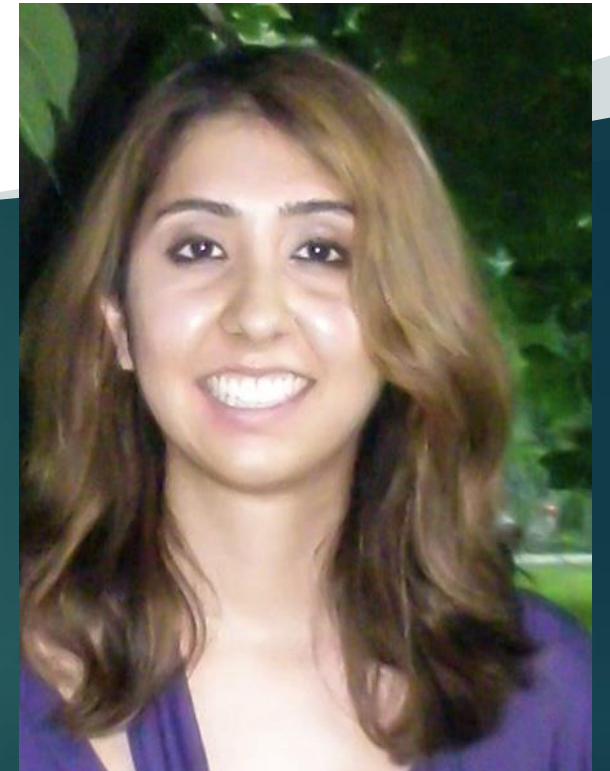# EE Hub Digitalisation Working Group
Alison Delgado, Pacific Northwest National Laboratory
Team: Vikas Chandan, Kathryn Otte, and Tanner Stelmach
Joint Meeting of the APEC EGEEC & APEC EGNRET
6 October 2022

Agenda

1. Overview of EE Hub Digitalisation Working Group (DWG)

2. Launch of recent report on *Digitalisation for Energy Efficiency of Buildings Operations: Lessons Learned from the EE Hub Digitalisation Working Group*

3. Current activities and next steps

Digitalisation Working Group (What)

- Established to increase multilateral cooperation in the field of energy efficiency and demand flexibility, specifically to:
    1. Identify shared priorities and challenges so that collaborative research can be conducted to address the most pressing issues
    2. Share lessons learned so that successes can be replicated
    3. Enhance the development of instruments that enable effective implementation of energy efficiency, demand response and other demand flexibility policy measures

- At its kickoff meeting in December 2021, the Working Group decided to focus its first activities on buildings.

Digitalisation Working Group (Why)

- Digitalisation is creating new opportunities to optimize energy systems and decrease GHG emissions

- Among these sectors, buildings are critical to address because they comprise 36% of global energy demand and 37% of global energy-related CO2 emissions.[1]

- The IEA estimates that **digitalization could cut 10% of total building energy consumption by 2040**.[2]

Sources:
(1) 2021 UNEP Global Status Report for Buildings and Construction
(2) 2017 IEA Digitalization & Energy Report

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Digitalisation Working Group (Who)

- To date, eight member countries and the European Commission have joined.
  - U.S. (lead)
  - Australia
  - Brazil
  - Canada
  - Denmark
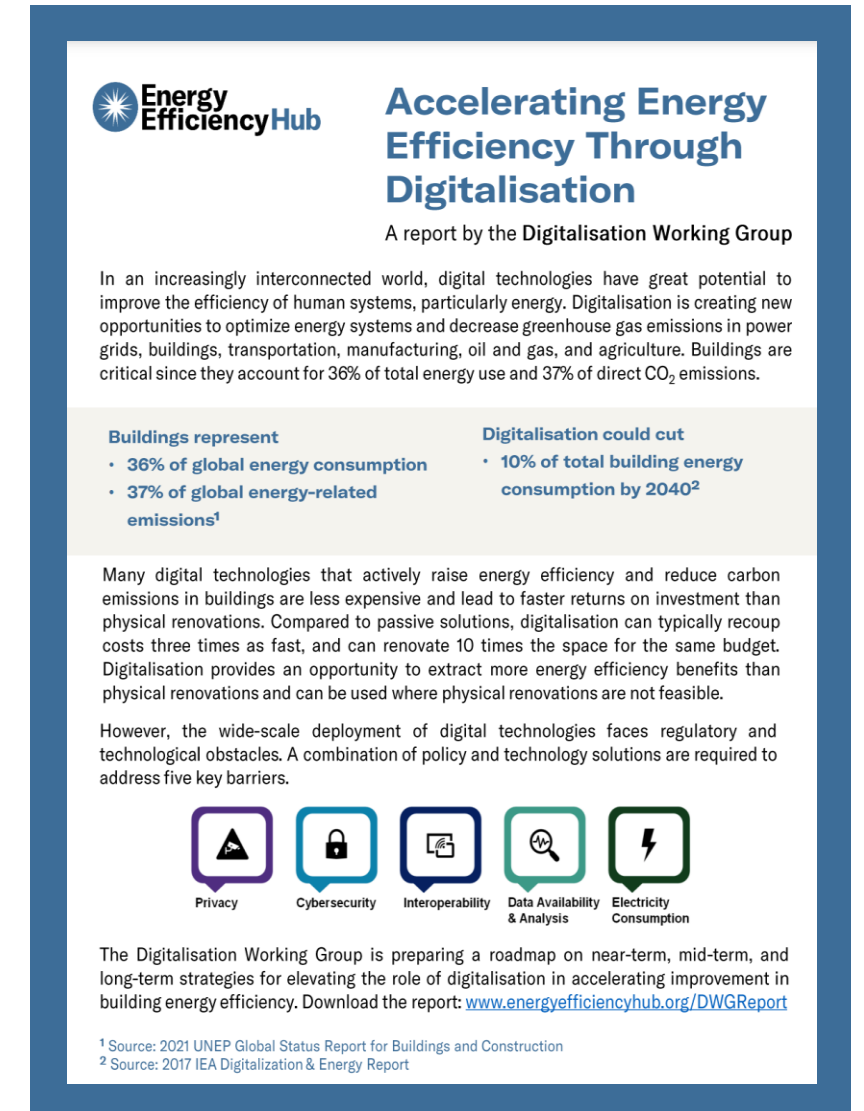 - France
  - Germany
  - Japan
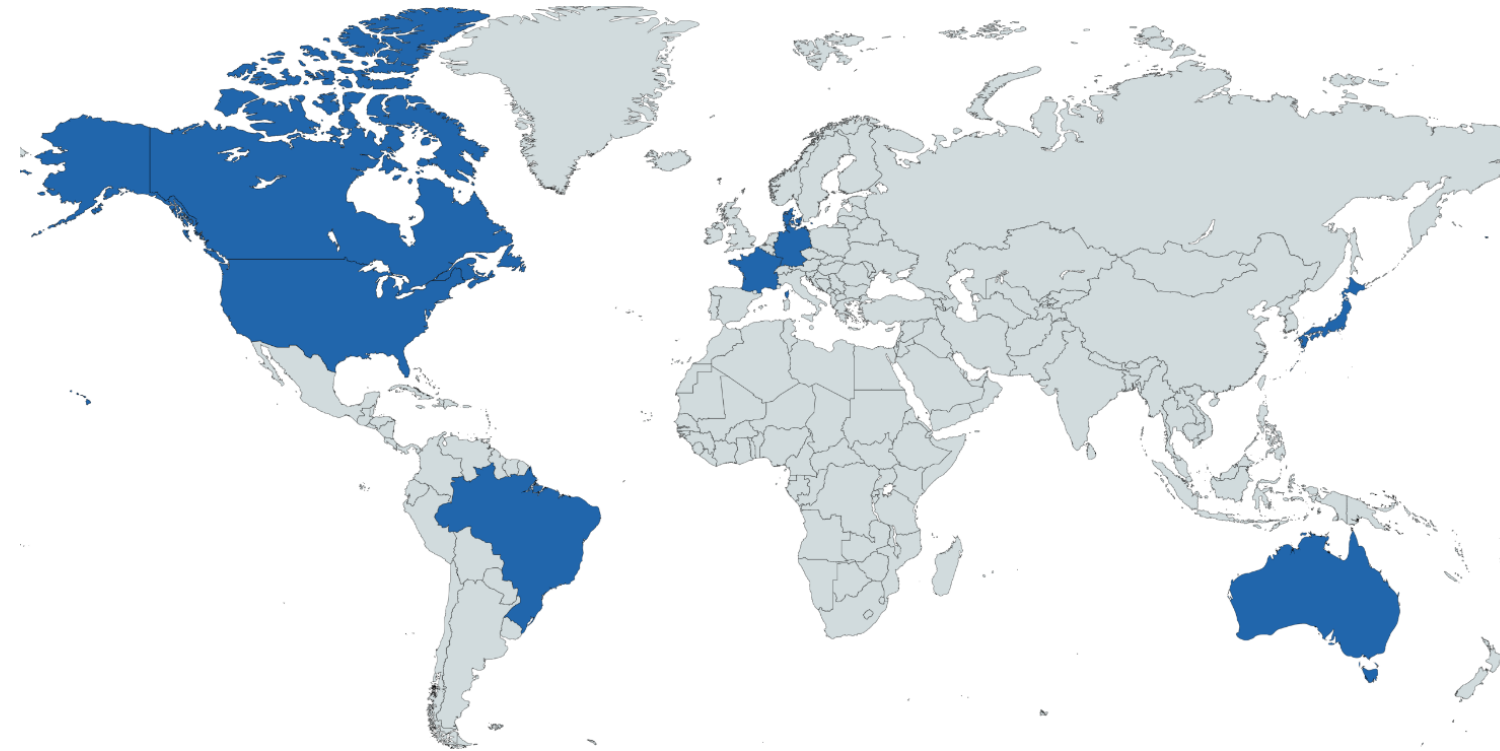
Chair: Rob Sandoli, U.S. Department of Energy
Operating Agent: Pacific Northwest National Laboratory
Other team members: Brian Walker, U.S. Department of Energy, Jack Mayernik, National Renewable Energy Laboratory

Recent Working Group Report

- Report launched in September 2022

- Report highlights:
  - Identifies technological and policy/regulatory gaps
  - Characterizes impactful digitalisation tools for buildings
  - Incorporates country policy/program examples based on member country interviews and presentations

Download the report: www.energyefficiencyhub.org/DWGReport

Identified Barriers

- Interoperability, data concerns, privacy, cybersecurity, and device energy consumption and decentralization constitute major barriers
- As digitalisation becomes more prevalent in buildings, owners, managers, and occupants will want access to information from across a range of manufacturers and product types.
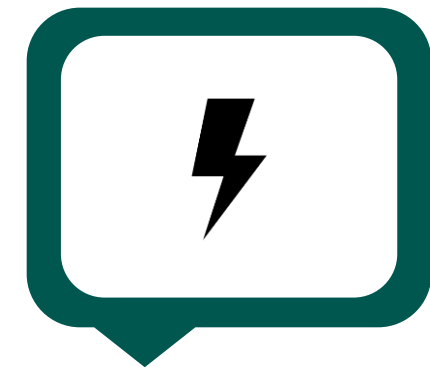
Privacy

Cybersecurity

Interoperability

Data Availability & Analysis

Electricity Consumption

Interoperability Case Study

Innovation Hub for Affordable Heating and Cooling (i-Hub): Leveraging digital innovation, i-Hub supports the delivery of flexible demand services from buildings. As part of this effort, the i-Hub developed a real-time data management platform.

Impact
- More than 60 buildings and 9 software applications use the platform
- Led to significant interview & focus group research on adoption barriers

Lessons Learned
- Lower digital connectivity costs for by making it a part of normal equipment investment lifecycle
- Coordination with industry stakeholders plays a key role in project success

Challenges: The large-scale program delivery required significant time and coordination effort.

Privacy & Cybersecurity Case Study

Smart Meter Gateway in Germany: A highly secure and interoperable communication module for sharing data between smart meters and service providers.

Impact
- Led to robust cybersecurity and privacy policy in smart meters
- Prevents manipulation of smart meter data
- Protects buildings against cyber attacks

Lessons Learned
- Robust technology development can enhance cybersecurity and privacy solutions
- Increase customer acceptance via attractive offerings and noticeable benefits
- Complex product certification schemes can delay technology rollouts

Challenges: Some of the notable barriers included consumer acceptance and complexity of the certification process.

Data Availability & Analysis Case Study

Green Button Initiative: Industry-led effort to provide utility customers with easy and secure access to their energy usage information in a consumer-friendly, digitized format

Impact
- 60 million homes and businesses securely accessing standardized energy information
- More than 50 participating utilities
- More than 35 companies developed apps leveraging Green Button Data

Lessons Learned
- Leverage existing standards
- Launch marketing campaign with the support from the government
- Set up non-profit alliances for testing and compliance

Challenges: Some of the challenges included lack of data standards, initial difficulty of recruiting early adopters, and testing and compliance.

Current Activities & Next Steps

- DWG website launch in October

- Developing roadmap on near-term, mid-term, and long-term strategies for elevating the role of digitalisation in accelerating improvement in building energy efficiency

- Launch event of report and roadmap in November
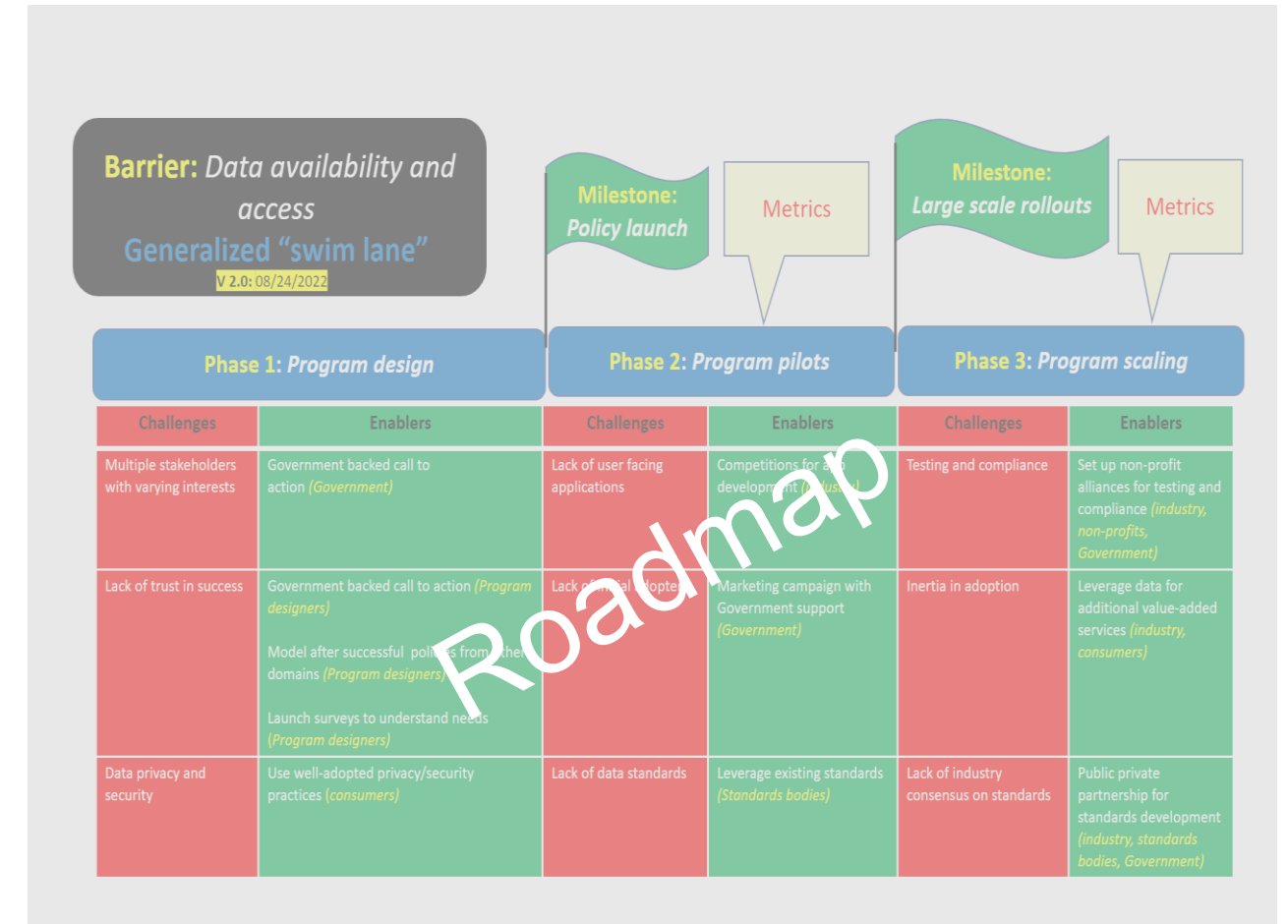
Thank you!

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