



WeDoWind

Data sharing in renewable energy: experiences and incentives

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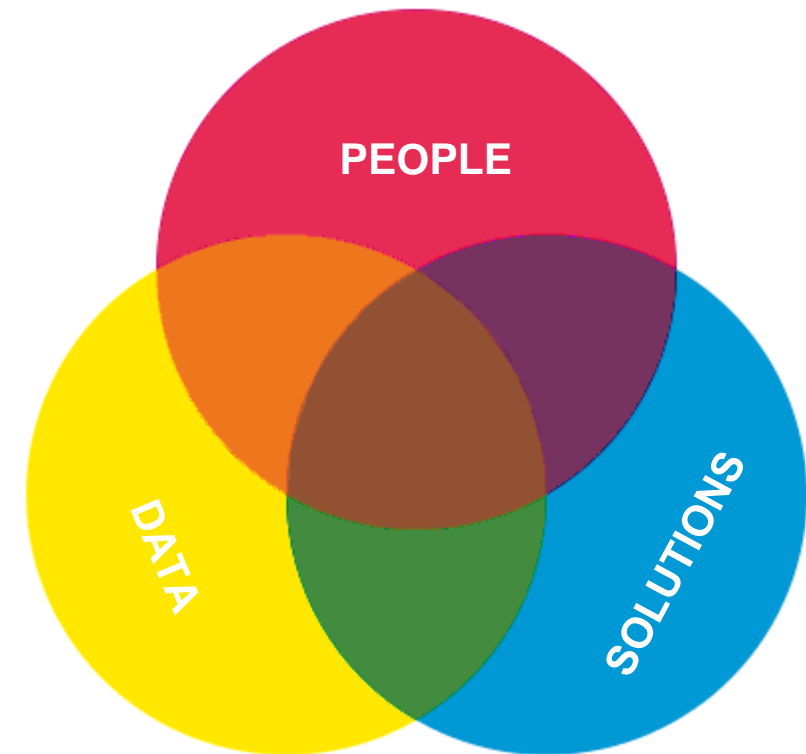
Experience

WeDoWind

A centralised ecosystem for accelerating innovation and learning through inclusive knowledge sharing based around real wind energy industry-specific challenges

Bringing together people, data and solutions from all over the world in "win-win" situations

Shifting wind energy to a collaborative mindset



Experience

2020

Interviews



Jan. 2021

Contact with EDP



Sofia Ganilha

Hydrogen Project Developer @ EDP Renewables | Data Analysis Enthusiast
Lisbon Metropolitan Area · 500+ connections

YES!

Sarah: We think people want to come together

Sofia: We think you're right.

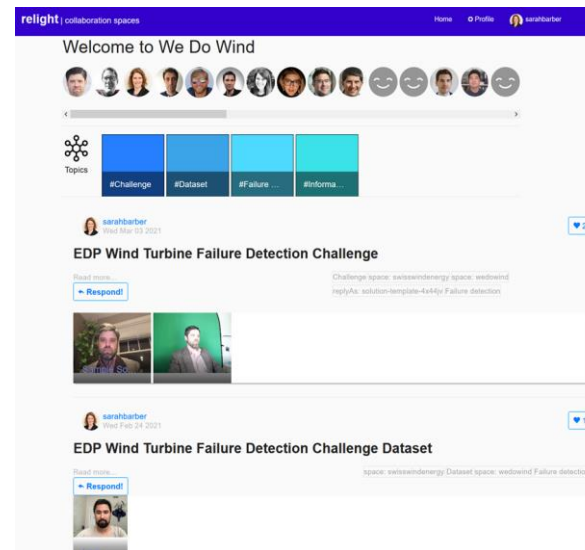
Sarah: We want to try using a new tech platform, Relight, for a new kind of conversation.

Sofia: let's try it.

The 4th biggest wind farm producer in the world with 10'000 staff members

Mar. 2021

"Challenge" defined, WeDoWind launched

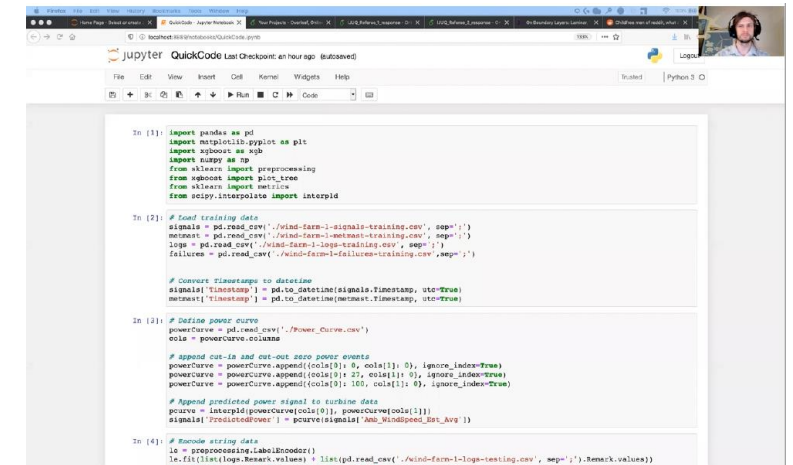


Develop solutions for early damage detection of components in their wind farms

SCADA data from nine wind turbines provided

Apr. 2021

First solution submitted



Does the community want to come together and develop solutions?

WHY ARE WE SOLVING APART?

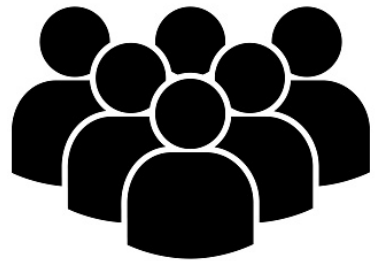


Experience

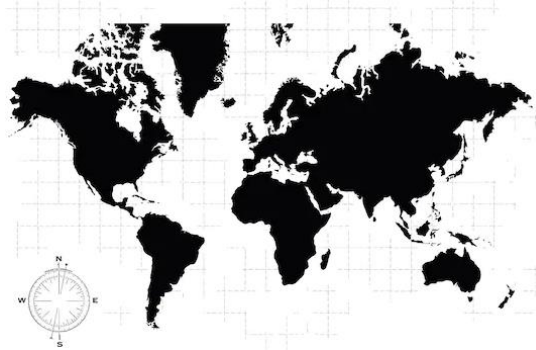
9 solutions



80 participants



26 countries



28 research institutes



13 companies



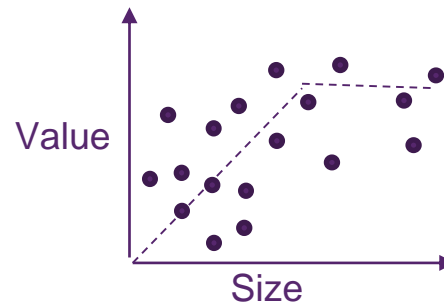
One collaborative paper underway



Experiences

- The value of data sharing in wind energy:
 - Data and knowledge sharing must be improved → IEA Wind Task 43 / Grand Challenges of Wind Energy Digitalisation.
 - But this is connected with the fear of losing competitive advantage → need to create a win-win situation for all parties and remove the fear.
 - WeDoWind:
 - Data owners gain new ideas and solutions / Solution providers can improve their solutions using real data.
 - Start with some early adopters → slowly gain momentum. 200+ participants world-wide since 2021.
 - Challenge with EDP completed → collaborative paper with nine new solutions underway.
 - Challenge with WinJi started → using learnings from EDP challenge.
- Relationship between how big a dataset is and the value that can be gained from it?

- My guess: weak correlation



Incentives

- Performance data ownership rights: do we need, in general, to shift from equipment provider owning the data to the plant operator?
 - Probably.
- Considering how to get bigger datasets...

	...would the company do this?		
	Yes	No	Yes with regulatory push (like?)
share performance data only with peers and only on a reciprocal basis (multilateral sharing)	50%		80% with incentive*
share performance with specific partners (researchers, other companies) under confidentiality (bilaterally negotiated sharing)	90%		100% with incentive
Post data publicly for anyone to have a go at deriving the best insights from (if so, post this identifying the source or anonymously?)	20%		50% with incentive

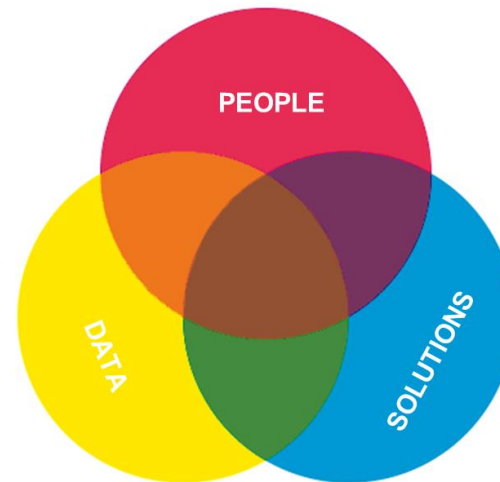
**e.g. saving time, gaining knowledge, learning, money*

- Your view on the question “what is the profile of a company interested in data sharing?”
 - Usually smaller companies.
 - Usually a company with little capacity to analyse its data.
 - Both companies working with performance data related to early-stage technology and working with data from mature commercial technology.

Join us on our journey here:

<https://www.wedowind.ch/wedowind-ecosystem>

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TRUE POWER

Trusted Asset Management for Continuous, Sustainable Growth

Data sharing in renewable energy: experiences and incentives

Background of WinJi

Our vision is to fight climate change by improving production efficiency



Mission

- Identify and close the performance gap of renewable energy assets
- Trusted long term business partner for asset owners



Team

- Experienced senior team with in depth expertise in renewables, software development and AI
- Specialised team of 25 experts in renewable technology and data science



Customer base & track record

- > 50 customers in 4 continents, fast growing
- 10% loss in average in >1000 M\$ production revenues, 2-5% actionable measures



Governance & ownership

- Founders with majority in company, secured financing incl. Swiss Government
- Strong network from founding companies (>500 employees) and partners

WinJi Collaborations



WeDoWind open challenge for gearbox anomaly detection

- Provision of fully anonymised, open dataset in collaboration with client
- Workshops and discussions with participants, challenging the community



Partnering up with academia (ZHAW, BFT, OST)

- Bringing together our customers needs for innovation and the academic institutes
- Data shared internally, but results and methods published to empower R&D

Collaborations with other companies in the space

- Controlled exchange of data towards shareable results that add value for both sides
- Towards closing the gap between real and optimal renewable energy production

Key Takeaways

Sharing data (anonymised or not) benefits all parties:

- Asset owners can benchmark their portfolios against others, now happening in “silos” like WinJi or big owners
- R&D space has access to curated information to progress & innovate
- Data Standardization is crucial for acceleration of Energy Digitalisation

Sharing methods benefits all parties:

- R&D actors can act as “distillers” of information, receiving (sensitive) data but releasing open methods and results
- Transparency is essential in a space where OEM, owners and 3rd parties usually have conflicting interests

Sharing results benefits all parties:

- Performance and reliability metrics from devices on the field can optimise maintenance costs
- OEM and 3rd party upgrades, maintenance teams efficiency benchmarked for an educated planning and decision making of owners and producers

winji

TRUE POWER

Gold Standard for Best Managed Renewable Asset Portfolios
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Improving Renewable Energy Predictability through Data Sharing

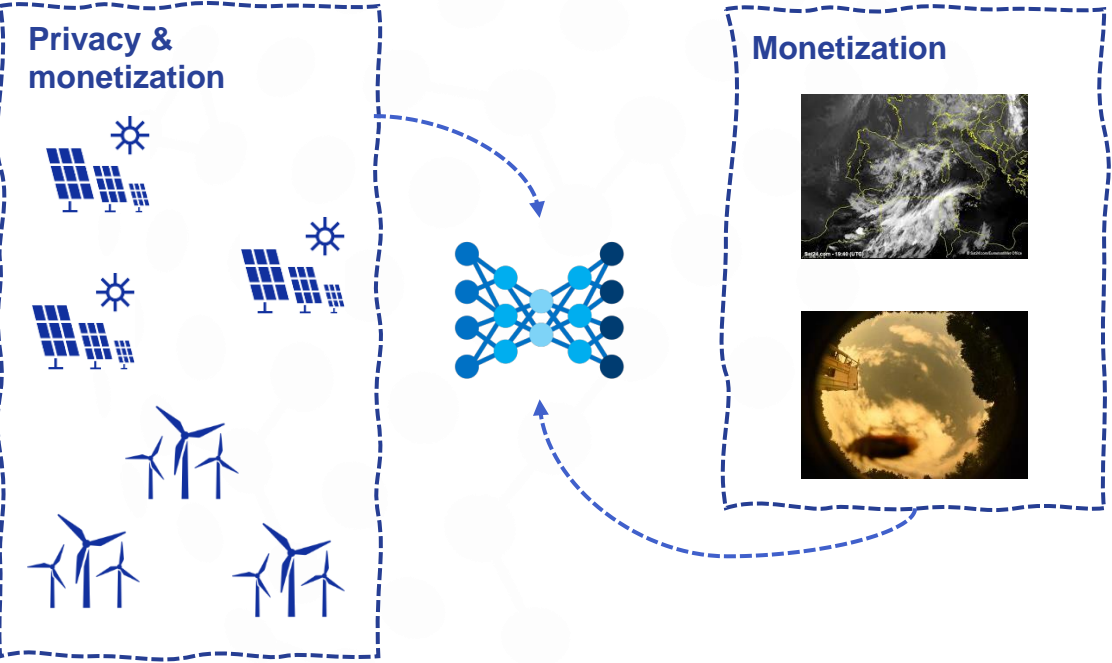
Ricardo Bessa (ricardo.j.bessa@inesctec.pt) | INESC TEC

Workshop with DG ENER – “Data sharing in renewable energy: experiences and incentives”



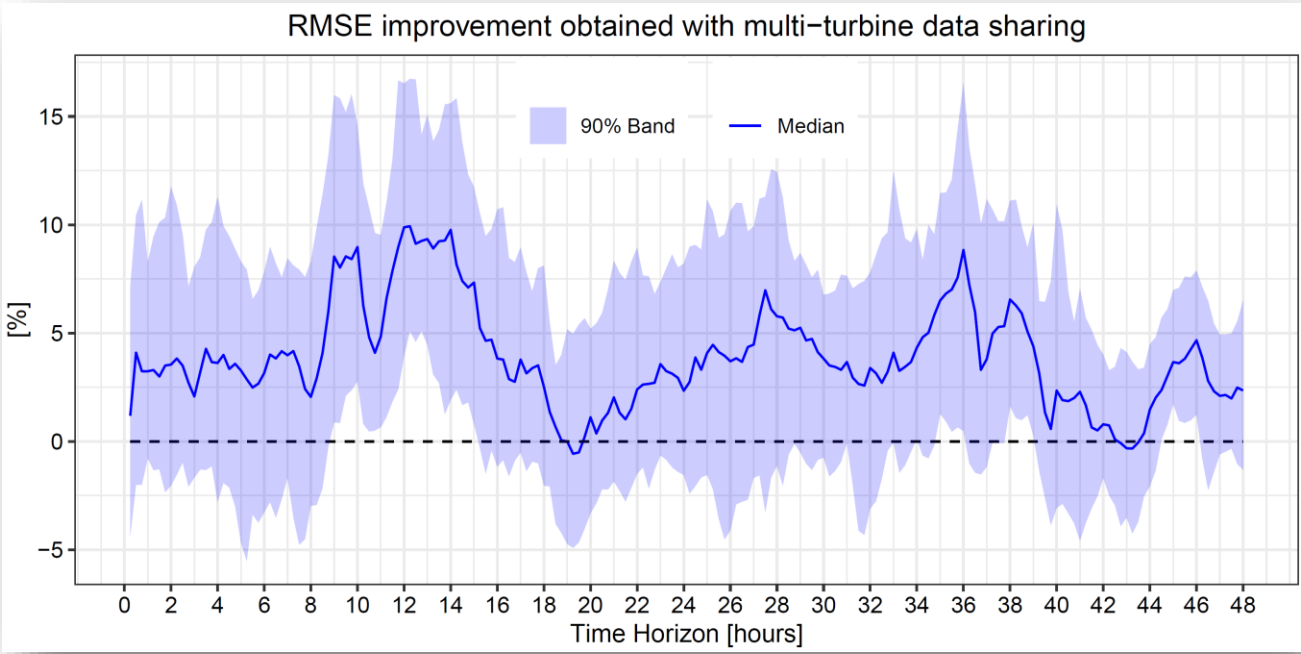
This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 864337

RES Forecasting



Benefit: Improve forecasting skill in minutes to day-ahead time horizon & exploit heterogenous data sources

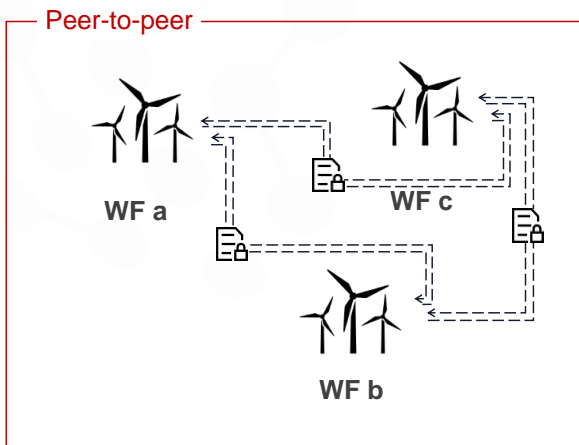
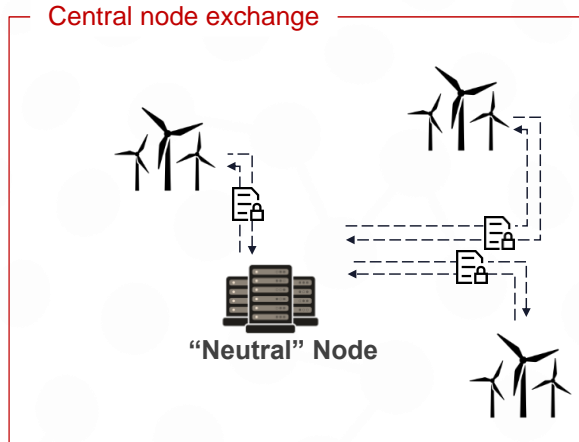
Results for 60 wind turbines located in the same region



Relevance of
Historical data volume? Non-critical. Avoid “data-intensive” models
Geographical scope? Important due to spatial-temporal dependency of RES

Data Sharing Incentives: the need for algorithmic solutions

Cross-silo federated learning (EPO patent)



Data & regression markets

Buyers

Objective: Improve forecasting skill

Payment depends on the **gain** obtained by using market **sellers'** data



Data value found through collaborative analytics

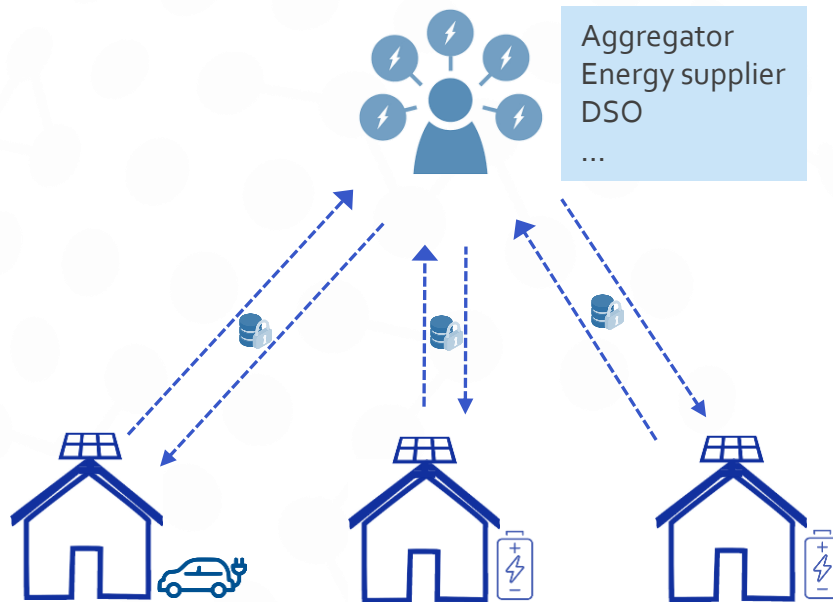
Sellers

Objective: Monetize their data

Revenue depends on the actual contribution to **Buyers** forecast skill

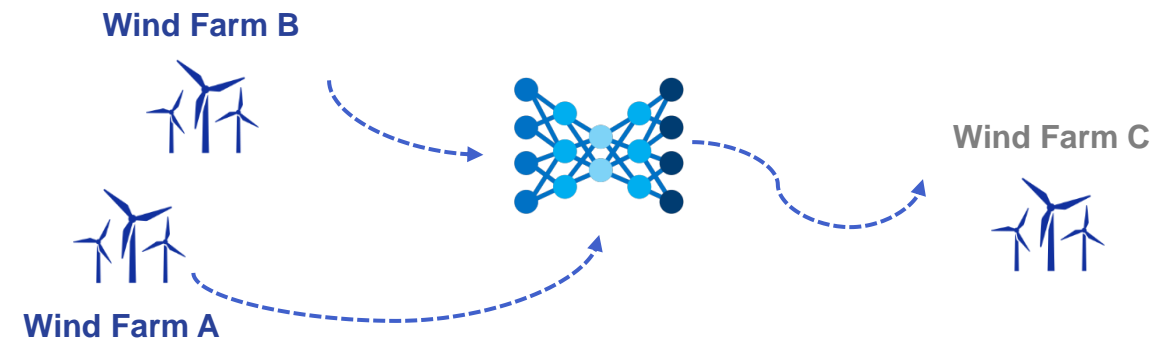
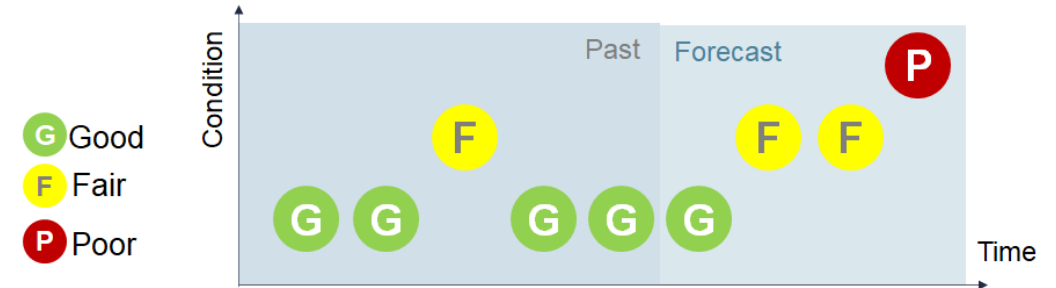
Business Cases: Beyond Smart4RES

Privacy-preserving Net-load Forecasting



Share data with a service provider to improve predictability of prosumers net-load in a privacy-constrained environment

Asset Condition Prediction



Data/model sharing between peers or across the value chain
→ data augmentation for improved maintenance policies