

ERA-Net Smart Energy Systems
JOINT PROGRAMMING CONFERENCE 2020
SMART ENERGY SYSTEMS

Minutes Connectathon for MlCall20:

regional innovation ecosystems for clean energy transition

14 October 2020

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1 Connectathon for MlCall20: regional innovation ecosystems for clean energy transition

The Connectathon was the co-creation session of the Joint Programming Conference 2020 Smart Energy Systems open to project participants, associated partners, members of the Living Labs and Digital Platforms Providers as well as any interested potential applicant. The objective of the session was to allow to the more than 200 registered participants to meet and draft together general project outlines on the topic of the upcoming Joint Call 2020 (Ml-Call20) for project proposals on digital transformation for green energy transition.

The session built on the results of the [5th Mission Innovation Ministerial Side Event](#) hosted by the Joint Programming Platform ERA-Net Smart Energy Systems (JPP SES).

The slides of the Connectathon for MlCall 2020 are available for download on [expera](#).

2 Session roll-out

The session was split into a plenary with updates on the upcoming Joint Call 2020 (MlCall20) and JPP SES Digital Platform Providers & Living Lab and Testbed Network introducing offers for MlCall20. The second part of the session was an interactive session with co-creation among all participants.

Time	Focus
14:00	Opening and introduction to the session
14:10	Aim of Joint Call 2020 (MlCall20)
14:20	Who can make clean energy transition happen?
14:30	JPP SES Digital Platform Providers & Living Lab and Testbed Network introducing offers for MlCall20
15:00-16:30	Working in groups along the four dimensions of MlCall20 digitalization <ul style="list-style-type: none"> 1.1 Technical Operation 1, Moderators: Ludwig Karg, Julia Chenut 1.2 Technical Operation 2, Moderators: Laura Börner, Julio Alterach 2 Business Operation, Moderators: Jatta Jussila, Dorothea Brockhoff 3 Market Operation, Moderators: Iva Maria Gianinoni, Anna Stetter 4 Communication, Moderators: Minna Näsman, Franziska Wirth
16:30	Joint wrap-up
17:00	End of session

3 Main results from the Connectathon

The moderators **Jatta Jussila** and **Ludwig Karg** of the JPP SES Support Team welcomed the participants to the Connectathon and introduced the session's aims and structure. Then the objectives of the **MICall20** were presented by **Fredrik Lundström** from the JPP SES Call Management. The MICall20 invites project consortia to:

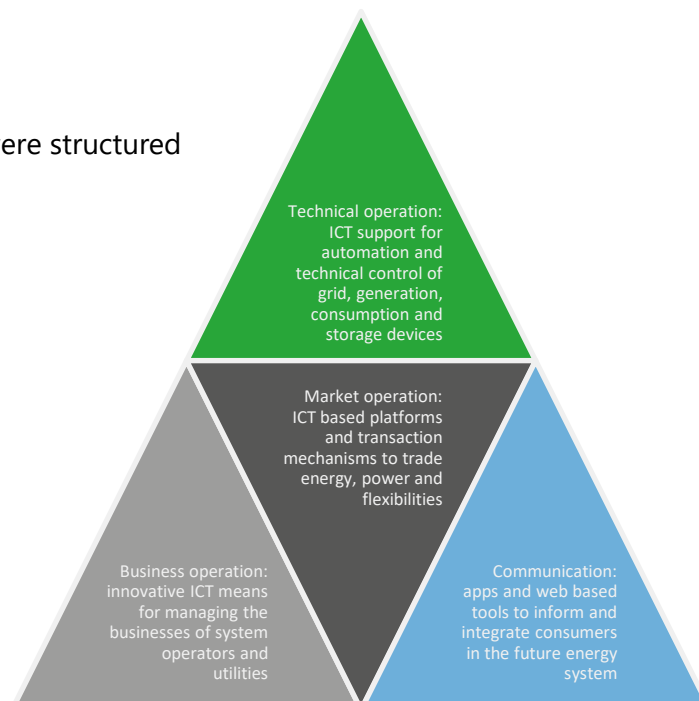
- Advance the green energy transition in all sectors of the energy system while ensuring security of supply
- Shaping new transnational business and investment opportunities by sector coupling and development of new value chains in innovative and cost-effective energy solutions, thereby creating new employment opportunities and contributing to the development of an environmentally sustainable financial growth
- Ensuring social sustainability and coherence with digitalisation in other sectors in the progression of the green energy transition

Projects are expected to address key challenges and opportunities relating to the main objectives such as social sustainability, energy and ICT infrastructure, energy marketplaces, business models and communication.

Ludwig Karg, from the Support Team presented the four areas of digitalization identified for the call along the question: "Who can make clean energy transition happen at the local field level?":

1. Technical operation
2. Business operation
3. Market operation
4. Communication

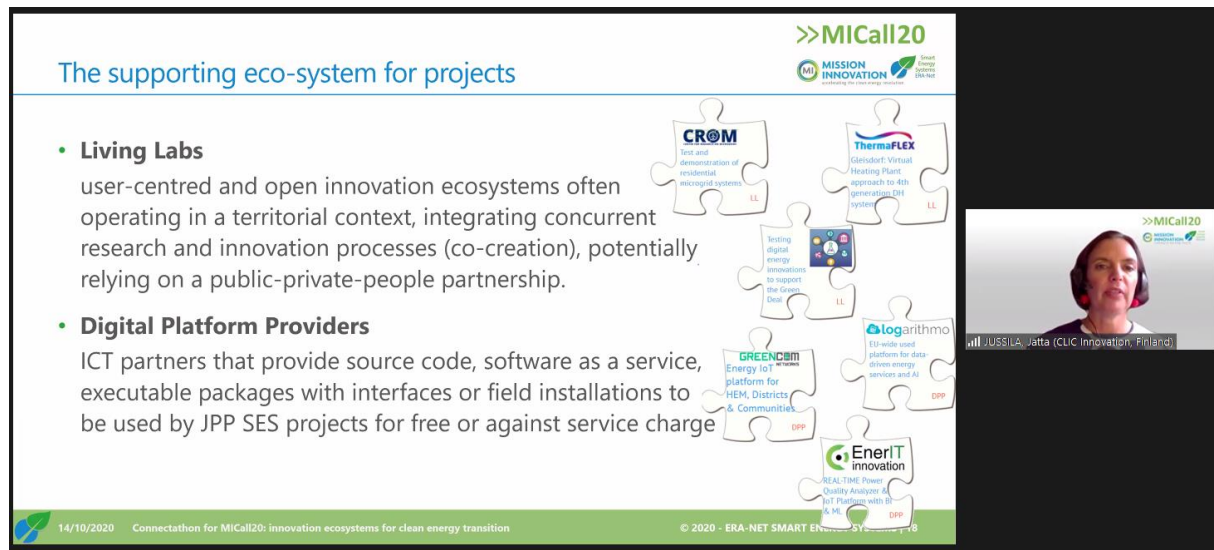
The sub-subsequent workshop sessions were structured along the four areas of digitalization.



Four areas of digitalization

3.1 JPP SES Digital Platform Providers & Living Lab and Testbed Network introducing offers for MICall20

In the pitch session moderated by **Jatta Jussila**, 11 Digital Platform Providers and 13 Living Lab and Testbed Networks introduced presented their offers for user-centred and open innovation ecosystems to support the prospect project consortia. The Living Labs and Digital Platform Providers have been selected from numerous applicants. Due to the vast interest, a second round will follow.



The supporting eco-system for projects

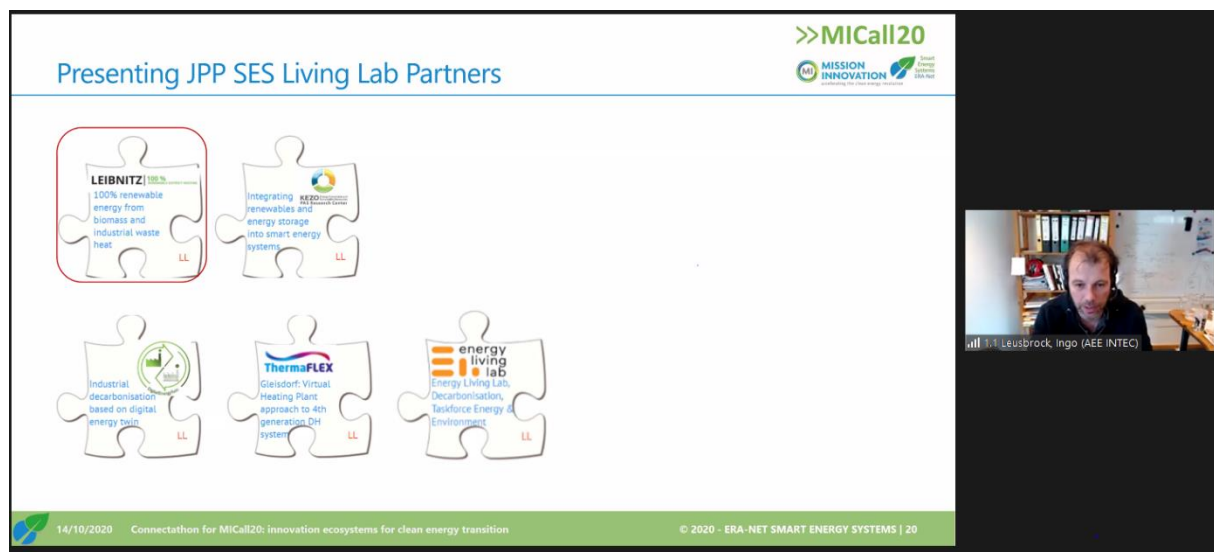
- Living Labs**
 user-centred and open innovation ecosystems often operating in a territorial context, integrating concurrent research and innovation processes (co-creation), potentially relying on a public-private-people partnership.
- Digital Platform Providers**
 ICT partners that provide source code, software as a service, executable packages with interfaces or field installations to be used by JPP SES projects for free or against service charge

Logos in the puzzle include: CROM (Test and demonstration of residential microgrid systems), ThermoFLEX (Giesdorf's Virtual Heating Plant approach to 4th generation DH system), testing digital energy innovations to support the Green Deal, logarithmo (EU-wide cloud platform for data-driven energy services and AI), GREENDem (Energy IoT platform for HEM, Districts & Communities), EnerIT innovation (REAL TIME Power Quality Analyzer & IoT Platform with 800kVA), and others.

14/10/2020 Connectathon for MICall20: innovation ecosystems for clean energy transition © 2020 - ERA-NET SMART ENERGY SYSTEMS | 20

Jatta Jussila introducing the Living Labs and Digital Platform Providers

The offers from the Living Labs ranged from test and demonstration sites but also virtual plants and playgrounds for innovators.



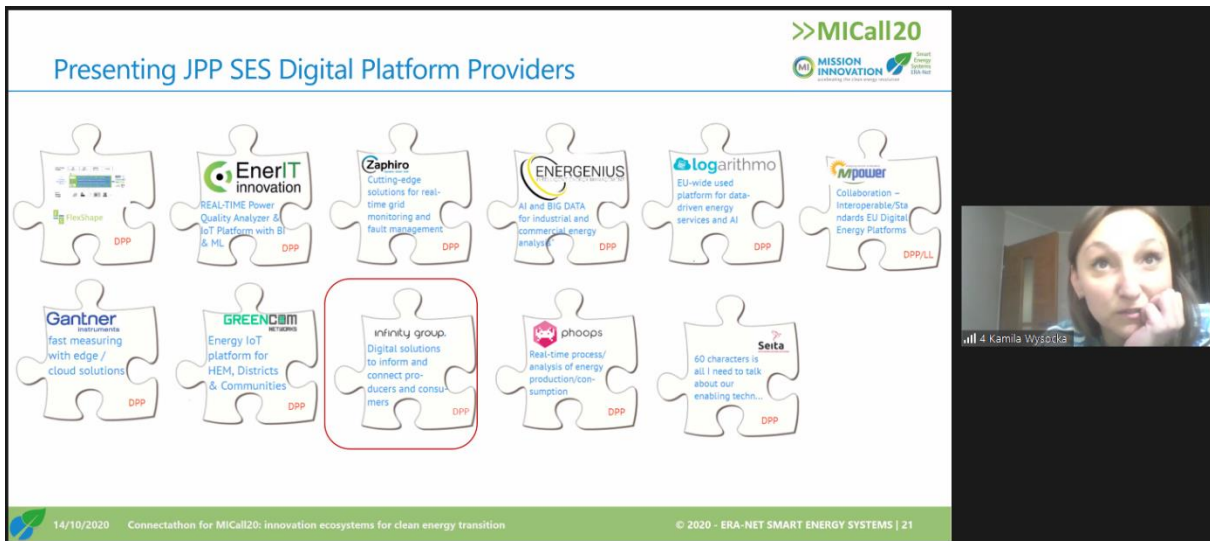
Presenting JPP SES Living Lab Partners

Logos in the puzzle include: LEIBNITZ (100% renewable energy from biomass and industrial waste heat), KEO (Integrating renewables and energy storage into smart energy systems), ThermoFLEX (Giesdorf: Virtual Heating Plant approach to 4th generation DH system), and energy living lab (Energy Living Lab, Decarbonisation, Taskforce Energy & Environment).

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Pitch by Living Labs

The Digital Platform Providers included measuring, real-time monitoring and analysis or collaboration platforms for producers and consumers.



Pitch by Digital Platform Providers

A detailed profile of every Digital Platform Provider and Living Lab describing their special competence, available infrastructure and what can be tested can be found on the [JPP SES website](#). This page includes also the contact details and the pricing model of the respective Living Lab and Digital Platform Provider.

3.2 Co-creation in sub groups

The aim of this workshop session was turning research needs and supportive offers into concrete ideas for collaboration in MICall20. The research needs were identified during the co-creation workshop with researchers and need owners following the [5th Mission Innovation Ministerial Side Event](#) hosted by JPP SES. The offers came from the Digital Platform Providers and Living Labs and Testbed network who can support research on those needs.

The Connectathon followed the guiding question for MICall20: Which research is needed from a technical operation / business operation / market operation / communication operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?

The groups approached this task by first reviewing all the research needs. Then, they reflected on the first of these research needs, coming up with ideas and solutions in the form of key exploitable results. The Digital Platform Providers and Living Labs connected their puzzle pieces with solutions from the pitch to the needs. This process was continued with the next research needs.

3.2.1 Area 1 of digitalization: Technical operation

Participation was high in this area leading to the organisation of two different subgroups. Both of them treated ICT support for technical control of grid, generation, consumption and storage devices.

The first group discussed mainly the following needs:

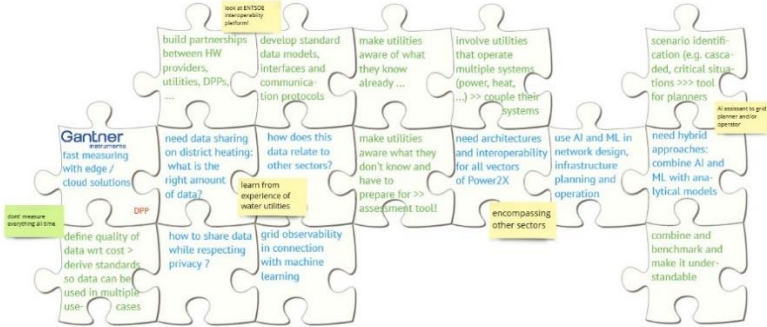
- Holistic smart sector integration
- Describing the system of systems
- Relation of planning and technological architectures

The main outcomes of the discussion and co-creation can be found in the images below.

1.1: Technical Operation: holistic smart sector integration

Moderation: Ludwig Karg and Julia Chenut

Which research is needed from a technical operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



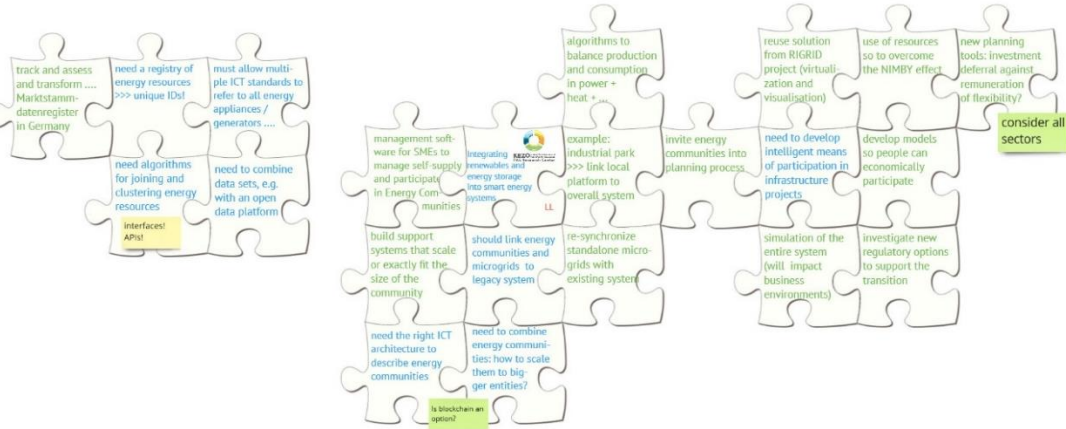
BAUM

Technical Operation 1: holistic smart sector integration

1.1: Technical Operation: describing the system of systems

Moderation: Ludwig Karg and Julia Chenut

Which research is needed from a technical operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



BAUM

Technical Operation 1: "describing the system of systems" and "relation of planning and technical architectures" were merged into one discussion as synergy could be found.

The second group on Technical Operation discussed mainly the following needs:

1. Linking technical operation to users
2. Relation of planning and technological architectures
3. Describing the system of systems

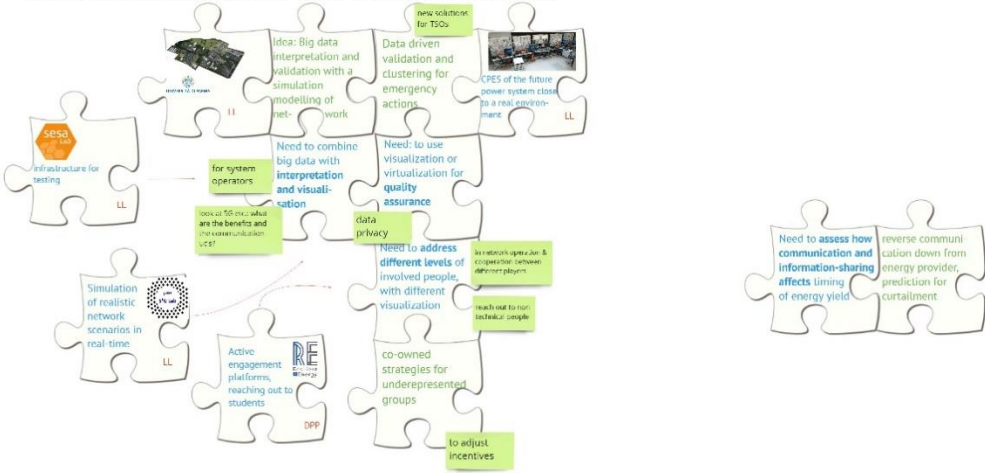
The main outcomes of the discussion and co-creation can be found in the images below.

>>MICall20
MISSION INNOVATION

1.2: Technical Operation: linking technical operation to users

Moderation: Laura Börner and Julio Alterach

Which research is needed from a technical operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



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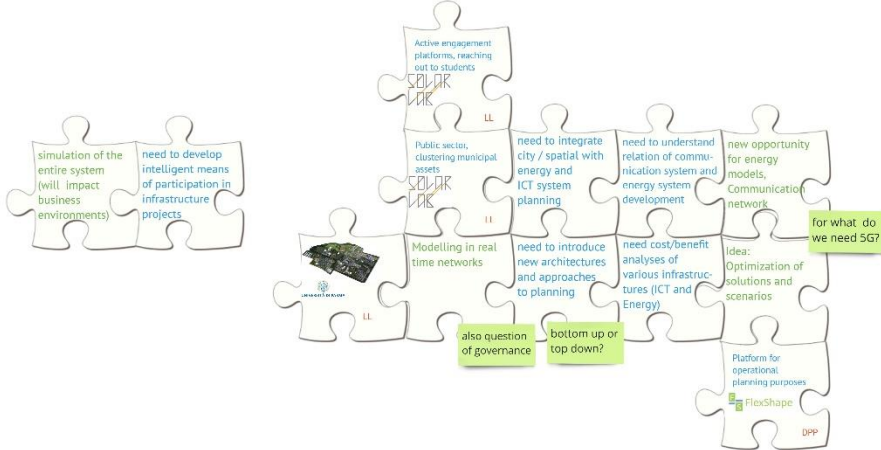
Technical Operation 2: linking technical operation to users

>>MICall20
MISSION INNOVATION

1.2: Technical Operation: relation of planning and technological architectures

Moderation: Laura Börner and Julio Alterach

Which research is needed from a technical operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



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Technical Operation 2: relation of planning and technological architectures

3.2.2 Area 2 of digitalization: Business operation


This group focused its discussion on the following needs:

1. Identifying flexibility sources and control loads
2. Describing the system of systems

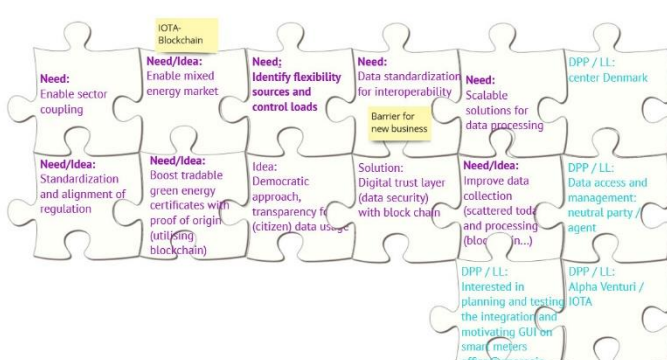
The main outcomes of the discussion and co-creation can be found in the images below. The core needs on every board appear with bold letters.

2: Business Operation: needs discussed at the MI Side-event for both Market and Business >>MICall20

Moderation: Jatta Jussila and Dorothea Brockhoff

MI MISSION INNOVATION  accelerator of the clean energy revolution

Which research is needed from a business operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



Need: Enable sector coupling

Need/Idea: Enable mixed energy market

Need: Identify flexibility sources and control loads

Need: Data standardization for interoperability

Need: Scalable solutions for data processing

DPP / LL: center Denmark

Need/Idea: Standardization and alignment of regulation

Need/Idea: Boost tradable green energy certificates with proof of origin (utilising blockchain)

Idea: Democratic approach, transparency in (citizen) data usage

Solution: Digital trust layer (data security) with blockchain

Need/Idea: Improve data collection (scattered tool and processing (blockchain...))

DPP / LL: Data access and management: neutral party / agent

DPP / LL: Interested in planning and testing the integration and motivating GUI on smart meters

DPP / LL: Alpha Venturi / IOTA


BAUM

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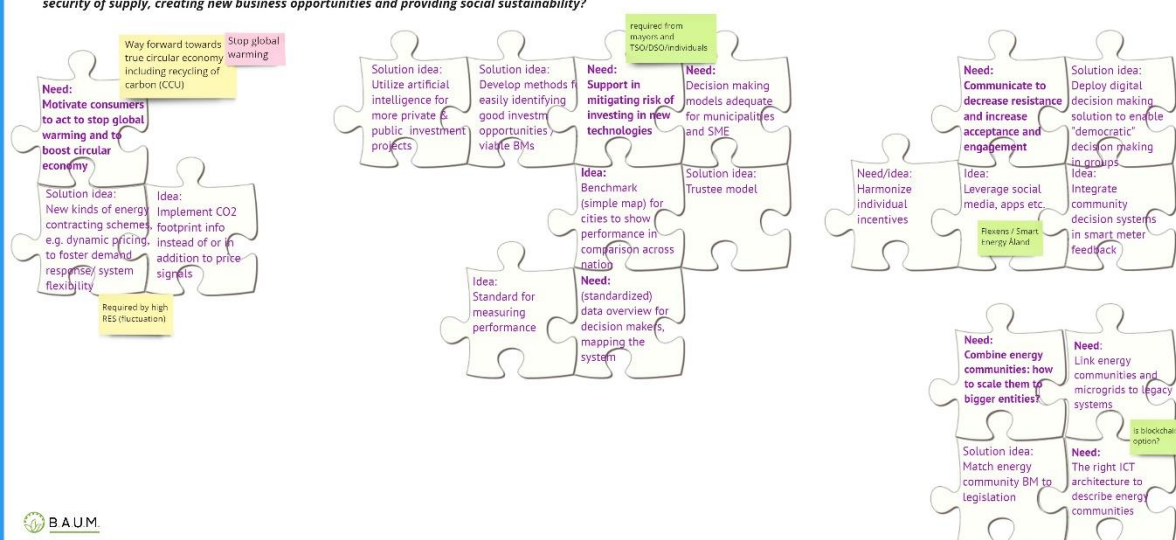
Business Operation: identifying flexibility sources and control loads

2: Business Operation: describing the system of systems >>MICall20

Moderation: Jatta Jussila and Dorothea Brockhoff

MI MISSION INNOVATION  accelerator of the clean energy revolution

Which research is needed from a business operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



Need: Motivate consumers to act to stop global warming and to boost circular economy

Solution idea: Utilize artificial intelligence for more private & public investment projects

Solution idea: Develop methods for easily identifying good investment opportunities via IoT BMs

Need: Support in mitigating risk of investing in new technologies

Need: Decision making models adequate for municipalities and SME

Idea: Benchmark (simple map) for cities to show performance in comparison across nation

Solution idea: Trustee model

Need: Communicate to decrease resistance and increase acceptance and engagement

Solution idea: Deploy digital decision making solution to enable "democratic" decision making in groups

Idea: Implement CO2 footprint info instead of or in addition to price signals

Idea: Leverage social media, apps etc.

Idea: Integrate community decision systems in smart meter feedback

Required by high RES (fluctuation)

Idea: Standard for measuring performance

Need: (standardized) data overview for decision makers, mapping the system

Required from mayors and TSO/DSO/individuals

Need: Combine energy communities: how to scale them to bigger entities?

Need: Link energy communities and microgrids to legacy systems

Solution idea: Match energy community BM to legislation

Need: The right ICT architecture to describe energy communities

is blockchain an option?

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Business Operation: describing the system of systems

3.2.3 Area 3 of digitalization: Market operation

The market operation group treated ICT based platforms and transaction mechanisms to trade energy, power and flexibilities. The participants discussed the following needs:

1. Describing the system of systems, / interoperability / sector-coupling
2. Operationalizing flexibility markets

The main outcomes of the discussion and co-creation can be found in the images below.

3: Market Operation: describing the system of systems / interoperability / sector-coupling >>MICall20

Moderation: Iva Maria Gianinoni and Anna Stetter

Which research is needed from a market operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?

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Market Operation: describing the system of systems

3: Market Operation: (2) operationalizing flexibility markets >>MICall20

Moderation: Iva Maria Gianinoni and Anna Stetter

Which research is needed from a market operation perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?

Waterford Institute of Technology

GREENCOM

Seita

Market Operation: operationalizing flexibility markets

3.2.4 Area 4 of digitalization: Communication

This group discussed mainly the following needs:

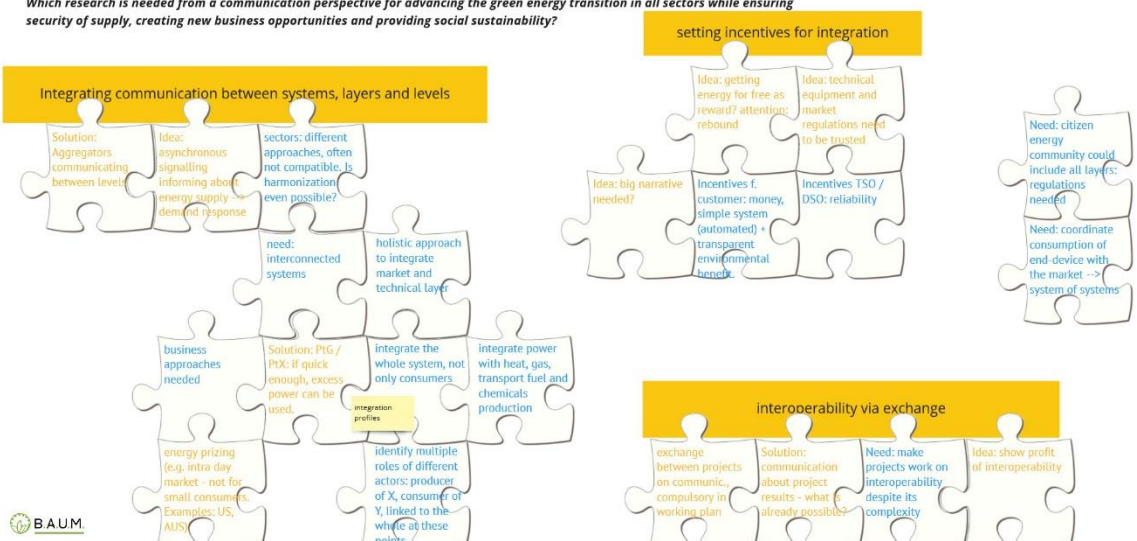
1. Holistic smart sector integration
2. Describing the system of systems
3. Integrating and connecting communities

The main outcomes of the discussion and co-creation can be found in the images below.

4: Communication: holistic smart sector integration

Moderation: Minna Näsman and Franziska Wirth

Which research is needed from a communication perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



The diagram consists of several puzzle pieces arranged in a grid-like structure. Key sections include:

- Integrating communication between systems, layers and levels:**
 - Solution: Aggregators communicating between levels
 - Idea: asynchronous signalling informing about energy supply & demand response
 - Sectors: different approaches, often not compatible. Is harmonization even possible?
 - Need: interconnected systems
 - holistic approach to integrate market and technical layer
 - business approaches needed
 - Solution: P2G / P2X: if quick enough, excess power can be used.
 - integrate the whole system, not only consumers
 - integrate power with heat, gas, transport fuel and chemicals production
 - energy pricing (e.g. intra day market - not for small consumers. Examples: US, AUS)
 - integration profiles
 - identify multiple roles of different actors: producer of X, consumer of Y, linked to the whole at these nodes
- setting incentives for integration:**
 - Idea: getting energy for free as reward? attention: rebound
 - Idea: technical equipment and market regulations need to be trusted
 - Idea: big narrative needed?
 - Incentives f. customer: money, simple system (automated) + transparent environmental benefit.
 - Incentives TSO / DSO: reliability
- interoperability via exchange:**
 - exchange between projects on communic. compulsory in working plan
 - Solution: communication about project results - what is already possible?
 - Need: make projects work on interoperability despite its complexity
 - Idea: show profit of interoperability
- Other notes:**
 - Need: citizen energy community could include all layers: regulations needed
 - Need: coordinate consumption of end device -> system of systems

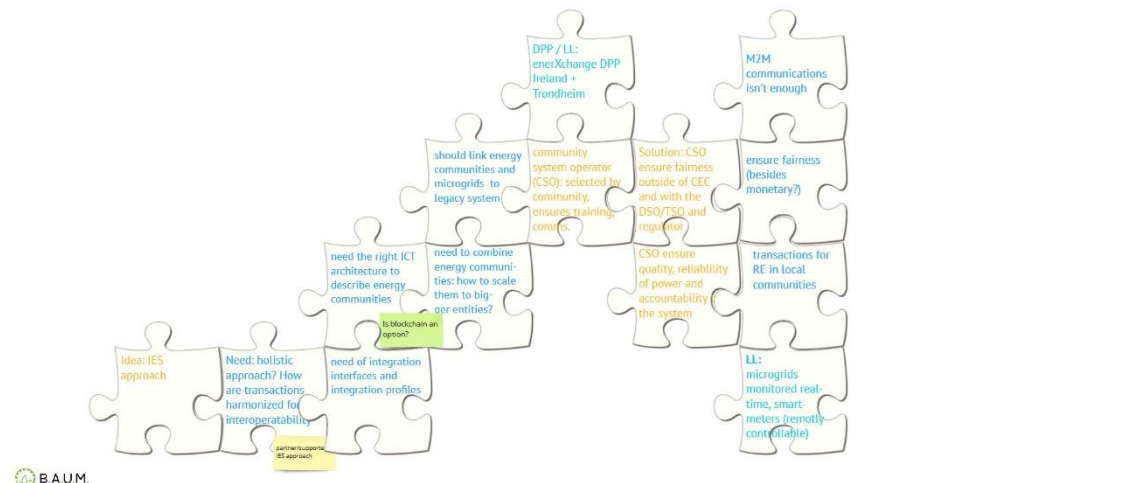
Logos: BAUM, MISSION INNOVATION, Smart Energy Systems ERA-Net

Communication: holistic smart sector integration

4: Communication: describing the system of systems

Moderation: Minna Näsman and Franziska Wirth

Which research is needed from a communication perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?



The diagram consists of several puzzle pieces arranged in a grid-like structure. Key sections include:

- Idea: IES approach
- Need: holistic approach? How are transactions harmonized for interoperability?
- Need: integration interfaces and integration profiles
- need the right ICT architecture to describe energy communities
- need to combine energy communities: how to scale them to bigger entities?
- is blockchain an option?
- community system operator (CSO): selected by community, ensures training, comm. etc.
- DPP / LL: eneXchange DPP Ireland + Trondheim
- M2M communications isn't enough
- should link energy communities and microgrids to legacy system
- Solution: CSO ensure fairness outside of CEC and with the DSO/TSO and regulator
- ensure fairness (besides monetary?)
- CSO ensure quality, reliability of power and accountability the system
- transactions for RE in local communities
- LL: microgrids monitored real-time, smart meters (remotely controllable)

Logos: BAUM, MISSION INNOVATION, Smart Energy Systems ERA-Net

Communication: describing the system of systems

4: Communication: integrating and connecting communities

Moderation: Minna Näsman and Franziska Wirth

Which research is needed from a communication perspective for advancing the green energy transition in all sectors while ensuring security of supply, creating new business opportunities and providing social sustainability?

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local solutions for resilience

need: resilient system

power

Solution: citizen energy community

local commun. system, cloud for sharing amongst communities and international.

DPP/LL

Solution: Visualization

system design

Overall design: small and modular or something big. What does it require from communications?

should link energy communities and microgrids to legacy system

need to combine energy communities: how to scale them to bigger entities?

Need: which ICT software to use to connect all stakeholders

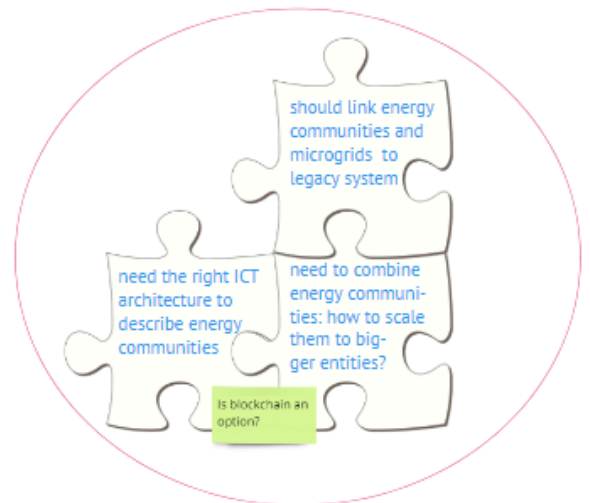
different markets have different time constraints e.g. grid is real time <-> energy market not

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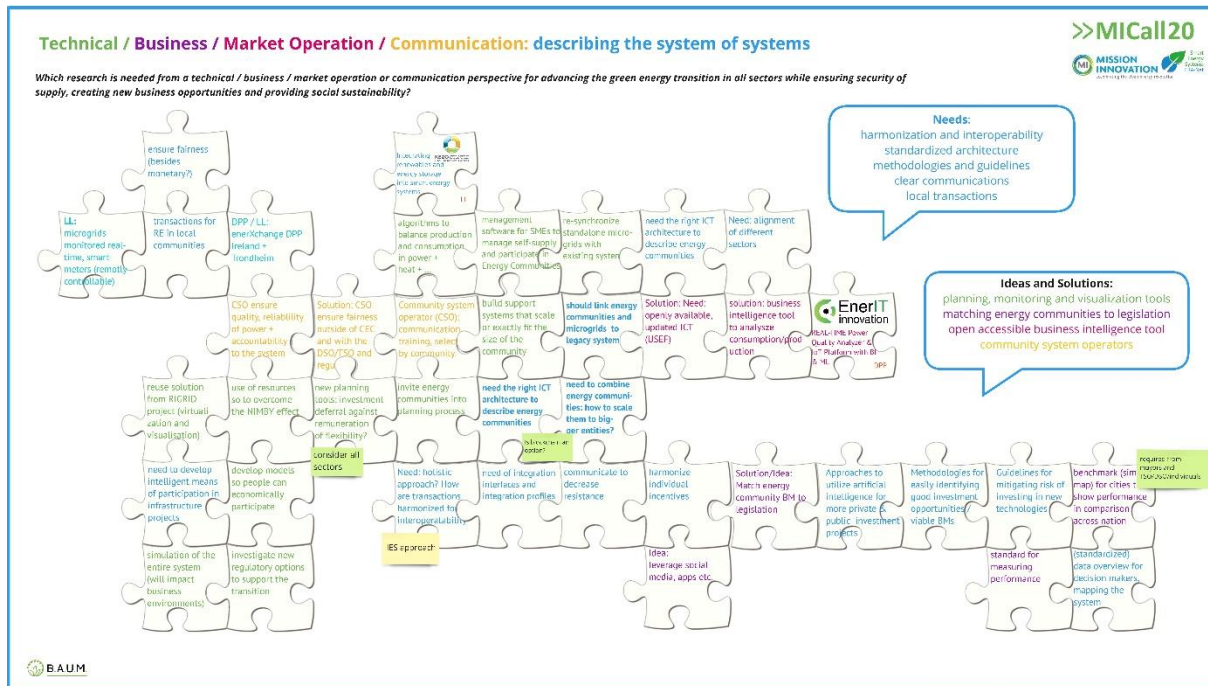
Communication: integrating and connecting communities

3.3 Wrap-up

In the wrap-up, moderator **Ludwig Karg** showed how one need could be tackled in the upcoming call for project proposals while covering the four dimensions of digitalization. The need “describing the systems of systems” and the example of energy communities were chosen for demonstration. This need was addressed in all subgroups.



Here is the consolidated result of the co-creation work in the groups:



Describing the system of systems - needs on energy communities tackled from a technical, business, market operation and communication perspective

ERA-Net SES funding partners



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