
Interoperable Demand Side Response Engagement Session

Net Zero Innovation Portfolio – Flexibility Innovation Programme

Thursday 3rd March 2022



Agenda

Item
Housekeeping
Purpose of today
Background <ul style="list-style-type: none">• NZIP Overview• Flexibility Innovation Programme Overview
Background: Interoperable demand side response
Proposed Innovation Activity
Feedback and Close

Housekeeping

- The event is **not** being recorded. The presentation slides will be published on the [Flexibility Innovation Programme website](#)
- Please type any comments and feedback into the Q&A function (top right of screen). The Q&A function will be kept open for 10 minutes after the event has finished to allow for any feedback.
- [Feedback can also be submitted via email to flexibilityinnovation-dsr@beis.gov.uk](mailto:flexibilityinnovation-dsr@beis.gov.uk) until **5pm 11th March 2022**. Any comments and feedback received will not be published.
- We will **not** be taking questions at this event or afterwards.
- Please note, the proposed innovation activity is under development and therefore proposals in these slides are **subject to change**.

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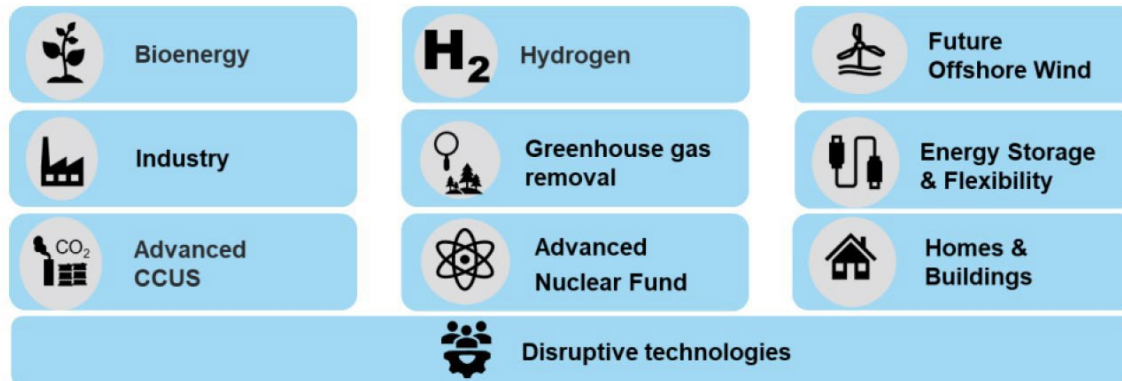
Purpose of Today

The outcome of today's market engagement is to provide an overview of the proposed future innovation activity in the area of interoperable demand side response and to give an opportunity to provide feedback

Net Zero Innovation Portfolio: Background

NZIP Overview

- The Government has set out a commitment to reach net zero emissions by 2050
- The Prime Minister's Ten Point Plan for a Green Industrial Revolution announced a **£1 billion Net Zero Innovation Portfolio (NZIP)**
- NZIP will accelerate the commercialisation of innovative low-carbon technologies, systems and processes in the power, buildings and industrial sectors.
- The portfolio will focus on ten priority areas:



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Flexibility Innovation Programme Overview

- An up to £65 million overarching programme
- Part of BEIS' Net Zero Innovation Portfolio
- Forms a substantial part of the at least £100m funding for energy storage and flexibility challenges as set out in the Prime Minister's ten point plan for a green industrial revolution
- Seeks to enable large-scale widespread electricity system flexibility through smart, flexible, secure, and accessible technologies and markets.
- To achieve this, the programme aims to fund innovation across a range of key smart energy applications.
- It is expected that the programme will run to the end of March 2025
- [Updates to the Flexibility Innovation Programme will be provided on the Flexibility Innovation Programme webpage.](#)

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Interoperable Demand Side Response: Background

Why interoperable demand side response?

- As electricity demand rises due to the electrification of transport, heat and industrial processes, **flexibility from consumers** will become increasingly important.
- The Smart Systems and Flexibility Plan 2021 (SSFP) set out a suite of policies to enable flexibility from consumers, known as “**demand side response**”. Consumers will need access to “energy smart” appliances that make it easier to change their consumption patterns, alongside tariffs and services that incentivise this change.
- As part of this, the Government has committed to taking powers to set regulatory requirements for “energy smart” appliances, guided by principles of **interoperability, data privacy, cyber security and grid stability**.
- The Government also commissioned the British Standards Institute to develop two standards (**PAS 1878 and 1879**) with industry. These standards were published last year and set out a technical framework for small-scale DSR, guided by the same principles, and compatible with the **GB Smart Metering system**.
- As stated in the SSFP, the government will aim to consult in 2022 on an appropriate regulatory approach for flexibility service providers and other organisations controlling load.

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Background to PAS 1878 and 1879

- Standardisation helps to **lower costs** and **promote innovation** in technologies, while **accelerating the uptake** of **secure and interoperable** smart products and services
- Develop **technical specifications** which could be referenced and required by **future regulations** and would enable certification
- Demonstrate **UK leadership** on the international stage, by promoting published standards for **international adoption**



4 principles underpin PAS 1878 and 1879 standards, developed in consultation with industry stakeholders

Interoperability

Data Privacy

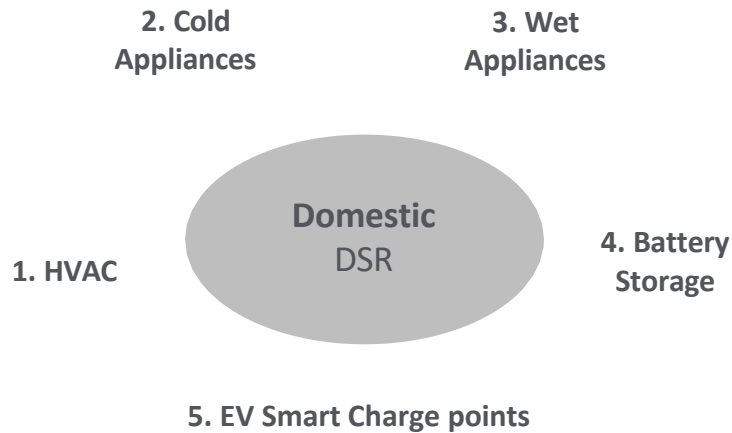
Grid Stability

Cybersecurity

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Background to DSR via PAS 1878/79

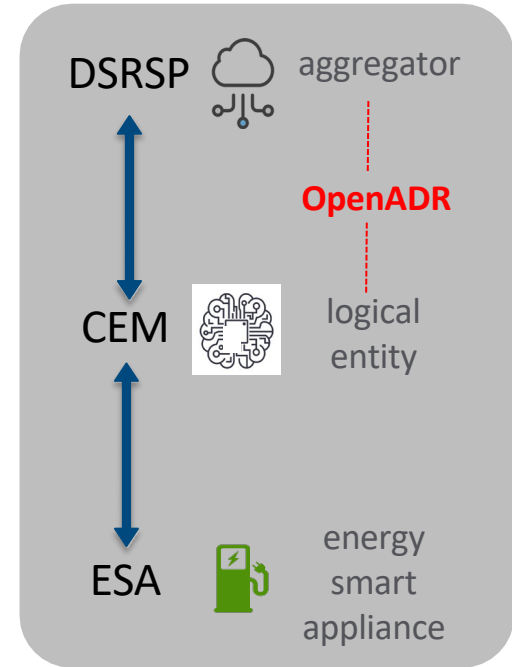
A **standardised technical framework**, covering both **ESAs and DSR** for end-to-end system across **2 PASs**



Operational approach

Specify only the **minimum requirements** to deliver DSR in line with the **4 Policy Principles**, which **allows innovation** on top

Specify a **DSR framework**, with details for **called response services**, with handles for **other routine services** to be built on

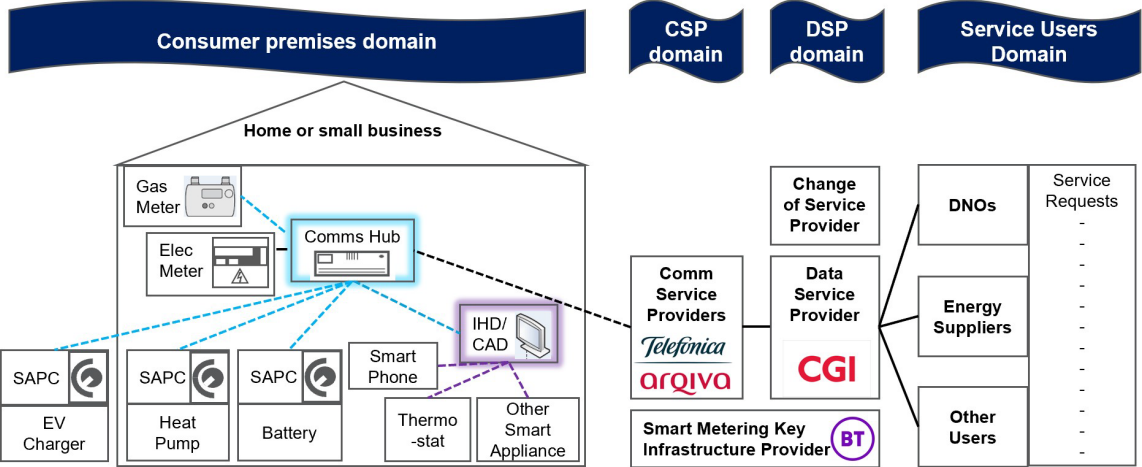


PAS 1878 Appliance-side: “**ESA specification for classification**”

PAS 1879 Grid-side: “**DSR framework for operation**”



Background to DSR via the GB Smart Metering System



- DSR delivered by SAPC
- SAPC technical specifications set out in SMETS
- SAPC can be integrated or non-integrated with the appliance
- PAS 1878 Annex D sets out one interaction of PAS and Smart Metering, but there may be others

Enabling infrastructure & Governance					
1. Legislative Framework	2. Licencing, consumer protection & enforcement	3. Industry code (multi-party contract)	4. Industry governance (including change)	5. Device Certification	6. System security & privacy assurance
Electricity Act 1989 Gas Act 1986 Energy Act 2008			SEC Panel & Sub-Committees	 	CIO Audits Scheme Audit SOC2 Audit

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Interoperable Demand Side Response: Proposed Innovation Activities

Previous Market Engagement

- The **Flexibility Innovation Programme: Market Engagement Questionnaire** collected responses to inform future innovation activity across Integration & Interoperability of Demand Side Response Systems
- Feedback received amongst other sources has been considered during the development of the proposed innovation activity.

Proposed Innovation Activities

Proposed objectives: To enable flexible system integration and interoperability, we are considering options to support innovation in demand side response (DSR) that focus on developing, testing and demonstrating energy smart appliances (ESAs) and platforms according to the following technical frameworks:

- Publicly Available Specification (PAS) 1878 and principles of PAS 1879
 - GB smart metering system and standalone auxiliary proportional controller (SAPC) specification and PAS 1878 (building on Annex D and Annex F)
-
- Whilst meeting the core principles of **interoperability, cyber security, data privacy and grid stability** set out in Smart Systems and Flexibility Plan 2021*.

[*Transitioning to a net zero energy system: smart systems and flexibility plan 2021](#)



Scope of Proposed Innovation Activity

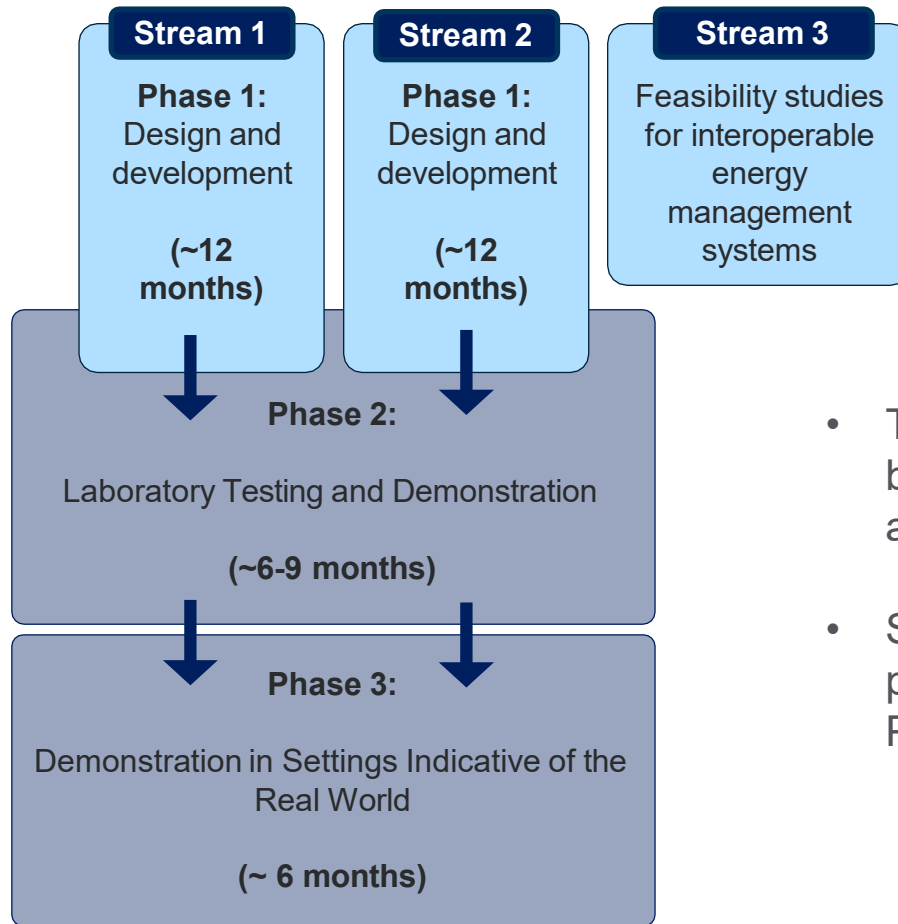
- Options in scope for consideration are innovations focusing on low voltage (LV) connected loads (domestic and small business settings).
- Energy smart appliances in scope for consideration are:

- Smart electric vehicle (EV) charge points, including V2X devices
- Battery storage
- Electric heating, ventilation, and air conditioning (HVAC), including heat pumps
- White goods*

*White goods refers to cold and wet appliances such as refrigerators, freezers, washing machines, tumble dryers, and dish washers.



Structure of Proposed Innovation Activity



- Testing and facilities will be provided by an independent contractor(s) appointed by BEIS
- Stream 1 and 2 will be expected to provide technical support during Phases 2 and 3

[The invitation to tender for the *Laboratory testing and demonstration of interoperable DSR applications in settings indicative of the real world* is open to applicants until 5pm 7 March 2022 \(TRN: 5532/12/2021\)](#)



Stream 1 – Interoperable DSR to PAS 1878 and 1879

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Objectives:

- Design and develop DSR systems in accordance with PAS 1878 specification (excluding Annex D - smart metering route) and principles of PAS 1879
- Provide recommendations on how PAS 1878 and 1879 could be updated in future iterations.

Funding mechanism: Grant
(participants to provide match-funding)

Expected participant organisations:

- ESA manufacturers
- DSR service providers

Stream 2 – Interoperable DSR via the GB Smart Metering System

Stream 2 – Interoperable DSR via the GB Smart Metering System

Objectives:

- Design and develop ESAs and DSR service provider platforms to provide DSR using PAS 1878 and the GB smart metering system based on:
 - OpenADR and SAPC commands delivered to the SAPC via two routes:
 1. SMWAN and SMHAN
 2. Alternative comms routes (e.g. internet based)

Funding mechanism: Grant
(participants to provide match-funding)

Expected participant organisations:

- ESA manufacturers
- DSR service providers
- Energy suppliers
- SAPC manufacturers

Stream 3 – Interoperable Energy Management Systems (EMS)

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Objectives:

- Explore the feasibility of developing an EMS with an interface to:
 - PAS 1878 compliant Customer Energy Managers (CEM) and;
 - SAPC using OpenADR, in line with relevant parts of PAS 1878 via the GB Smart Metering System
- Provide recommendations on how PAS 1878 and 1879 could be updated in future iterations

Funding mechanism: Small Business Research Initiative (SBRI)

Expected participant organisations:

- EMS manufacturers
- EMS operators



*An EMS is used to mean domestic HEMS (home energy management system) and smaller non-domestic settings EMS

Comments & Feedback

- We welcome feedback on the proposed innovation activity. The feedback will not be published but BEIS may use it to inform future innovation competitions.
- The Q&A function will be kept open for 10 minutes after the event has finished to allow for any feedback.
- If you would like to provide further feedback after the event, please submit this via email to flexibilityinnovation-dsr@beis.gov.uk. The deadline for providing feedback is **5pm 11th March 2022**. Feedback received after this deadline may not be considered.
- We will **not** be providing responses to questions at this time.
- Updates to the Flexibility Innovation Programme will be provided on the [Flexibility Innovation Programme webpage](#).

Thank you for listening!