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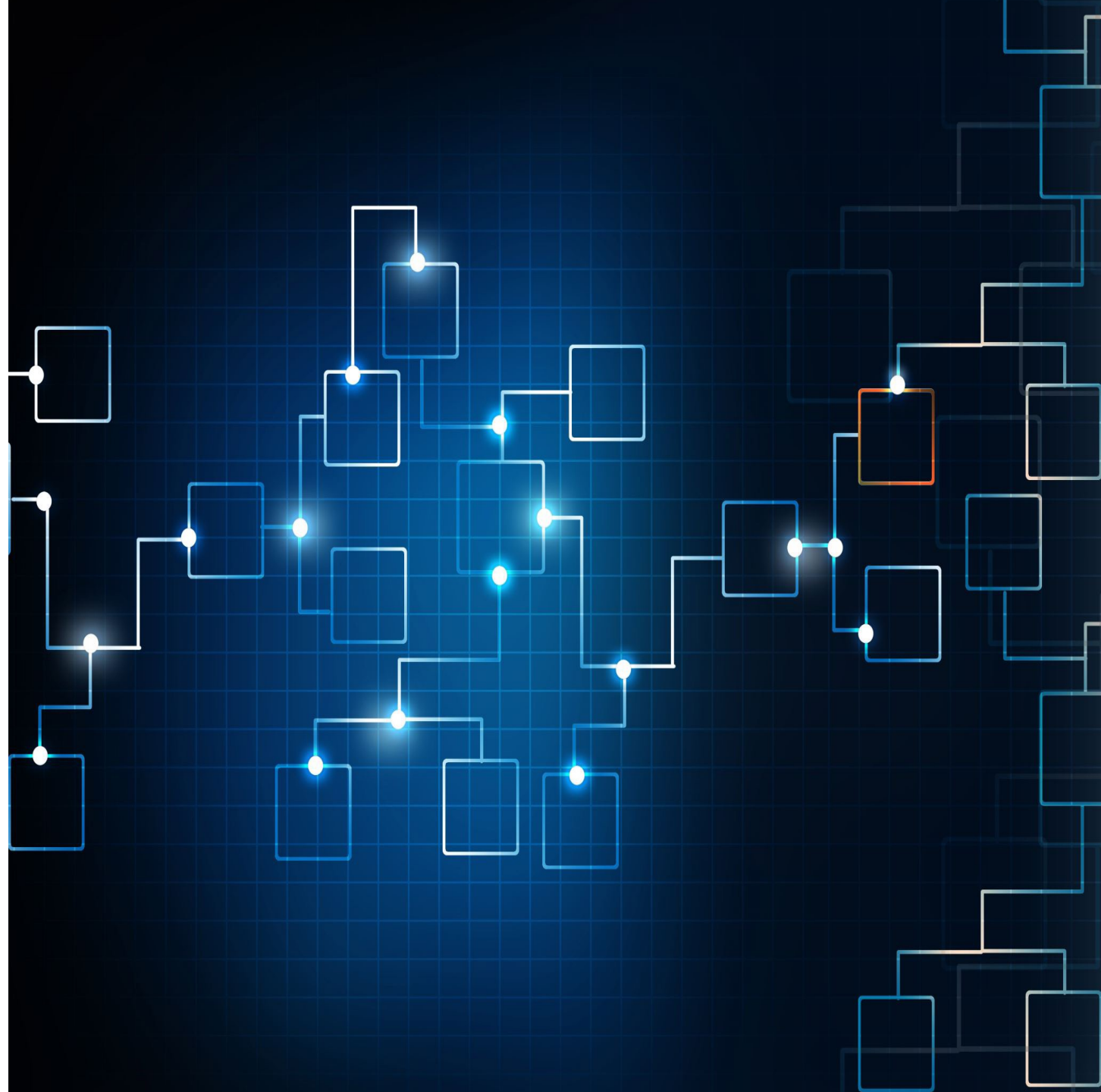
Aggregators in Collaborative Prosumer Networks

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About Me

- Professor, Information Systems
- Research on smart cities, smart energy systems, emerging business models, sustainability.
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Background

- For the last five years, our research group has worked on prosumer networks in the energy sector

- In this context, prosumers are energy consumers that also produce energy

- In most cases, energy comes from solar panels

TSO

DSO

Aggregator

Prosumer

EV charger

Smart meter

Prosumer

EV charger

Smart meter
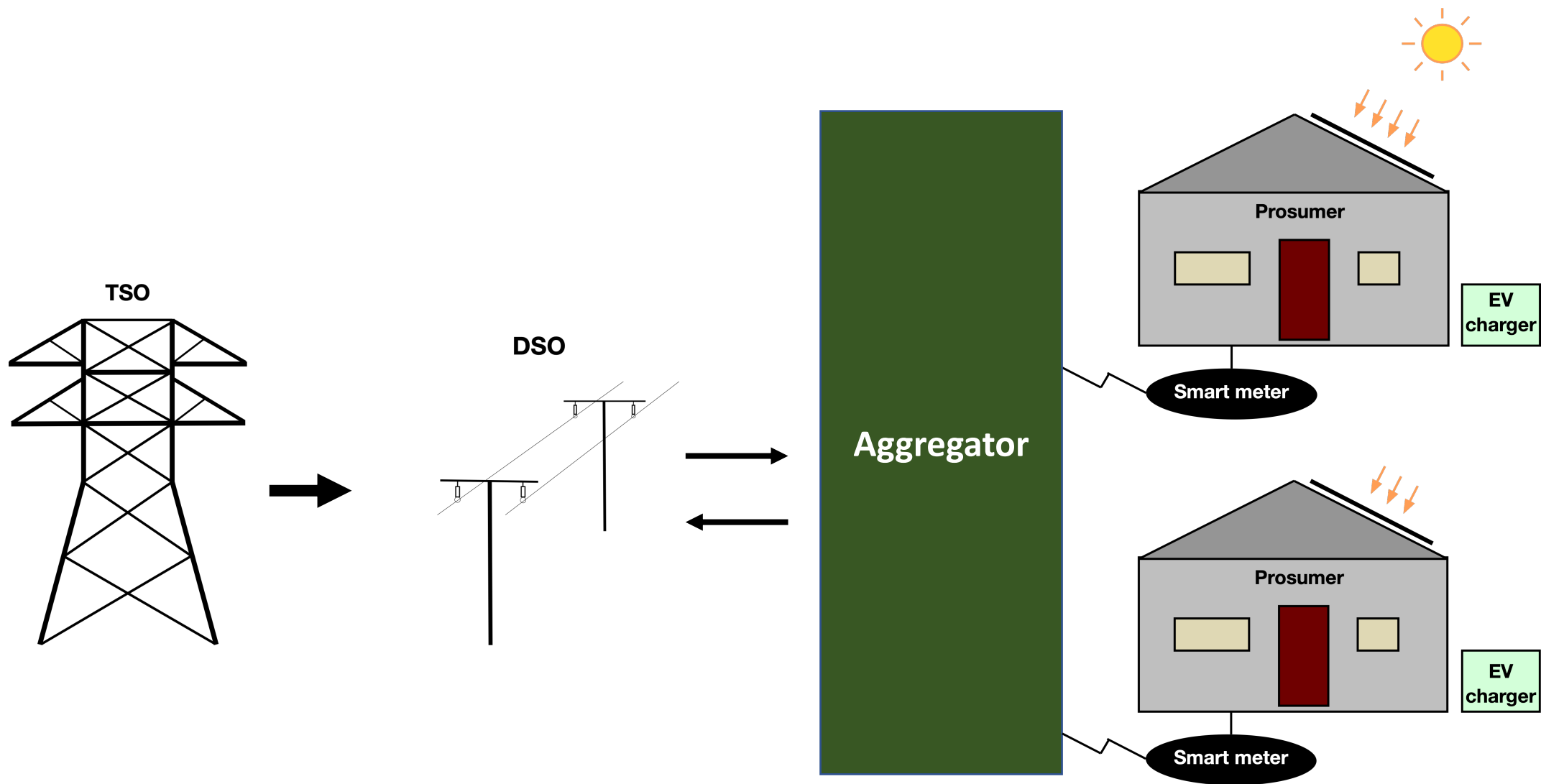
Prosumer

- The term 'prosumer' represents the dynamic convergence of 'producer' and 'consumer,' signifying a shift away from conventional boundaries that separate the realms of creation and consumption.
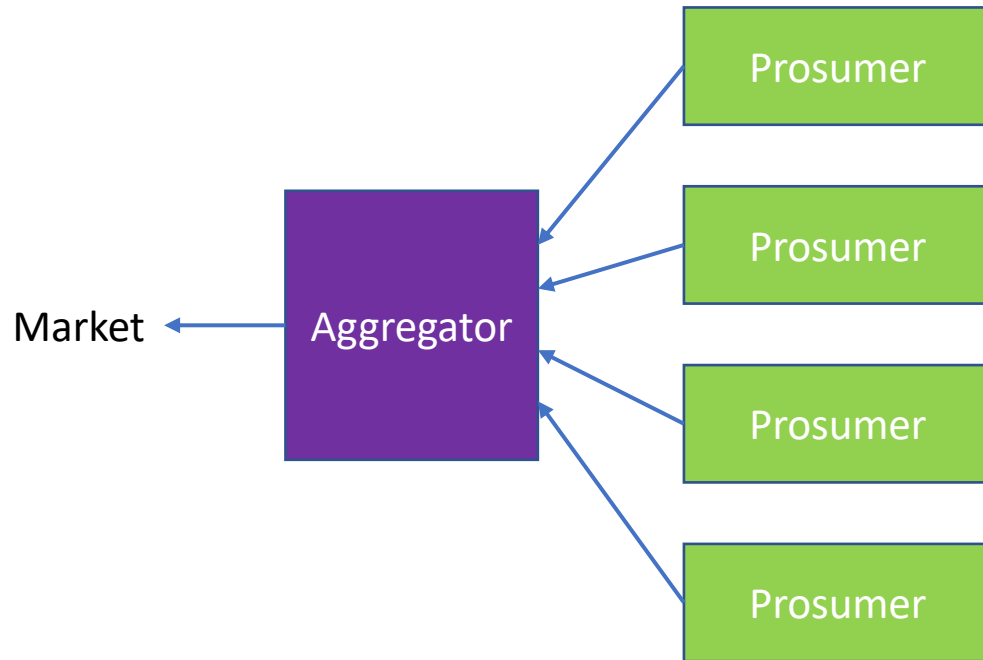
Prosumer network

- In the realm of prosumer networks, individuals engage in reciprocal exchange of goods or services.

- These networks manifest in diverse formats, ranging from vibrant online communities to collaborative physical co-working spaces.

Collaborative prosumer network

- Within collaborative prosumer networks, prosumers actively collaborate to leverage collective knowledge and resources, resulting in reduced costs and heightened efficiency.

- These networks encompass diverse forms, encompassing self-support networks, renewable energy prosumer networks, and more.

- The facilitation of these networks is often enabled through dynamic online platforms, fostering seamless connectivity and interactive engagement among prosumers.
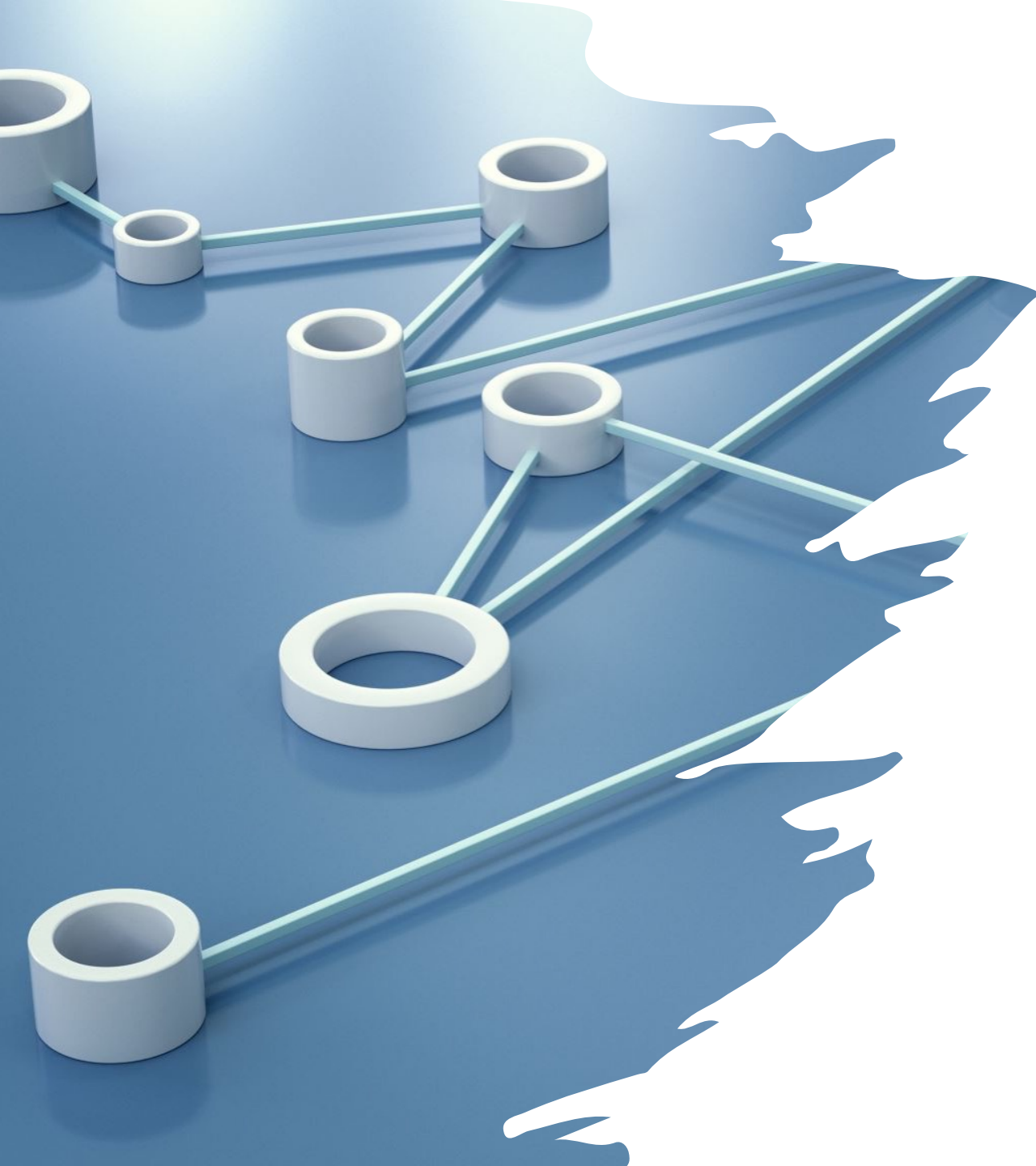
The aggregator

- In most cases, the network has a hub or an aggregator that keeps the network together.
- The aggregator is a role that aggregates the goods, services, or information produced by a network of prosumers.
- The aggregator also represents the network in its relation to the outside world.

The aggregator

- The aggregator can also facilitate the exchange of goods, services, or information inside the network.

- The aggregator may negotiate with the outside world on behalf of the prosumers or provide infrastructure elements that enable exchanging goods, services, or information, e.g., a portal for a self-support network or a settlement service for renewable energy prosumers.

The hub

Prosumer

Prosumer

Hub
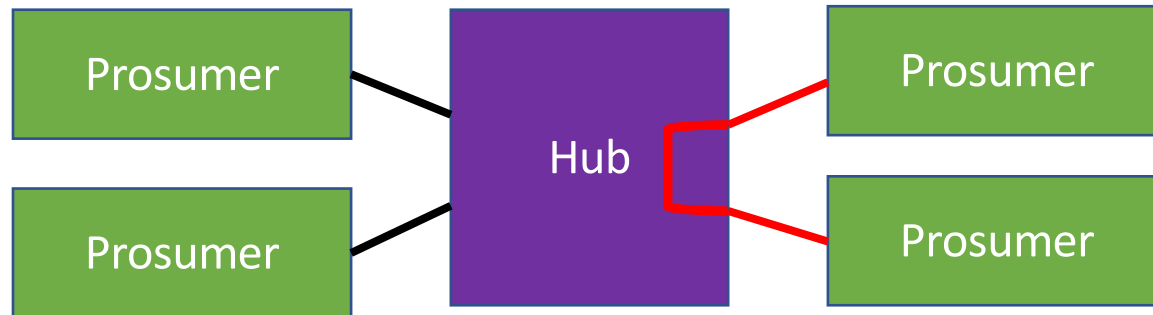
Prosumer

Prosumer

A hub connects the prosumers without aggregating the goods, services, or information.

Advantages of an aggregator or a hub

Legal and regulatory compliance

- A hub or aggregator can help ensure that the network complies with relevant laws and regulations, such as intellectual property rights or data protection rules, by centralizing the responsibility for these issues within the network.

Tapscott, D. and Williams, A. D.: Wikinomics: How Mass Collaboration Changes Everything. Portfolio. (2006)

Simplified access

- A centralized platform makes it easier for users to find, access, and contribute to projects, as they have a single point of entry and can quickly discover relevant content or initiatives.

Tapscott, D. and Williams, A. D.: Wikinomics: How Mass Collaboration Changes Everything. Portfolio. (2006)

Coordination

- A hub or aggregator can help coordinate and manage the efforts of multiple participants, streamlining the collaborative process and reducing the potential for chaos or duplicated work.

Benkler, Y.: The Wealth of Networks: How Social Production Transforms Markets and Freedom. Yale University Press. (2006)

Reputation and trust

- By establishing a trusted brand or identity, a hub or aggregator can attract more participants to the network and foster a sense of credibility and reliability.

Benkler, Y.: The Wealth of Networks: How Social Production Transforms Markets and Freedom. Yale University Press. (2006)

Data aggregation and analysis

- By collecting and analyzing participant data, a hub or aggregator can identify trends, patterns, and insights, which can inform decision-making and drive innovation.

Benkler, Y.: The Wealth of Networks: How Social Production Transforms Markets and Freedom. Yale University Press. (2006)

Networking opportunities

- Centralized platforms can facilitate connections among participants, allowing them to network, share ideas, and collaborate more effectively.

Shirky, C.: Here Comes Everybody: The Power of Organizing Without Organizations. Penguin Press. (2008).

Scaling

- A centralized platform can facilitate the growth and expansion of the network by providing the necessary infrastructure, support, and resources for scaling the collaborative efforts of prosumers.

Shirky, C.: Here Comes Everybody: The Power of Organizing Without Organizations. Penguin Press. (2008).

Quality control

- By centralizing the evaluation and approval of content, products, or services, a hub or aggregator can help ensure consistency and maintain high-quality standards across the network.

Shirky, C.: Here Comes Everybody: The Power of Organizing Without Organizations. Penguin Press. (2008).

Resource allocation

- A hub or aggregator can more effectively allocate resources, such as funding or expertise, to the network's most promising or high-impact projects.

Leadbeater, C:. We-Think: Mass Innovation, Not Mass Production, 2nd ed.. Profile Books. (2009)

Monetization

- For networks aiming to generate revenue, a hub or aggregator can help manage and distribute income streams, such as advertising, subscriptions, or donations.

Leadbeater, C:. We-Think: Mass Innovation, Not Mass Production, 2nd ed.. Profile Books. (2009)

Case studies

Some real world examples of collaborative prosumer networks

Self-support network
Genealogy records
Map sharing
Open source dev.
Social media
Wikipedia
Renewable energy
REKO-rings

Self-support network

- Established in 2002 in Nøtterøy municipality, now Færder municipality.

- Support spouses of citizens who have suffered strokes or dementia.

- Extended to more municipalities and new user groups, e.g., parents of children with developmental disorders or teenagers with drug problems.

Berntzen, L.: Assisted living through self-support networks. In: Bit's 1st Annual World Congress of U-Home (Abstracts), [Online] http://www.citizencentric.net/2011_Self_support.pdf , (2011)

Self-support network

- Collaborative prosumer network.

- Participants produce by sharing their knowledge and experiences and consuming advice from other participants.

- Communication platform.

- No clear aggregator. This is a hub connecting the prosumers without aggregating the goods, services, or information.

Genealogy records

- Another collaborative prosumer network: Genealogists transcribes historical records. They also use the information provided by other members of the network.

- The government through its national archive provides the infrastructure to support such activities.
  - Database, front end, back end

- Digital Archives.

- The Digital Inn.

Berntzen, L. (2007) Enhanced e-Services through Partnerships. Proceedings of the First International Conference on the Digital Society (ICDS'07), IEEE

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Map sharing

- The paper presenting the previous example also had another case: A collaborative map service.

- A municipality had a Geographic Information System (GIS) that included overlays to maps.

- This could be used to develop context-driven maps.

1. Berntzen, L., Steinmann, R., and Krek, A.: Innovative Use of Geographic Information Systems to Facilitate Collaboration between Government and Citizens. In: Innovation and the Knowledge Economy: Issues, Applications, Case Studies Paul Cunningham and Miriam Cunningham (Eds) IOS Press, 2005 Amsterdam (2005)

2. Berntzen, L. (2007) Enhanced e-Services through Partnerships. Proceedings of the First International Conference on the Digital Society (ICDS'07), IEEE
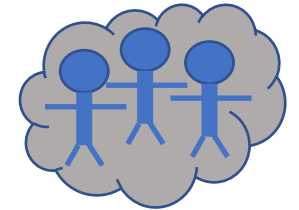
Map sharing

Public catalog of maps

EveryonesMap

OurMap

MyMap

Open source development

- Another good example of collaborative prosumer network.

- Participants take part in development in order to produce software that better fullfill their demands.

Social media

YouTube

Facebook

Instagram

Twitter

TikTok

LinkedIn

Snapchat

Wikipedia

Prosumer

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> This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.
> *Find sources:* "Prosumer" – news · newspapers · books · scholar · JSTOR *(February 2023)* (*Learn how and when to remove this template message*)

This article is about consumers who also produce. The term may also refer to prosumer equipment.

A **prosumer** is an individual who both consumes and produces. The term is a portmanteau of the words *producer* and *consumer*. Research has identified six types of prosumers: DIY prosumers, self-service prosumers, customizing prosumers, collaborative prosumers, monetised prosumers, and economic prosumers.[1]

The terms *prosumer* and *prosumption* were coined in 1980 by American futurist Alvin Toffler, and were widely used by many technology writers of the time. Technological breakthrough and a rise in user participation blurs the line between production and consumption activities, with the consumer becoming a prosumer.

Energy consumer

- Traditional model
- Buys energy from the grid
- Deregulated market (since 1991)
- Two components:
  - Consumed power
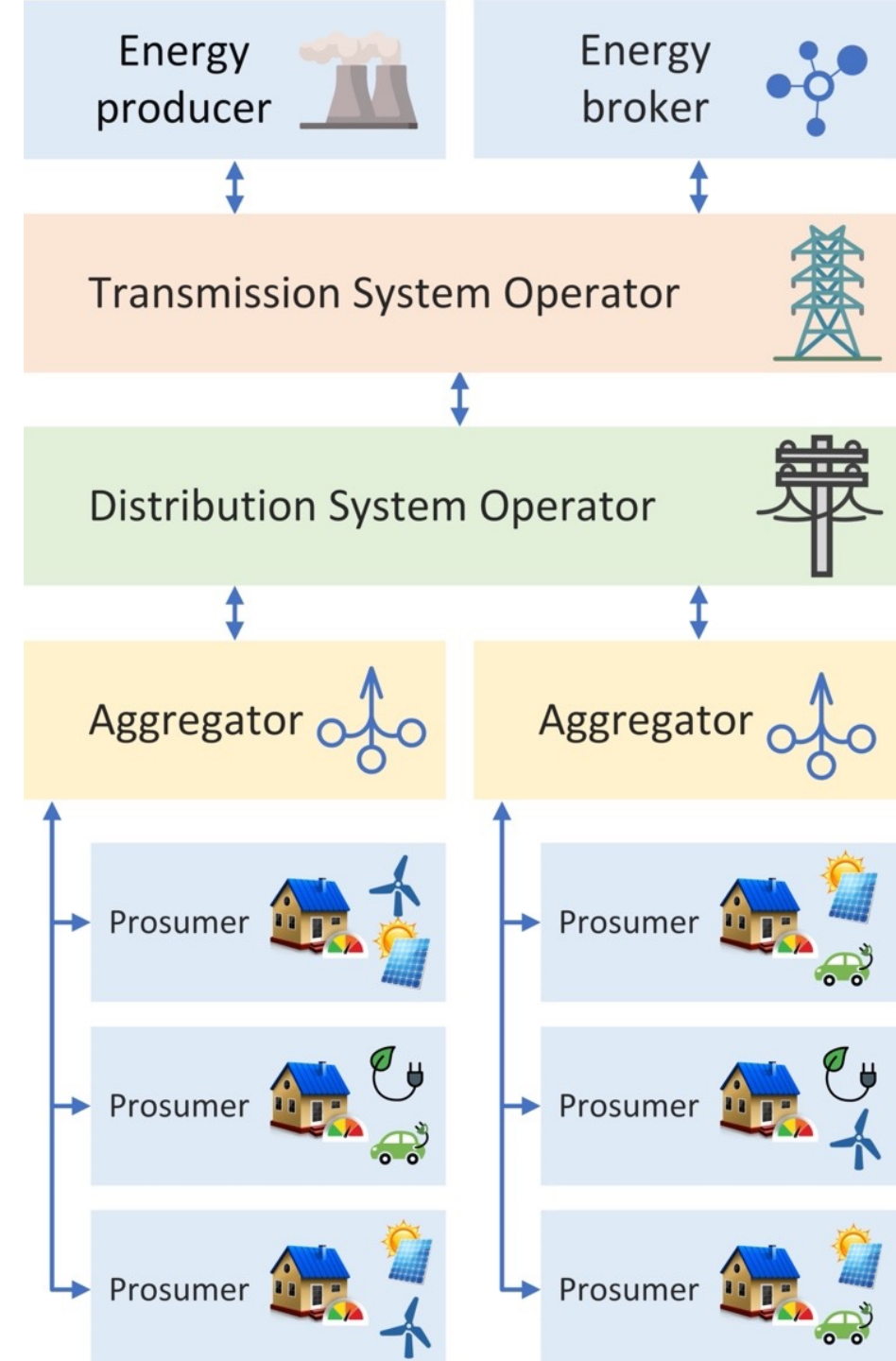 - Infrastructure (grid)
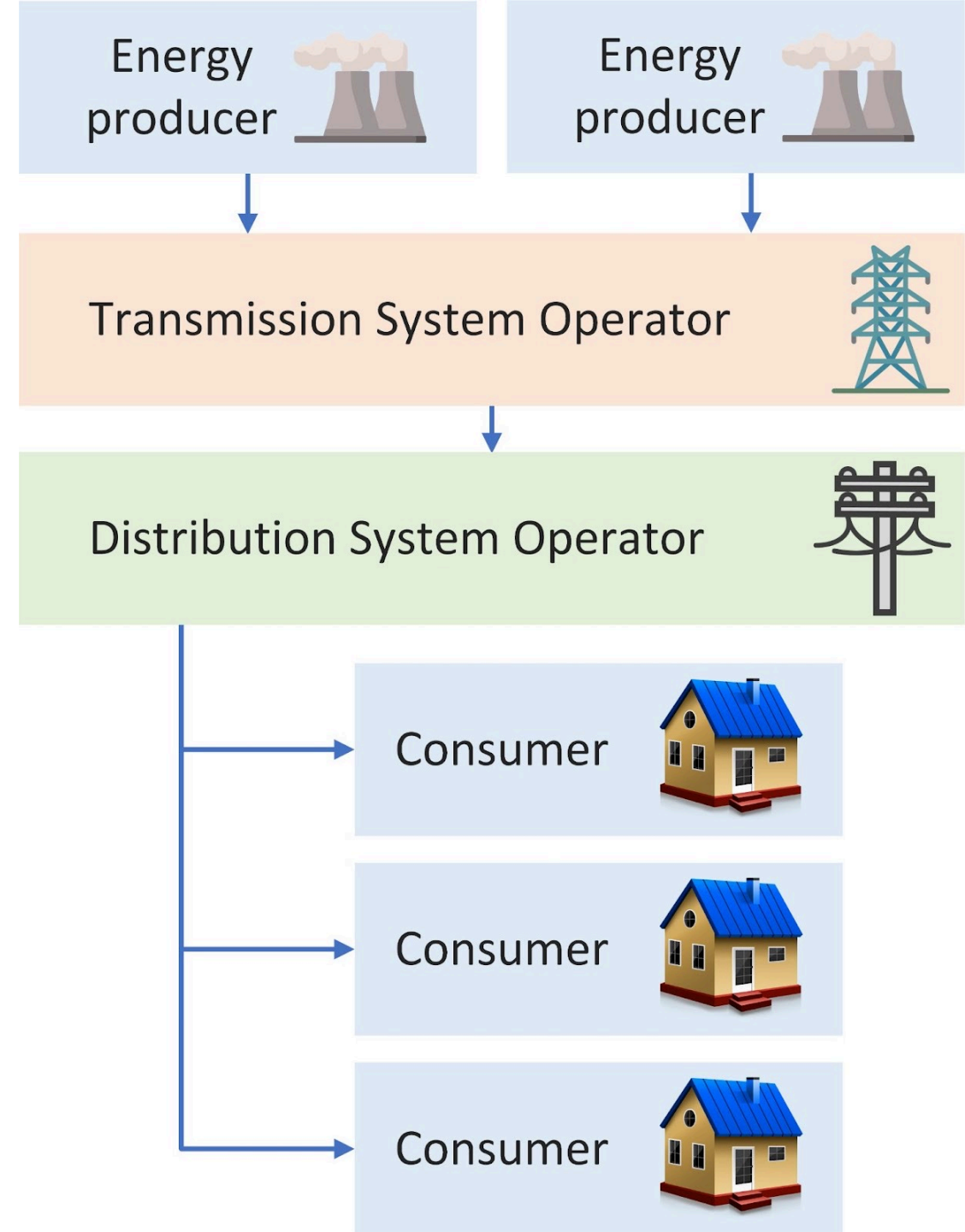
Renewable energy prosumer

Emerging

Both producer and consumer

Mostly photovoltaic (solar), but some geothermal and wind

Renewable energy sources

Can sell to the grid
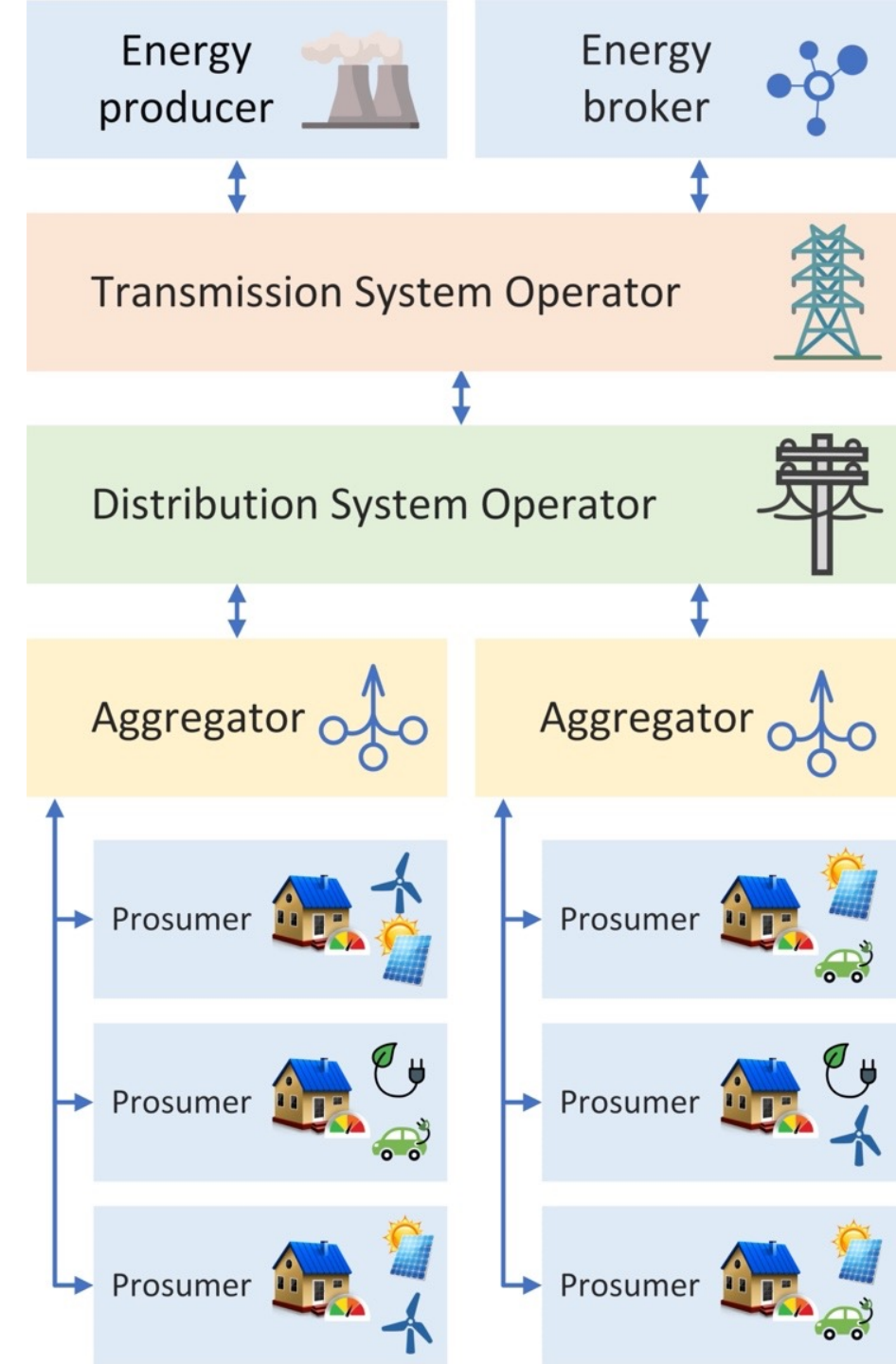
The Aggregator

The aggregator operates on behalf of prosumers.

Negotiates with energy brokers and distribution system operators.

Market power.

Create value for the prosumers, create profit.

Can also create an internal market.

The Aggregator

- As the number of prosumers grows, the business opportunities for a new energy ecosystem actor, the aggregator, emerge

- The aggregator is a business entity that can aggregate energy from a group of prosumers, and trade flexibility in the market

- A higher volume benefits the aggregator when negotiating with the distribution system operators and energy providers

- The aggregator can also provide services, such as settlements, energy storage, etc.

REKO-rings

- A REKO-ring is a food distribution system that originated in Jacobstad, Finland, and has become increasingly popular in other countries.

- A REKO-ring involves a group of consumers who form a network with local producers and farmers, enabling them to purchase food directly from the producers without intermediaries like supermarkets.
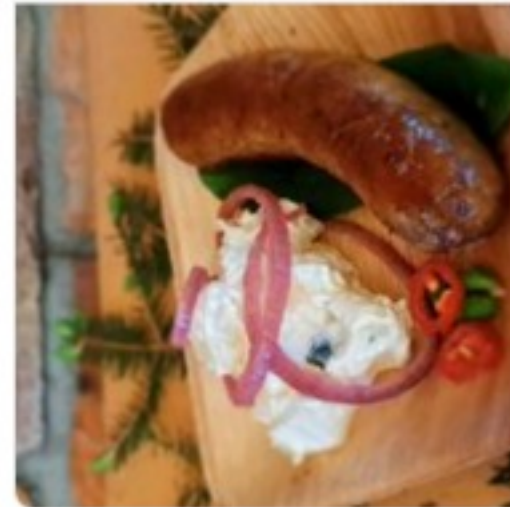
REKO-rings

The REKO-ring can be considered a collaborative prosumer network, but most participants are not producing, just consuming.

The network has no aggregator but a hub (the Facebook group).

An aggregator would collect the production from each producer and be the contact point for the consumers.

Summary

	Collaborative network	Prosumers	Aggregator or hub?
Self-support network	Yes	Yes	Hub
Genealogy records	Yes	Yes	Aggregator
Map sharing	Yes	Yes	Aggregator
Open source dev.	Yes	Yes	Aggregator
Social media	Yes	Yes	Aggregator
Wikipedia	Yes	Yes	Aggregator
Renewable energy	Yes	Yes	Aggregator
REKO-rings	Yes	Yes	Hub

Conclusions

Our case studies predominantly underscore the societal benefits derived from networks, rather than their monetary profitability.

This emphasis perhaps explains why monetization and resource allocation emerged as less critical in our instances, save for one notable exception - the renewable energy prosumer network.

Here, financial gain serves as a key incentive for individual prosumers.

Conclusions

The selection of examples in our study inherently carries some limitations.

A number of our case studies were chosen based on our prior engagement with real-world projects, bringing to bear practical experience and in-depth knowledge.

Conversely, other examples, including social media and Wikipedia, were selected due to their frequent representation as typical prosumer networks.

Conclusions

- Our primary objective was to illuminate the frequently overlooked yet pivotal role of an aggregator or hub in maintaining the cohesion of a network.

- By scrutinizing the most influential literature on network economy and prosumers, paired with practical instances, we have highlighted the criticality of the aggregator or hub function in the network's overall functionality.
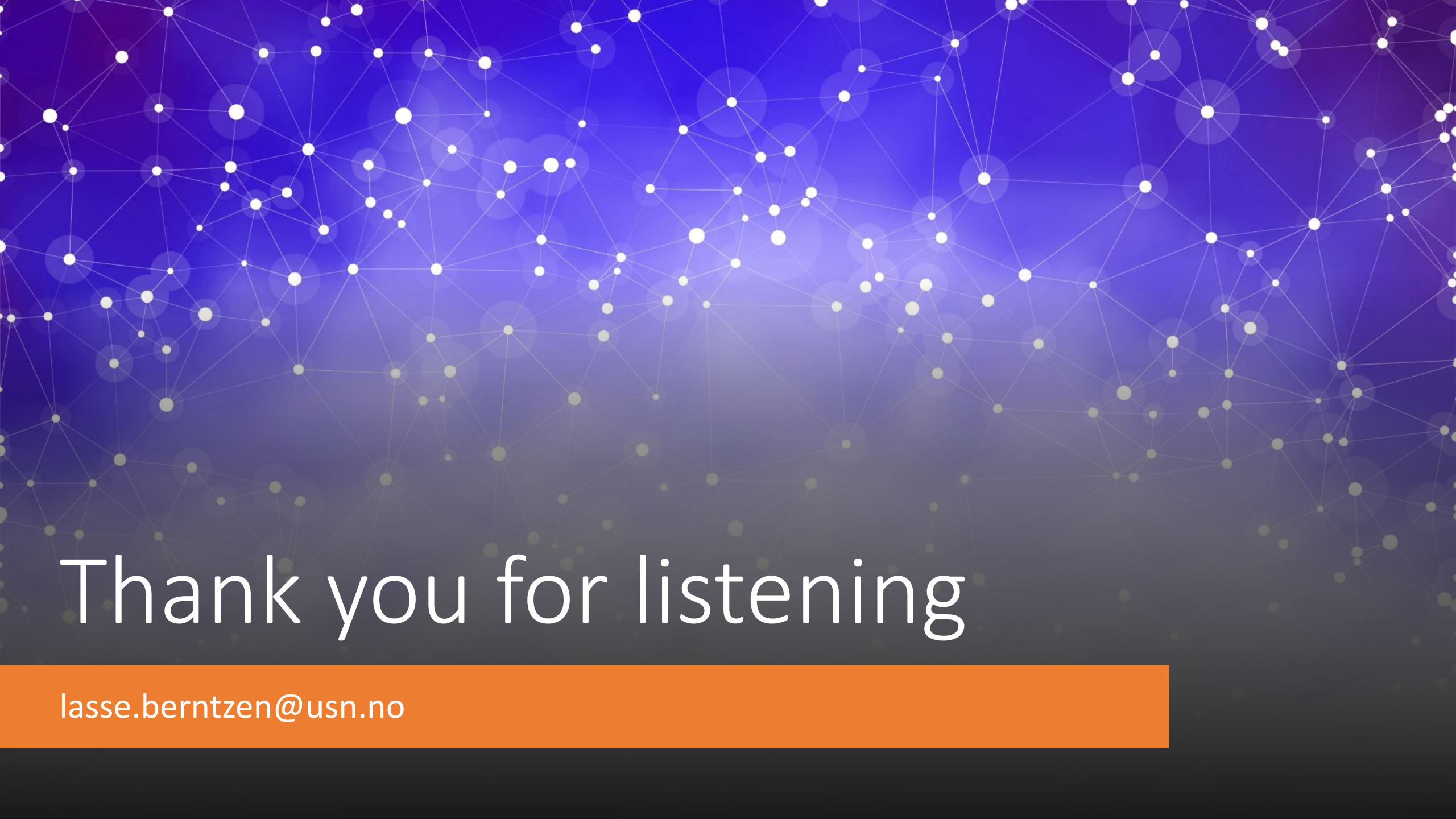
Thank you for listening

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