

DTU



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Implementation of energy communities – drivers, barriers, best practices, Denmark

*How do we empower the citizen in
the new energy reality ?*

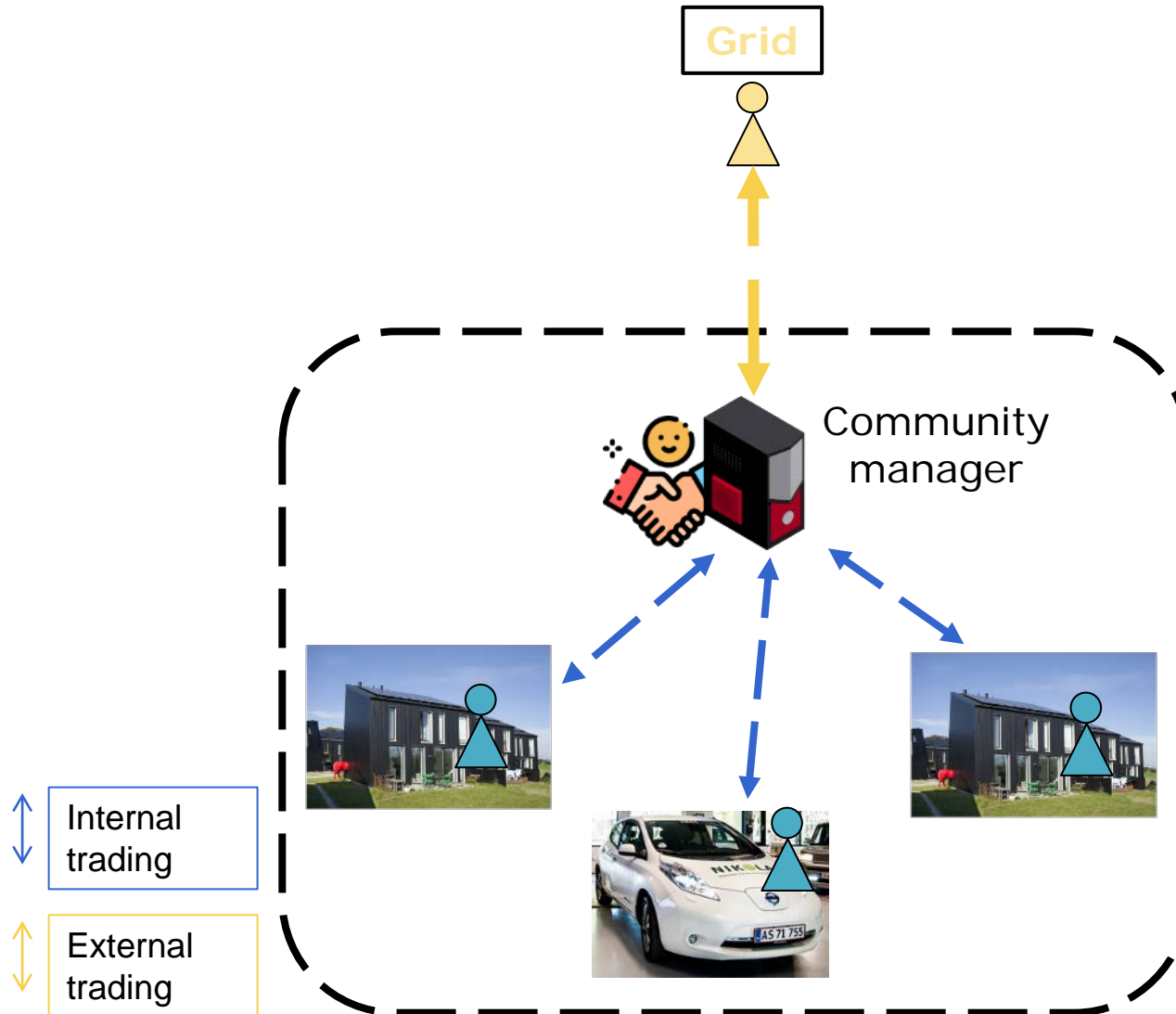
Svalin community > P2P Market

- Bakketoppen (2015)
- Svalin (2013)

<http://the-energy-collective-project.com/>



P2P market in Svalin



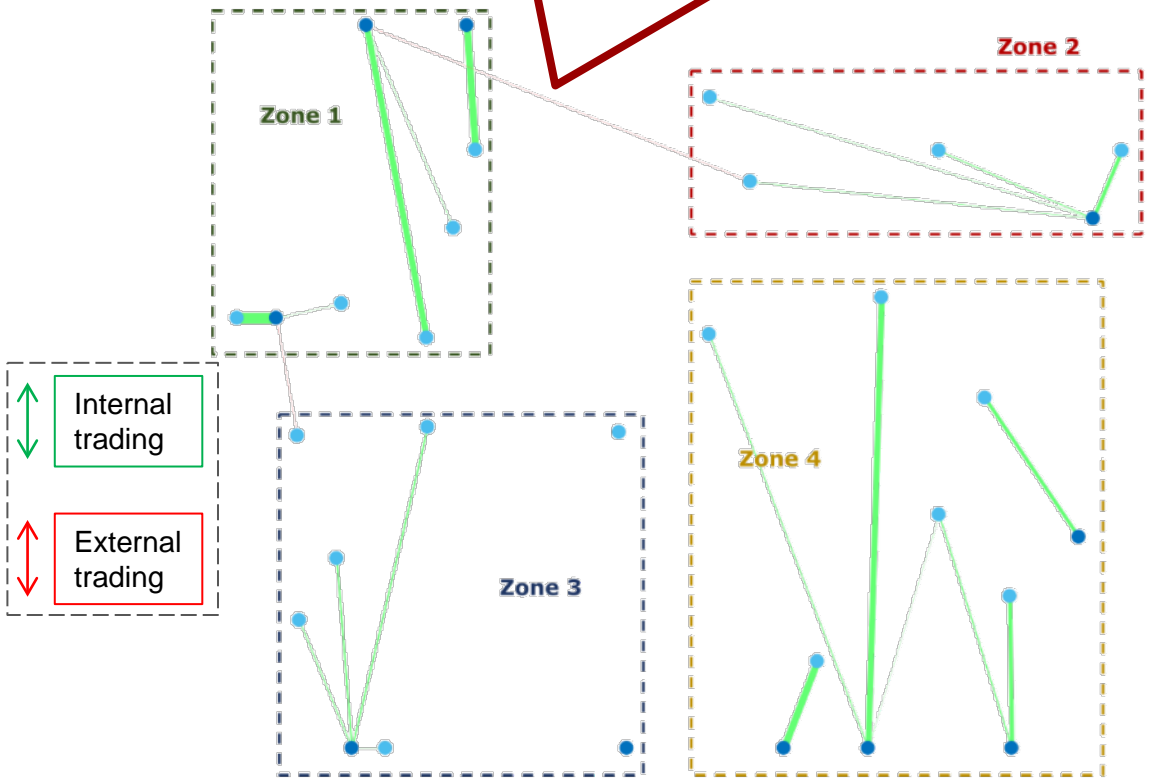
- Online P2P market for **every 5 minutes**
- **Autonomous agents** representing each house and electric vehicle



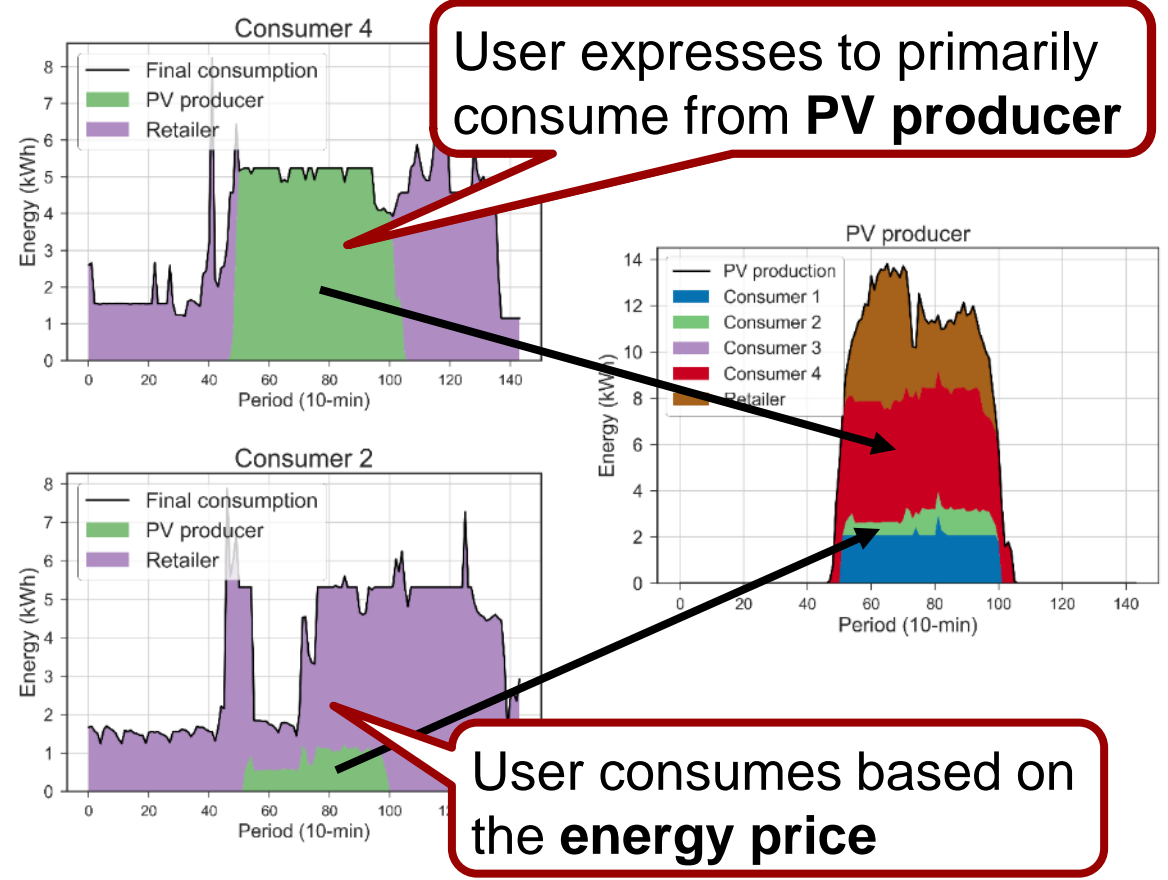
Research: New network cost allocation

- Grid tariffs based on **electricity distance**

Influences P2P trading to avoid **congestion** inter-lines



- Consumer preference towards sourcing of energy (solar, wind, etc)



The Delestrøm test case – As seen by an energy supplier

Test specifications

Digital grid on top of the existing infrastructure

Approx 150 test customers signed up

100 are installed or in process (approx 20% PV owners)

Test Results

Initial result shows an interest for local produced energy

Final result expected ultimo 2020 / primo 2021

Norlys Goals:

Understand how a local energy community could benefit the area

Understand if a energy community would change the consumption pattern

Understand if there is a benefit in communicating when local green power is available

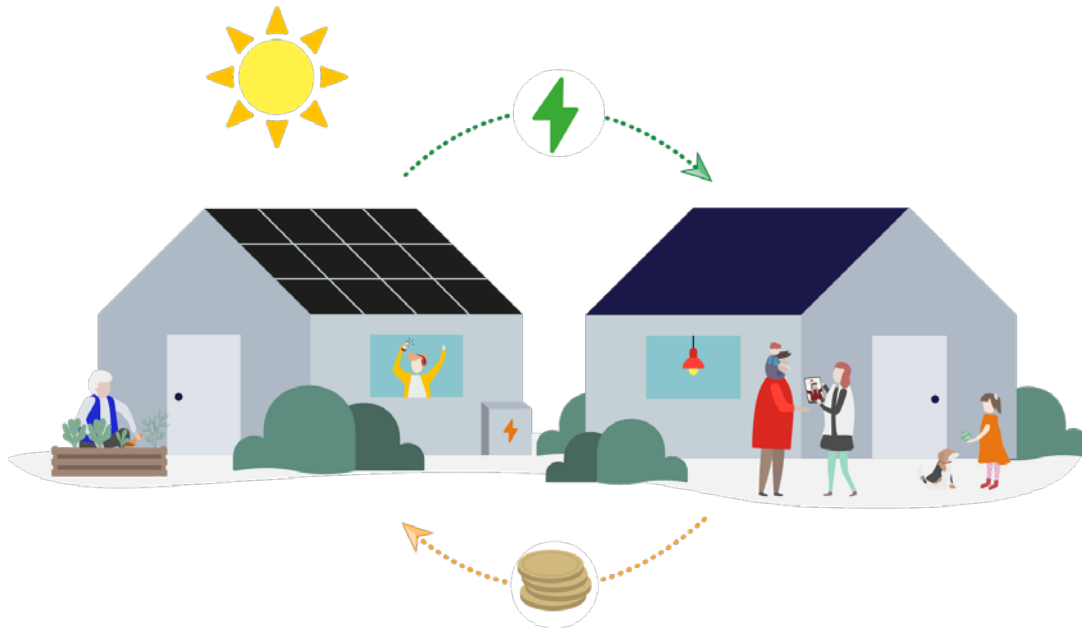
Understand if a strong local benefit would help engage customers/prosumers

Customer benefit:

The possibility to support the local community

Support the green agenda in their local area

From individual to community



Danish tech startup: Enyday.com

DIY Platform standardizing operations of energy communities in apartment buildings

Features:

- Administrator tool
 - Billing with more prices: Solar vs. grid
 - Buying power to the building collectively
- Neighbour community overview
- Newsfeed to residents with notifications
- APIs to DERs, meters, prices...

Learnings:

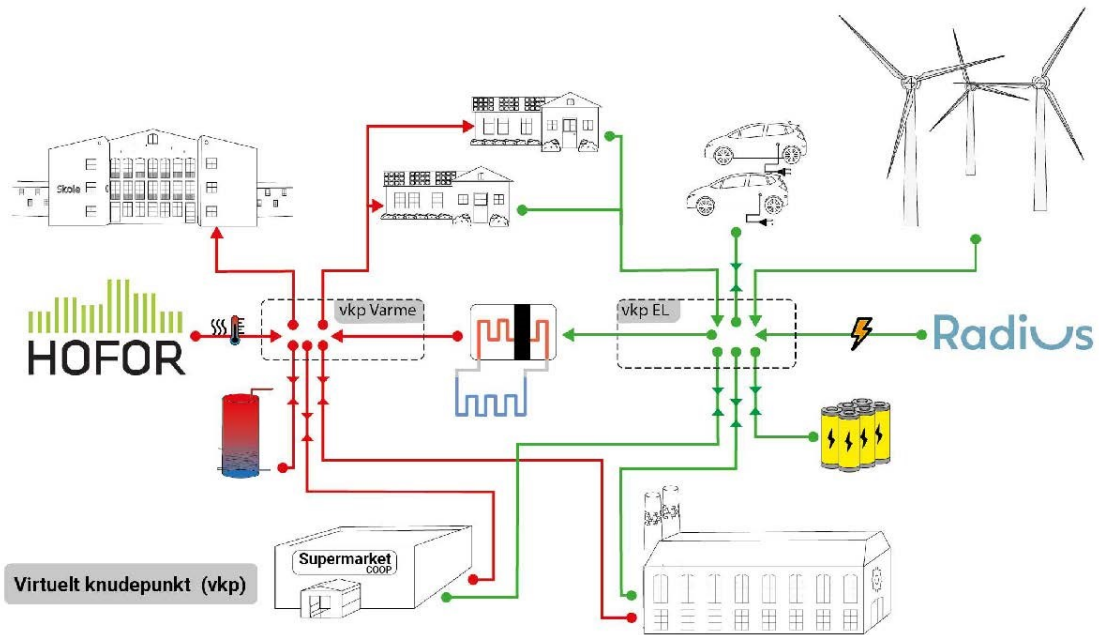
- Need professional platform
- Building owners need help to design and choose hardware
- The solution also need new business models for power

Barriers:

- Unclear+uncertain regulation
- Existing net and metering companies need to collaborate to scale solution virtually



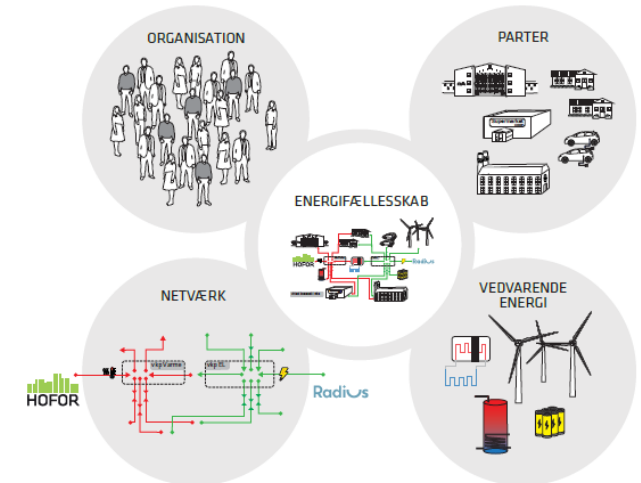
Aligning actors and networks, a city perspective



- Copenhagen Municipality supports local energy communities involving tenant building, public institutions and local business
- Proximity of buildings and actors and load shifting for power **and heat**, 4 to 6 cases in project 'Sun over the City', includes renewable energy technologies
- Local involvement is crucial – and possible. Can overcome barriers
- Actor alignment through economic gain in network efficiency and load shifting
- Institutional barriers and alignment of building structures, heat networks, power networks and ownership differences, can be overcome by operating the energy communities as virtual (sub)networks.

Summary

- Drivers
 - Reduction of energy taxes (behind the meter solutions)
 - Empowered guilds, owners associations, building cooperatives desire to contribute to the green transition
 - Transparency, feeling of local ownership, preference on source or local power
 - Delivery of flexibility services
- Barriers
 - Unclear+uncertain regulation
 - Currently datahub doesn't provide real-time data
 - Existing net and metering companies need to collaborate to scale solution virtually
 - Not invented here + friction in regulated business
 - Current legislation favors solutions behind the meter
- Best Practices
 - Professional platform empowers communities
 - Use well established organization forms (guilds, associations, cooperatives)
 - Important to activate existing building stock (new town developments = few % per year)
 - Diverse set of actors within the community



Thank you

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