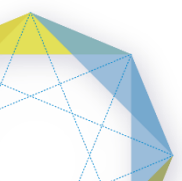# ETIP SNET

European Technology and Innovation Platform Smart Networks for Energy Transition

12th ETIP SNET Regional Workshop
Parallel Session 3 - Digitalisation as the Key Enabler
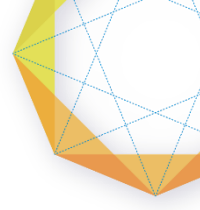22 June 2021

12th Regional Workshop: Digitalisation as the Key Enabler

- *1: Digitalisation (First Session)*

- *2: Semantic Interoperability; Protocols; Data Gateways; IoT Integration*

- *3: Monitoring and Control; Semantic Interoperability;*

- *4: AI, Data, Analytics, Big data; Skills (Training)*

- *5: Digitalisation for Mobility; Heating and Cooling; Hydrogen (Building, EV; Energy community; Renewable community)*

- *6:Cyber security (Cyber attacks resilience; cyber security information)*

- *7: Energy Services (data driven for grid; open source; ICT; Broadband)*

- *8: FINAL Digitalisation Session: open*

Parallel Session 3: Structure

1. *Part 1: Welcoming and Parallel session 3 Goal , structure and Audience Polling on highest and lowest priority of 6 ETIP SNET Research Areas*

   Focus of the session:

   #2: Semantic Interoperability; Protocols; Data Gateways; IoT Integration

   Better understanding Session 3 topic related to R&I State of the Art; Needs, Gaps, Use Cases by discussion with R&I Project, BRIDGE and ETIP SNET experts and the EC

2. *Part 2: 99sec projects pitches with short discussion after each pitch*

3. *Part 3: Discussion on Digitalisation Use Cases and focus:* **Semantic Interoperability; Protocols; Data Gateways; IoT Integration (***and the 12 ETIP SNET FUNCTIONALITIES*)

4. *Part 4: Discussion on Digitalisation R&I Needs (and 5 ETIP SNET Digitalisation Research TOPICS)*

PART 1 – Welcoming, Panel structure and topics presentation

Rainer Bacher
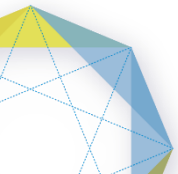
Moderator

Parallel session 3 - Panellists

Parallel Session 3	
Digitalisation: Managing energy data and Cyber security	
MODERATORS	
Rainer Bacher – BACHER Energie	**Margot Delestre** - ZABALA
PANELLISTS	
- **Markus Bechmann**	ETIP SNET Representative Association - ESMIG
- **Sandra Riaño** – Tecnalia	ETIP SNET WG4
- **Krzysztof Piotrowski** – Microelectronics **& Daria Kulemetieva** - ESCI	Ebalalance –Plus Project
- **G. Cebrat -** effiziente.st Energie- und Umweltconsulting e.U. Austria	Building Digital Building Twins from Energy Performance Certificate Data EPC4SES
- **Olivier Genest -** Trialog	InterConnect Project
- **Thong Vu –** Emax group	INTERRFACE project

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PART 1: Introductory poll

SLIDO www.slido.com
Code: #753046

→Parallel Session 3
### 'Digitalisation as the Key Enabler'

Questions:

- *Which sector are you from?* [only 1 answer]
- *In which country is your company located?* [no abbreviations, full country Name in English]
- *Which of the following is currently your primary research area?*

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Application Questions

"Digitalisation Focus **Semantic Interoperability; Protocols; Data Gateways; IoT Integration**"

- *Part 3 On the "**Application of digitalisation [technologies] to Use Cases**"*
- *What Use Cases are needed to showcase digitalization focus mentioned above?*

- *Part 4: On the "**Development of Digitalisation Technologies** for energy system integration"*
- *What technologies are to be researched for digitalisation focus mentioned above?*
  - **On SGAM as architectural framework?**
  - **On CIM as data management model?**
  - **On standardized Use Case Modelling?**
  - **On modelling public and private data?**
  - **On cross-sector and cross-border data management**
  - **On interoperable DEPs (Data Exchange Platforms)**
  - **On HERM – Harmonised Energy Role Model.**
  - *On "Missing / Future Digitalisation Technologies"?*
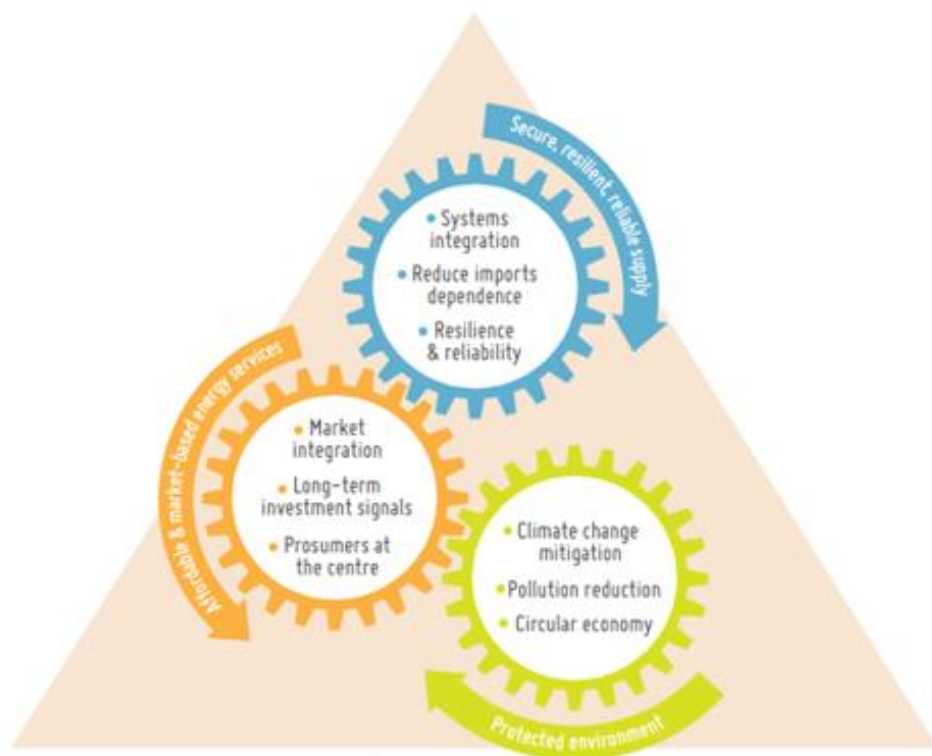
European Commission
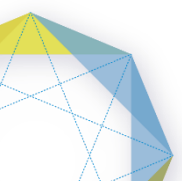
Part 2: Background information and base for discussion

Rainer Bacher

Moderator
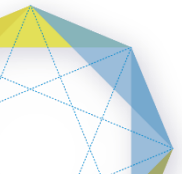
EU Energy Policy Goals

1. *Secure, resilient, reliable supply*

2. *Affordable & market-based energy services*

3. *Protected environment*

ETIP SNET: Main outcomes

May 2020 — ETIP SNET R&I IMPLEMENTATION PLAN 2021-2024

Jan/June 2020 — ETIP SNET R&I Roadmap 2020-2030

June 2018 — VISION 2050

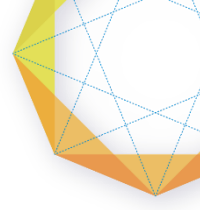ETIP SNET R&I Implementation Plan 2021-2024

ETIP SNET R&I Roadmap 2020-2030

ETIP SNET Vision 2050

(4) PROJECT INTENSITIES:
## 6 Research Areas and 12 FUNCTIONALITIES

Building Digital Building Twins from Energy Performance Certificate
ebalance-plus

Interoperable Solutions Connecting Smart Homes, Buildings and Grids
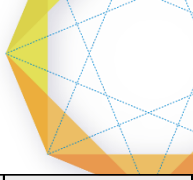INTERRFACE

1. Consumer, prosumer and citizen energy community	2. System economics	3. Digitalisation	4. Planning – holistic architectures and assets	5. Flexibility enablers and system flexibility	6. System operation	F1 Cooperation between system operators	F2. Cross sector integration	F3. Integrating the subsidiarity principal	F4. Pan European wholesale markets	F5. Integrating local markets	F6. Integrating digitalisation services	F7. Upgraded electricity networks, integrated components and systems	F8. Energy system business	F9. Simulation tools for electricity and energy systems	F10. Integrating flexibility in generation, demand, conversion and storage technologies	F11. Efficient heating and cooling for buildings and industries	F12. Efficient carbon-neutral liquid fuels and electricity for transport
Medium	Low	High	Medium	High	Medium	Low	Medium	High	Low	Medium	High	High	High	High	High	Medium	No research
Medium	No research	High	High	High	High	High	No research	Medium	No research	Low	High	High	Low	High	High	No research	Medium
High	Low	High	Medium	High	Medium	High	High	High	Low	Medium	High	High	Low	Low	Medium	Medium	Low
High	Medium	High	No research	High	Low	High	No research	Medium	High	High	High	No research	Medium	Medium	High	No research	No research

European Commission
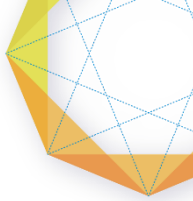
Project TRL related to Digitalisation TOPICs

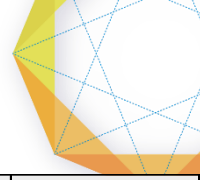| Protocols, standardisation and interoperability	Data communications	Data and Information Management	Cybersecurity	End-to-end architecture
TRL 6 – technology demonstrated in	TRL 6 – technology demonstrated in	TRL 5 – technology validated in	TRL 6 – technology	TRL 5 – technology validated in relevant
TRL 7 – system prototype	TRL 6 – technology demonstrated in	TRL 7 – system prototype	TRL 7 – system prototype	TRL 7 – system prototype demonstration
TRL 8 – system complete and qualified	TRL 8 –system complete and	TRL 8 – system complete and	TRL 8 –system complete and	TRL 8 – system complete and qualified
TRL 7 – system prototype	TRL 7 – system prototype	TRL 7 – system prototype	TRL 5 – technology	TRL 7 – system prototype demonstration

Digitalisation: Project focus themes (extract)

Semantic Interoperability based on e.g. SAREF, OCPP, SGAM, CIM, OPENADR, IEC61850, Sunspec, ...	Protocols	Data gateways	IoT integration	Cyber attack resilience	Edge or cloud computing	Monitoring and Control	Smart Meters	Smart Home Integration	HMI (Decision Support)
High	High	High	High	Low	High	Low	Medium	High	Medium
High	High	High	High	High	High	High	Medium	Medium	Medium
High	Medium	High	High	Medium	High	Medium	Medium	High	Not applicable
High	High	Medium	Medium	Low	Not applicable	Low	Low	Low	Not applicable

Digital Twin of Grid + Communication	Cybersecurity information	Peer-to-Peer Markets	Augmented reality	Integrated Data hub and Grid hub	Cross-sector data exchange	Big data	AI / Machine Learning	Digital Twins	RES and/or loads flexibility integration	Integrated Market and Energy Management Systems for grids	Multi-Market services	Balancing TSO-DSO-SGU (Significant Grid User)	EMobility integration
Low	Low	Medium	Not applicable	Medium	Medium	High	Medium	High	High	Medium	Medium	Medium	High
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Low	Not applicable	High	High	Not applicable	Medium	High
Medium	Medium	Medium	Not applicable	High	High	Medium	Low	Medium	High	High	High	Low	High
Not applicable	Low	High	Not applicable	Medium	Low	Low	Not applicable	Not applicable	High	High	Medium	High	Not applicable

# Digitalisation: Focus themes (extract)

Semantic Interoperability based on e.g. SAREF, OCPP, SGAM, CIM, OPENADR, IEC61850, Sunspec, ...	Protocols	Data gateways	IoT integration	Cyber attack resilience	Edge or cloud computing	Monitoring and Control	Smart Meters	Smart Home Integration	HMI (Decision Support)
High	High	High	High	Low	High	Low	Medium	High	Medium
High	High	High	High	High	High	High	Medium	Medium	Medium
High	Medium	High	High	Medium	High	Medium	Medium	High	Not applicable
High	High	Medium	Medium	Low	Not applicable	Low	Low	Low	Not applicable

Legacy system handling & IoT	Implementation of Network Codes	TSO Flexibilities	Security Operations Centers (SOC)	DSO Flexibilities	Resilient Grid Operator Communication	Blackout resilience	Fault detection
Medium	Medium	Low	Low	Medium	Medium	Low	Low
Not applicable	Not applicable	Medium	Medium	High	High	High	High
High	Low	Low	Low	High	Medium	Not applicable	Not applicable
Low	Low	High	Low	High	Low	Medium	Not applicable

Part 2: 99sec projects pitches

1. **Ebalance – Plus project -** *Krzysztof Piotrowski & Daria Kulemetieva -*

2. **Building Digital Building Twins from Energy Performance Certificate Data EPC4SES project -** *G. Cebrat*

3. **INTERCONNECT Project –** *Olivier Genest*

4. **INTERRFACE project –** *Thong Vu*

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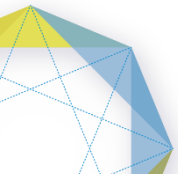
Part 3: *Discussion on Digitalisation Use Cases.*
Focus on:

- Semantic Interoperability;
- Protocols;
- Data Gateways;
- IoT Integration
- (and the 12 ETIP SNET FUNCTIONALITIES)

Panel Discussion

Part 3: On the "Application of digitalisation [technologies] to Use Cases"
- What Use Case elements/parts are key to showcase the four digitalization focus themes mentioned above?
- How can R&I projects prove/show/measure that the related functionalities will work when R&I results are scaled up through products and services?
- What are the most critical parts of scalability and replicability parts in each Project Use Case?
- What are the "specials" of the Project Use Case (non-replicability ; non-scalability)?

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Part 4: *Discussion on Digitalisation R&I Needs (and 5 ETIP SNET Digitalisation Research TOPICS)*

Panel Discussion

All Panelists
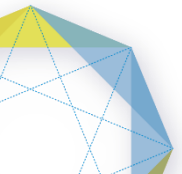
Part 4:

On the "Development of Digitalisation Technologies for energy system integration"

- *What technologies and their integration are to be researched for the four digitalisation focus themes mentioned above?*
  - **See next slide - graphical presentation (from BRIDGE Data Management WG)**
    - Excerpts:
      - On SGAM as architectural framework?
      - On CIM as data management model?
      - On standardized Use Case Modelling?
      - On modelling public and private data?
      - On cross-sector and cross-border data management
      - On interoperable DEPs (Data Exchange Platforms)
      - On HERM – Harmonised Energy Role Model.
  - *On "Missing / Future Digitalisation Technologies"?*

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R&I-related Digitalisation Steps (RHS-GREY BOXES)

Source. BRIDGE WG "Data Management"

Proposal for cross-sector data exchange reference architecture
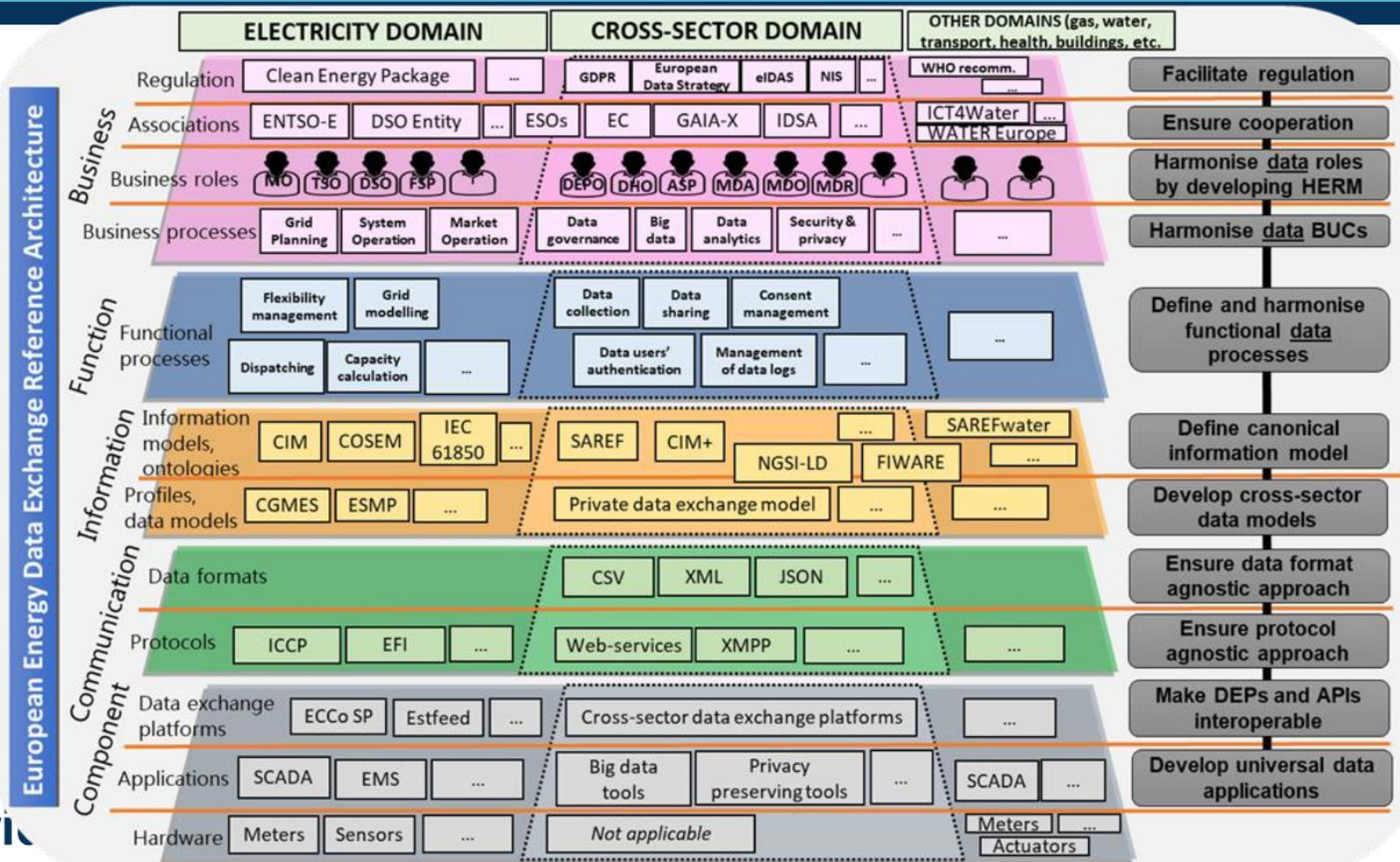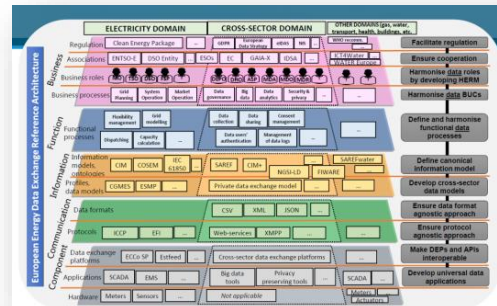
PART 5: Audience Poll (2/2)

SLIDO www.slido.com

Code: #753046

→Parallel Session 3
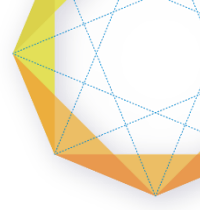'Digitalisation as the Key Enabler'

Question:

1. Indicate up to three most important R&I-related Digitalisation Steps (GREY BOXES)
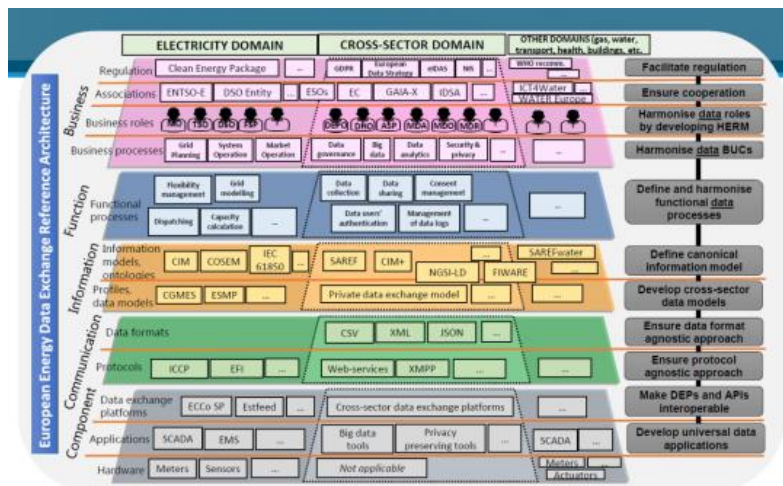
Questions to the the Panelists

on the Development of Digitalisation Technologies for energy system integration : Data exchange reference architectures

1. *Where are your biggest Digitalisation R&I or use case challenges?*

    1. **On SGAM as architectural framework?**
    2. **On CIM as data management model?**
    3. **On standardized Use Case Modelling?**
    4. **On modelling public and private data?**
    5. **On cross-sector and cross-border data management**
    6. **On interoperable DEPs (Data Exchange Platforms)**
    7. **On HERM – Harmonised Energy Role Model.**
    8. **On "Missing / Future Digitalisation Use Cases" ?**
    9. **On "Missing / Future Digitalisation Technologies"?**

2. *Which of the 11 rhs-grey-marked boxes are most important from your project's experience?*

Development of Digitalisation Technologies for energy system integration

Topics identified in the ETIP SNET Implementation Plan 2021 - 2024

	3.1	Protocols, standardisation and interoperability (IEC, CIM, Information models)
	3.2	Data Acquisition and Communication (ICT) (Data acquisition, Smart Meter, Sensors (monitoring), AMR, AMM, smart devices)
DIGITALISATION	3.3	Data and Information Management (Platforms, Big Data, Software, IoT)
	3.4	Cybersecurity (vulnerabilities, failures, risks) and privacy
	3.5	End-to-end architecture (integrating market, automation, control, data acquisitio digital twin, end-users)

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Reserve - Questions to the Panelists

1. *Using this categorisation, can you give ETIP SNET your feedback on the research TOPICs that are most relevant for your project? What needs to be done?*

2. *What has been resolved already (and can be reused by others?).*

3. *What Digitalisation R&I TOPICS are missing?*

4. *What R&I needs to be done most urgently? What Digitalisation R&I do we need in the near future?*

	3.1	Protocols, standardisation and interoperability (IEC, CIM, Information models)
	3.2	Data Acquisition and Communication (ICT) (Data acquisition, Smart Meter, Sensors (monitoring), AMR, AMM, smart devices)
DIGITALISATION	3.3	Data and Information Management (Platforms, Big Data, Software, IoT)
	3.4	Cybersecurity (vulnerabilities, failures, risks) and privacy
	3.5	End-to-end architecture (integrating market, automation, control, data acquisitio digital twin, end-users)

Do you have any ...

You would like to share?

Please write them on the chat and we will keep them in the proceedings!

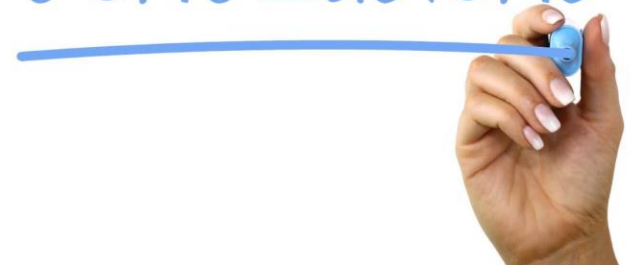**Thank for your participation and attention!**

Key conclusions
Parallel Session 3: Digitalisation as the Key Enabler

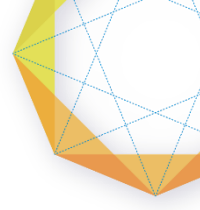➢ *Key statement 1*

➢ *Key statement 2*

➢ *…*

To panel members: Could you indicate ahead of meeting possible proposals for key session conclusions / statements from your side?
Please, write them (as suggestions) in the dot list below and send them to rainer.bacher@bacherenergie.ch and mtrifiletti@zabala.eu

# Key conclusions from the 11ᵗʰ Regional Workshop (1/3)

Based on the feedback received from the project pitches, the short questions and answers after these project pitches, the opinions of the panellist experts during the panel discussion as well as the interactive surveys

the following R&I and Use Case-related aspects shall be refined for the theme "Digitalisation as key enabler" in the next versions of ETIP SNET R&I Implementation Plans and ETIP SNET R&I Roadmap.

- *"Digitalisation is an enabler and is everywhere",*
- *"Digitalisation is more than data and numbers",*
- *"Digitalisation is about considering Data spaces beyond Energy-Data spaces",*
- *"What makes Energy data special",*

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Key conclusions from the 11th Regional Workshop (2/3)
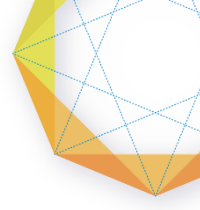
The next ETIP SNET regional workshops should focus on projects and experts feedback:

- *on creating trust for digitalisation of energy, including related to privacy*

- *on defining digitalisation benefits for DSOs and consumers*

- *on creating mutual platforms for sharing data*

- *on approaches, methodologies, technologies and use(r)s to be able distinguish better between generic higher-level digitalisation enablers*
  - *such as needs for generic API, standardisation, interoperability, data exchange architectures generic Use Case description methodologies applied in multiple areas such as Energy, Mobility, Health, Agriculture*

- *and energy-integration related specific digitalisation enablers*

    - *such as SGAM, CIM, Energy-related cross-sectorial issues, masses of real-time data for real-time aggregation needs, decentralised subsidiarity-related energy reliability, security and market needs*

Key conclusions from the 11ᵗʰ Regional Workshop (3/3)

- *on understanding Digitalisation-related differences between European initiatives such as Horizon Europe, GAIA-X, Interreg (intend to) contribute in the area of Digitalisation*

- *on dependencies between "generic" digitalisation-enabling solution needs ((including the time when needed within between 2020 and 2050) as prerequisites for specific energy system integration digitalisation enablers and needs*

- *on core digitalisation R&I priorities, when they are needed, how R&I solution shall be used in what types of Use Cases - by going through the digitalisation-related TOPICs and Tasks defined in the recent ETIP SNET IP (Research Area 3, TOPICs 3.1-3.5 and related FUNCTIONALITIES / Use Cases)*

- *on (high-Level) Use Case needs to realize higher TRLs for R&I Tasks related to "digitalisation as enabler of integrated energy systems"*

- *on truly new R&I TOPICs and tasks, not yet specified.*