

Digital solutions for wind energy

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Why going digital?



TSO-DSO



Real-time grid support capabilities



Synergies with other power generation



Consumer synergies



Sector Coupling



Storage



Improving productivity



Decrease OPEX



Decrease CAPEX



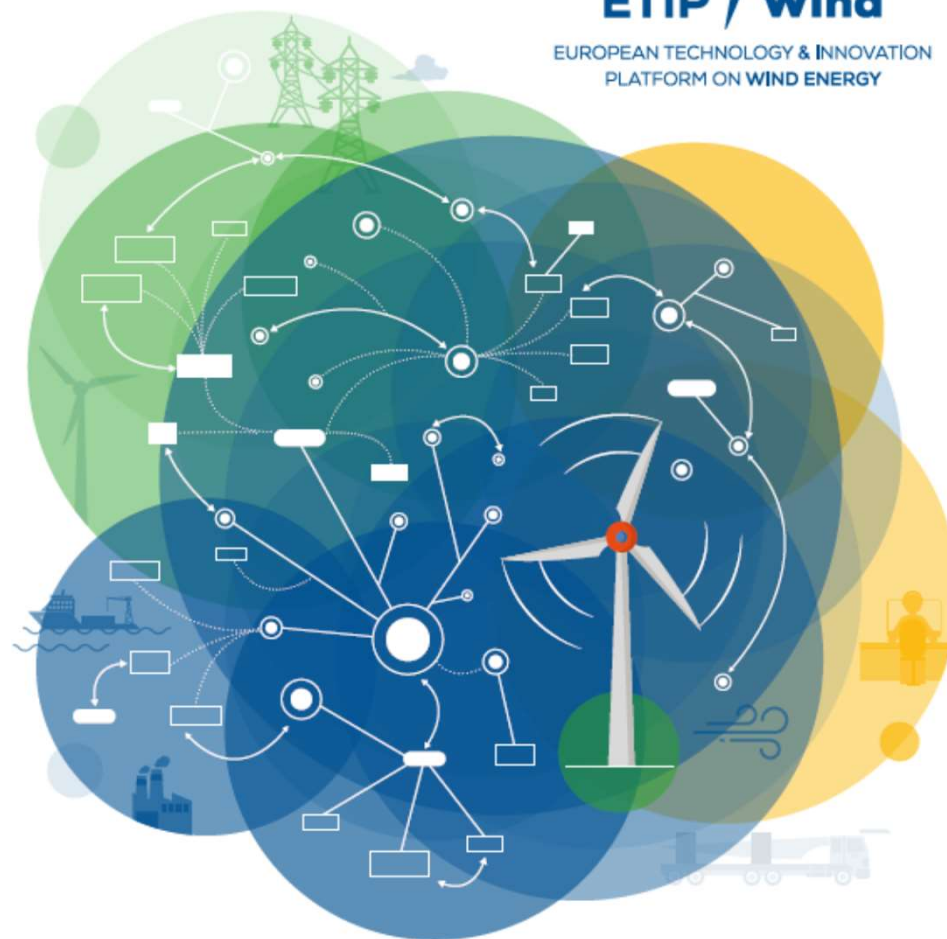
Lifetime extension



Improving value of each MWh produced



EUROPEAN TECHNOLOGY & INNOVATION
PLATFORM ON WIND ENERGY



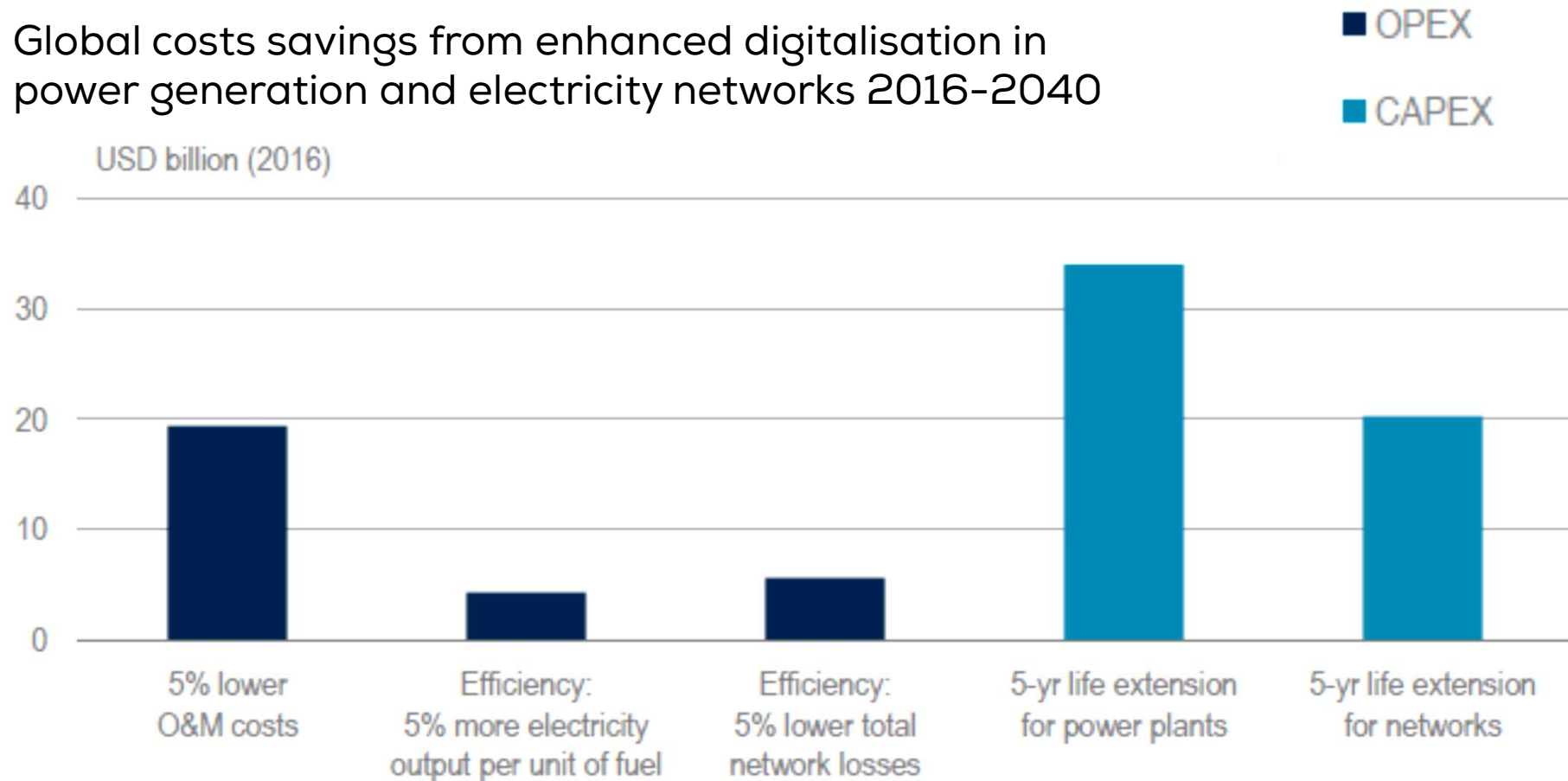
When wind GOES DIGITAL

etipwind.eu

Wind
EUROPE

Why going digital?

Global costs savings from enhanced digitalisation in power generation and electricity networks 2016-2040



WindEurope launches Digitalisation Task Force

Nov 2018

Launch Digitalisation Task Force

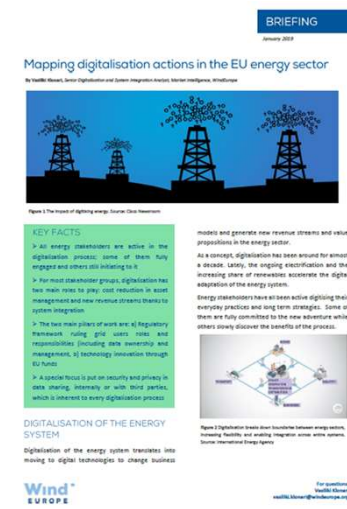
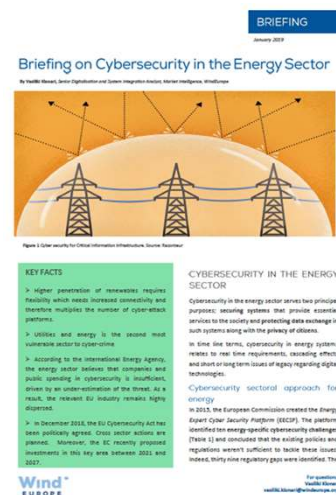
Dec 2018

Briefings on Cybersecurity and Digitalisation in the Energy Sector

24 Jan 2019

Kick-off meeting

- 35 participants
- Four work trucks



Task Force Digitalisation

Four work tracks

Design,
manufacturing
& engineering



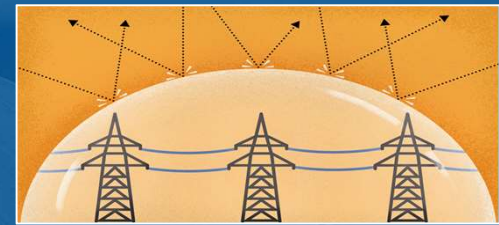
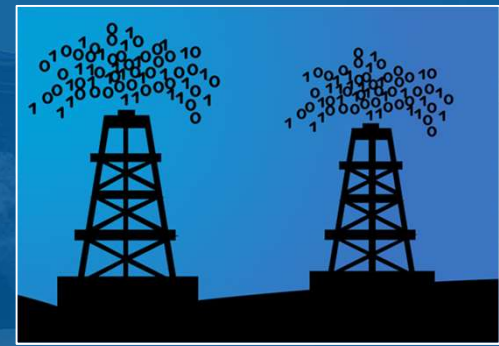
Grid &
market
integration



Asset
operations &
management



Data
exchanges &
cyber security



Digital solutions for wind energy



Benchmarking

Asset monitoring and optimisation

Training

Prognosis

Digital solutions for wind energy

Benchmarking

- Data available on-demand, anonymized, and sometimes free
- Easily accessible (online service)
- Easy to compare and evaluate Key Performance Indicators of one's projects (availability, performance etc.)

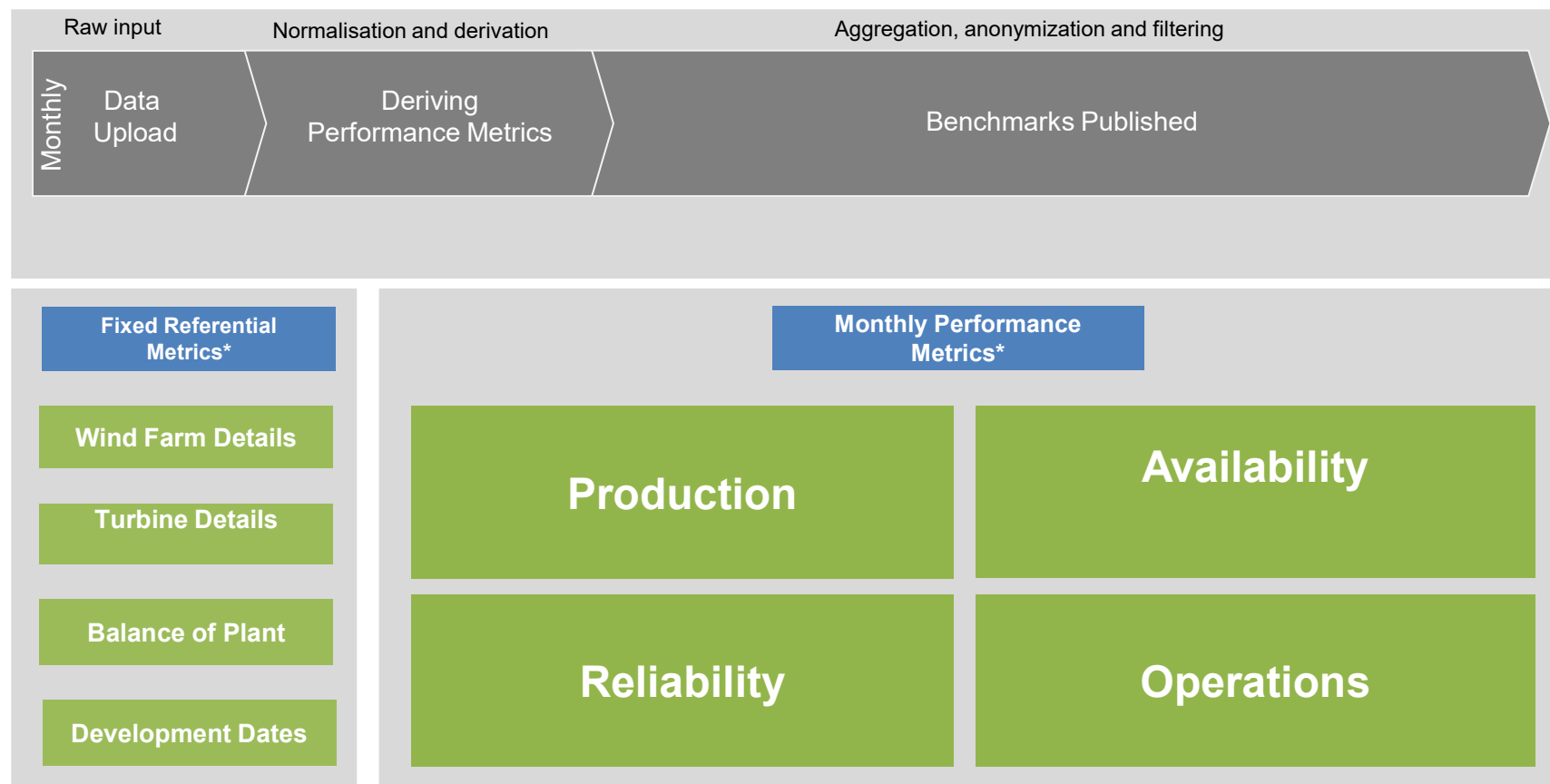
Examples

- WEBS – Wind Energy Benchmarking System



Benchmarking

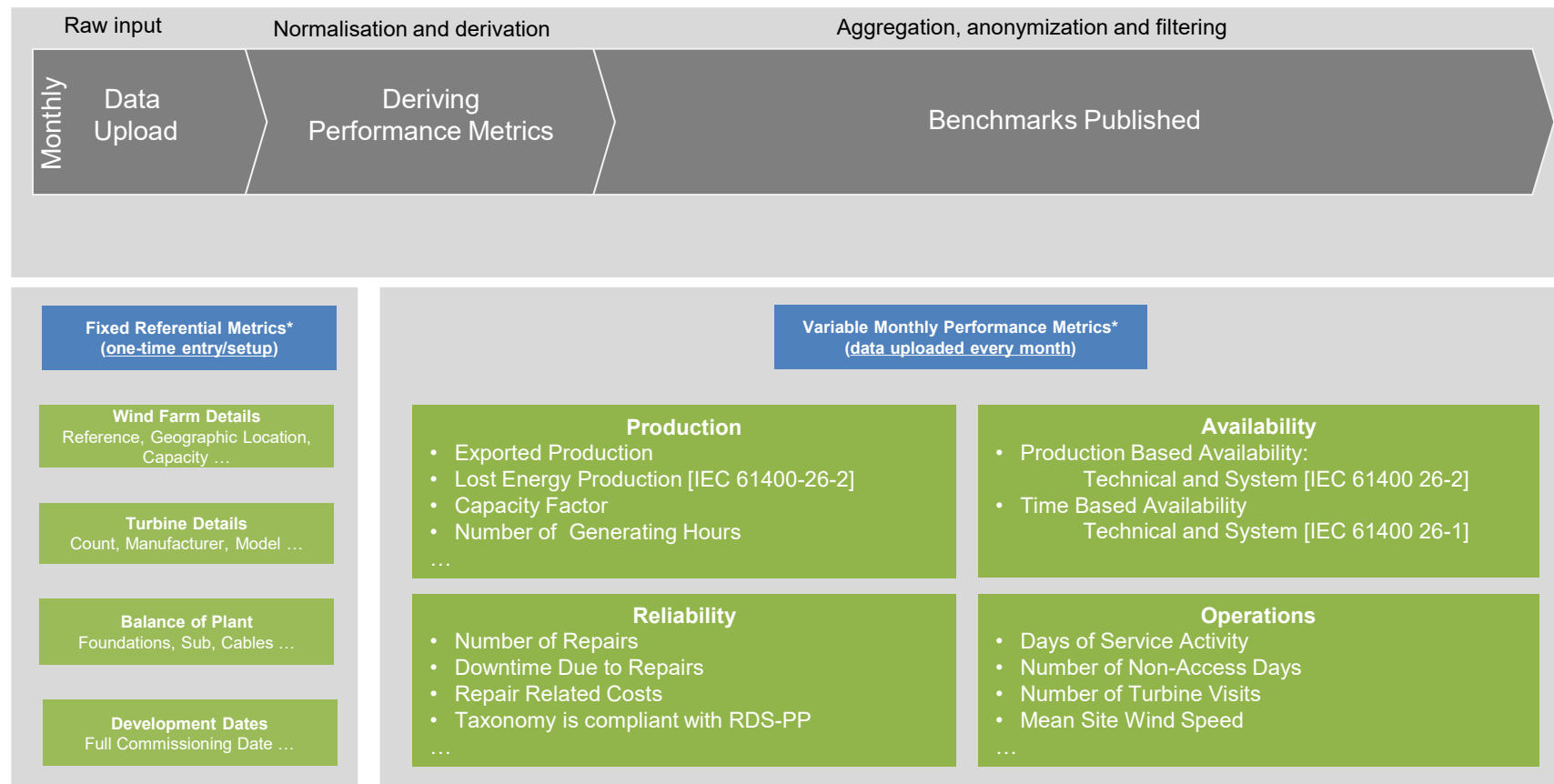
How WEBS Works



* non-exhaustive list of metrics

Benchmarking

How WEBS Works



* non-exhaustive list of metrics

Digital solutions for wind energy

Asset monitoring and optimisation

- Continuous monitoring and data visualisation
- Diagnostics and fast troubleshooting
- Generation forecasting
- Failure prediction

Examples

- Utopos – Vestas



- Onyx's Insight



Sources: Vestas, Utopos, Onyx *Selected products

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Asset monitoring and optimisation

- Real-time and long-term optimisation
- Machine learning

Examples

- Uptake



Reduce unplanned downtime and improve your power curve.



Improve annual energy production (AEP).



Decrease operational expenditure.



Streamline case planning & workflow management.

Sources: Uptake *Selected products

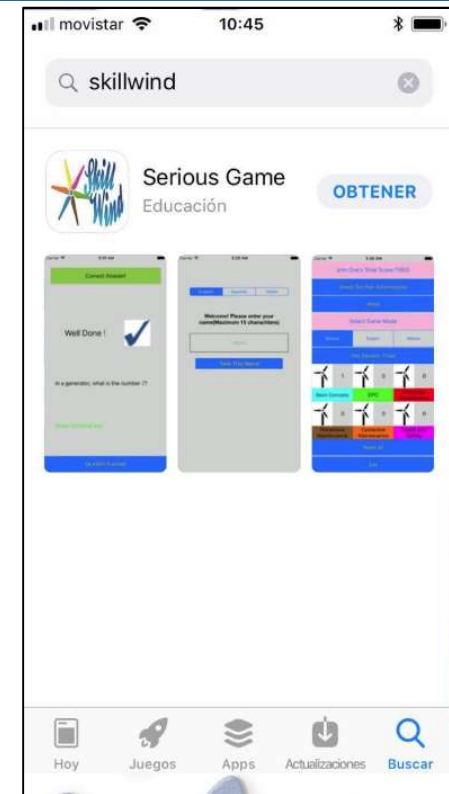
Digital solutions for wind energy

Training

- 24/7 availability for onsite workers
- Easily accessible, translated in different languages
- Easy to update, interactive
- Visual and open to multiple formats (images, video, etc.).

Examples

- Skill Wind



Sources: Skill Wind. Download the application here:
<https://skillwind.com/serious-game/>

Digital solutions for wind energy

Digital twins

- Comprehensive representation of a system and conditions around it
- Scenario testing safely and cheaper
- Interoperability testing

Examples

- Sentient Science



- GE



Sources: Sentient Science, GE

Remaining open questions

- Digital solutions evolving with technology and industry maturity >> **Should it be the other around?**
- Data ownership >> **Should it be split between asset owner, OEM, and data aggregators?**
- Cybersecurity >> **How to be secure in an interconnected/open system?**
- Interoperability. >> **How to integrate all these solutions?**

Specific topics to be addressed in 2019

- **Digitalisation of asset operation:** adapt operation model to life cycle stage and business model
- **Digitalisation in system integration:** adapt system operation practices to wind generation
- **Cybersecurity** as a practice in the wind sector
- **Standardising exchanges in data marketplaces**

IN 2019 JOIN US IN BILBAO, SPAIN

2-4 April 2019

Bilbao Exhibition Centre (BEC)

Thank you



Wind[•]
EUROPE

**CONFERENCE
& EXHIBITION**
2019 2-4 APRIL
BILBAO

NATIONAL
PARTNER:



REGIONAL
PARTNERS:



Find out more at: windeurope.org/confex2019