSO adopting the standardized interface
INT 7	# flexibility platforms interfacing with DSO Interface
INT 8	# Flexibility platforms interfacing with DSO interface
EN 1	Increase in the use of RES due to load shift in buildings
EN 2	Maximum aggregated power fraction per district for demand side flexibility (% of the whole district contracted power that has DSF capability)
EN 3	Peak load reduction
EN 4	Decrease in injection to the main grid * Aggragated for demonstration site * For each individual flexible asset
EN 5	Locally produced energy traded in community
EN 6	Number of times the voltage at grid connection exceeds the threshold
EN 7	Grid peak load reducation at transformer level
EN 8	Carbon Intensity reduction
USER 1	Rise in customer energy awareness
USER 2	Net promoter score measuring customer satisfaction (difference in % between promoters and detractors)
USER 3	Customer effort score
USER 4	User-centric co-creation engagement
USER 5	Amount of user adoption/involvement by the end of the project (benchmark: beginning of the pilot)

KPI Numbers and Descriptions

USER 6	Increase in perceived value of the service
CYBER 1	Security assesment of pilot: in task 2.3 Trialog will do a high level risk analysis of the pilots. This includes architectural design choises, user interactions and high level vulnerabilities
CYBER 2	Maturity Levels
CYBER 3	Protection Level of the system
BUS 1	customer economic impact
BUS 2	# validated business cases ready to be tested in the market
BUS 3	Average estimated cost decrease of deploying new service
DEP 1	Fraction of households/buildings participating to the demand side flexibility (DSF)
DEP 2	Number of participants
DEP 3	Number of Digital Innovation Hubs (DIHs) reached as potential adopters/disseminators
DEP 4	Number of standards and regulatory bodies approached and influenced by the project
DEP 5	Number of Pilots interested in becoming Associated Pilots
DEP 6	Number of stakeholders in the InterConnect Community
DEP 7	Number of services/applications integrated with the marketplace
DEP 8	Number of policy-makers receiving recommendations about measures to foster the European decentralised energy marketplace
DEP 9	Number of SMEs and start-ups reached
DEP 10	Number of SMEs and start-ups making use of the interoperable marketplace toolbox
DEP 11	Percentage bottom-up projects that contribute to improve energy efficiency

BE Pilot summary

- The 8 Belgian sub pilots have each identified different objectives and therefore different KPIs.

- All of the Belgian pilots will measure the interoperability KPIs 1 to 5. As the DSO in Belgium is not part of Interconnect, no DSO interoperability KPIs (6 to 8) will be gathered.

- The energy KPIs (1 to 8) are distributed among the sub pilots in order to cover all possible measurements, the Nanogrid (BE06) and Zellik (BE08) sub pilot are focusing on peer to peer energy trading and the accompanying energy KPI 5.

- The Belgian sub pilots Nanogrid and Zellik are less user centric and will therefore minimise the user acceptance KPIs, however the other Belgian sub pilots are collecting user acceptance data.

FR Pilot summary

- KPIs: The French pilot has submitted a temporary KPI selection which is still due to change for the next iteration of this deliverable. For now, the Interoperability KPIs covered by the French pilot are focused around the SSA development (INT 1 and 2).

- The French pilot will measure the traded energy inside the community and the accompanying energy KPIs EN1 and EN5. Several custom KPIs have been added in order to track the (energy) developments in the French pilot as can be observed from the KPI list.

- It is however clear that the French pilot has a DSO in its partnership. Hence, the KPIs that are DSO-specific will be reviewed in the next period.

DE Pilot summary

- The German pilot has submitted a temporary KPI selection which is still due to change for the next iteration of this deliverable. No input has been received from the DE01 Hamburg pilot; the main observations from the Norderstedt pilot is that it will not focus on the interoperability KPIs.

- For now, only a limited amount of energy and user acceptance KPIs have been selected, it is expected that this selection will grow for the next iteration.

GR Pilot summary

- The Greek pilot is highly focused on user acceptance and involvement as is shown by the high number of relevant KPIs selected (USER 1 to 6).
- The energy KPIs selected are related to flexibility, peak load reduction and CO2 reduction (EN 2, EN3, EN8).
- Additional KPIs will be added related to flexibility acceptance and engagement.

IT Pilot summary

- The Italian pilot is highly focused on user acceptance and involvement as is shown by the high number of relevant KPIs selected (USER 1 to 6).

- Additionally, they are targeting 1 DSO system to interface with the solutions developed in Interconnect (INT 8).

- The energy KPIs are centred around available flexibility in the Italian pilot (EN 2). Depending on the measurement equipment, more energy KPIs can be added in the next iteration.

PT Pilot summary

- The ambitions of the Portuguese pilot are reflected by the high number of KPIs selected, they have indicated the highest amount of KPIs amongst all the pilots.

- As a Portuguese DSO is also a project partner, they can cover the DSO related interoperability and energy KPIs which is not the case for most pilots in Interconnect. Equally important is the available measurement equipment that is foreseen in the PT pilot in order to be able to measure all the energy KPIs.

- This puts the Portuguese pilot in a position to cover all interoperability (INT 1 to 8), all energy (EN 1 to 8) and all acceptance (USER 1 to 6) KPIs.

NL Pilot summary

- The Dutch pilot is highly focused on user acceptance and involvement as is shown by the high number of relevant KPIs selected (USER 1 to 6).

- Additionally, they are targeting 1 DSO system to interface with the solutions developed in Interconnect (INT 8) next to the more common interoperability KPIs 1 to 3.

- The energy KPIs are centred around flexibility and peak load reduction in the Dutch pilot (EN 2, EN3). Depending on the measurement equipment, more energy KPIs can be added in the next iteration.

Conclusion

- Most, but not all pilots were able to finalize the KPIs that they will measure. This finalization will continue in the next period. WP6 will try to enforce all KPIs are measured at least once in the project.
- The summary of the KPI spreadsheet and all contributions from the pilots have been posted on the project drive here: https://drive.inesctec.pt/f/21079161
- Almost no KPIs have been measured yet since most pilots haven't started yet.

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