

THE FUTURE of wind farm design

DATE
18th of November 2015

TIME
10.30 – 13.00

LOCATION
EWEA 2015, Paris, France

An open session organised by
European Energy Research Alliance
Joint Programme Wind



Data sharing/open access: pros and cons

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- Report on the Strategy road map open data access
- Motivation
- Roadmap and data accessibility
- EERA partners plan
- Examples of available open and restricted data
- Examples of data sharing
- Pros
- Cons

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- Work Package 2 - Deliverable number 2.19 (Task 2.8)
- Lead Beneficiary: DTU
- Delivery date: 24 March 2015, Revised 21 August 2015
- Dissemination level: PU

I Integrated Research Programme on Wind Energy

Project acronym: IRPWIND
Grant agreement n° 609795
Collaborative project
Start date: 01* December 2013
Duration: 4 years

Strategy roadmap open data access Work Package 2 - Deliverable number 2.19 (Task 2.8)

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Why go for an open access data strategy?

There are two main reasons

- 1) The research results published in journals should be possible to reproduce by other scientists. This is truly possible if relevant data used for a specific study can be shared at a certain level.
- 2) Another vital background for open access data is that when collection of data has been funded by public funding, either from the EC or several national funding bodies in the Member States, it is expected that data sharing will increase research and innovation potential (Science 2.0 vision).



Motivation

- Open data access may
 - progress wind energy science faster
 - allow new scientific questions to be addressed
 - reduce cost on data collection of some types of data
 - increase collaboration between scientists and industry experts

Please note

- Science often has to be based on recent (novel) data
- Science **always** has to be based on robust, trustworthy, quality checked data





Challenging issues

Technical issues: Standardised Metadata, Exposure level of metadata for harvesting, Authentication and Authorization Infrastructure for data access.

Legal issues: NDA and 'model data agreement'

Motivation for sharing data: economy, human resources

Fig 8.1 Roadmap for open access data.

Roadmap ‘Keys to unlock’

The ‘Keys’ to unlock are several.

- Firstly, a motivation for the data owner to consider ‘Green’ as attractive is very important. In case no benefit or limited benefit is expected and/or extra work is associated with releasing data, this will hinder the process. The motivation for the wind industry as a whole to actively engage in the ‘open access data’ may be aided by EWEA, the European Wind Energy Association.
- Secondly, legal agreements need to be clear and not overwhelmingly complicated. Thus a possible ‘model agreement’ or extension to approved NDA (Non-Disclosure Agreement) could be starting point.
- Thirdly, the technical issues should be clarified and solved. A distributed data system appears more appealing than a centralized. Only metadata should be collected centrally.



Challenges in data sharing

- *Science data owners*
 - typically are interested in postponing the public release of data until the end of the project (because scientists want to publish first results). Thus for the duration of the project the data would be restricted to participants.
 - typically scientists foresee time-consuming data handling for providing full meta-data, organising data and when data are shared to spend time helping others
 - typically scientists do not get scientific credits for data handling (e.g. as H-index for publication)
- *Industry data used for science*
 - often has purpose of benchmark/ validation. A subset of data is usually necessary. Individual negotiation for release of the data useful enough for the sake of benchmark/ validation with NDA.
 - moving science from low TRL level to high TRL increase the confidentiality in general



Suggested actions

- *Science data owners*
 - EERA partners could release relevant data
 - Scientists achieve scientific merit/credit on open data archive
- *Industry data used for science*
 - Industry experts could consider for which data ‘win-win’ could be achieved using open access



Data accessibility levels

Level	Definition	Source	Duration	License	
0	Open-access	Data freely available from a web-based database	Public website, journals	Unlimited	<i>Green</i> or <i>Gold</i> open-access
1	Public	Available to the public after paying a fee	Public websites, journals	Unlimited	<i>Hybrid</i> open-access, Copyright
2	Members-only	Available to registered users of a service, association, etc	Private website	Membership	Terms and conditions
3	Project-based	Available for project members	Private website	Project	Consortium agreement
4	Group-based	Available for a group within a project	Private website	Task	NDA
5	Individual-based	Available for a delegate of the owner within a project	Private communication	Task	NDA
6	Private	Only the owner has access	Fully private	Task	Unlicensed

Table: Data accessibility levels and typical sources and licensing terms. From WindBench.

From: Sanz Rodrigo J, Moriarty P (2014) Model Evaluation Protocol for Wind Farm Flow Models. First edition. IEA Task 31 Report to the IEA-Wind Executive Committee, September 2014.

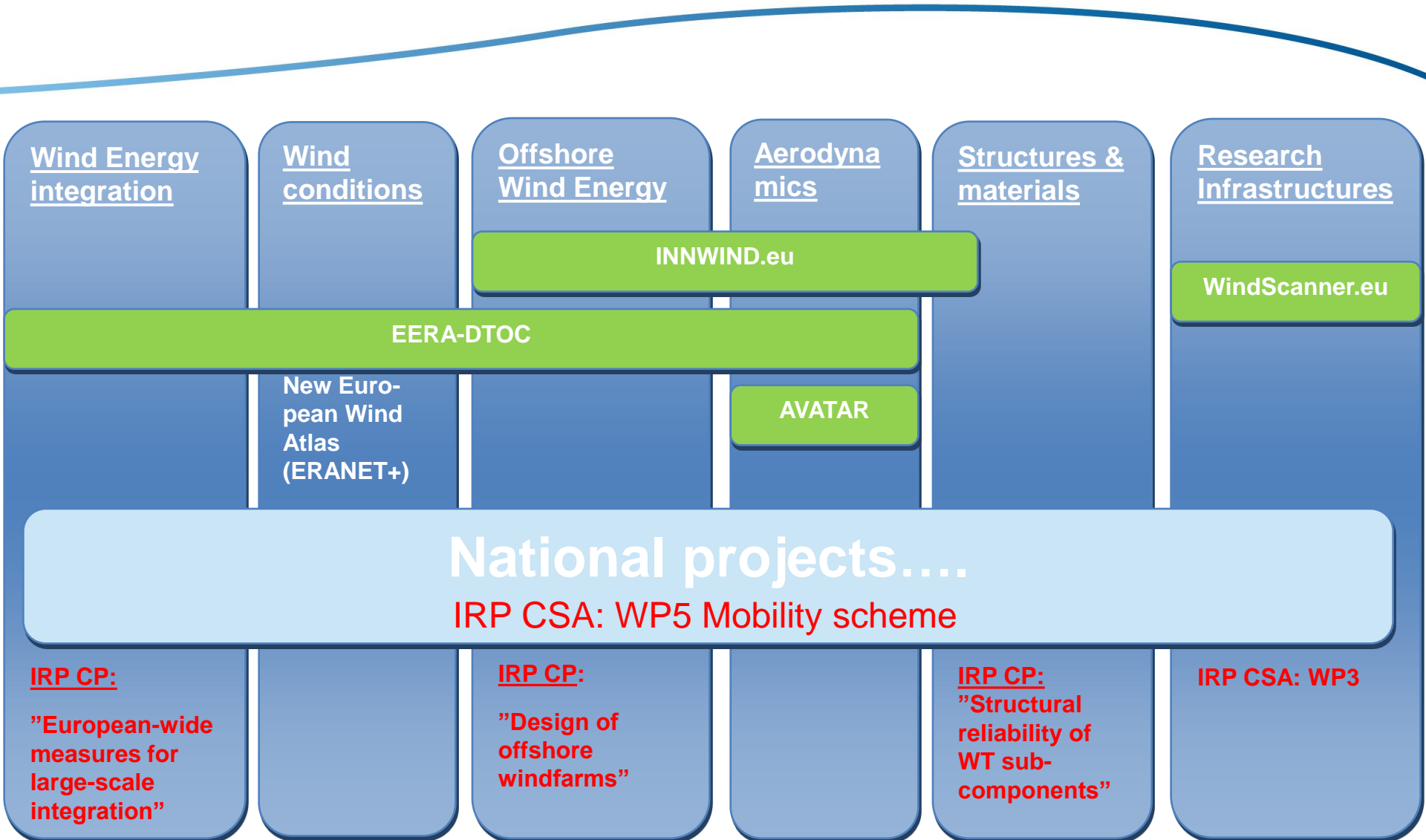
EERA partners plan

EERA partners plan several actions to realize our ambition of being good role models such as:

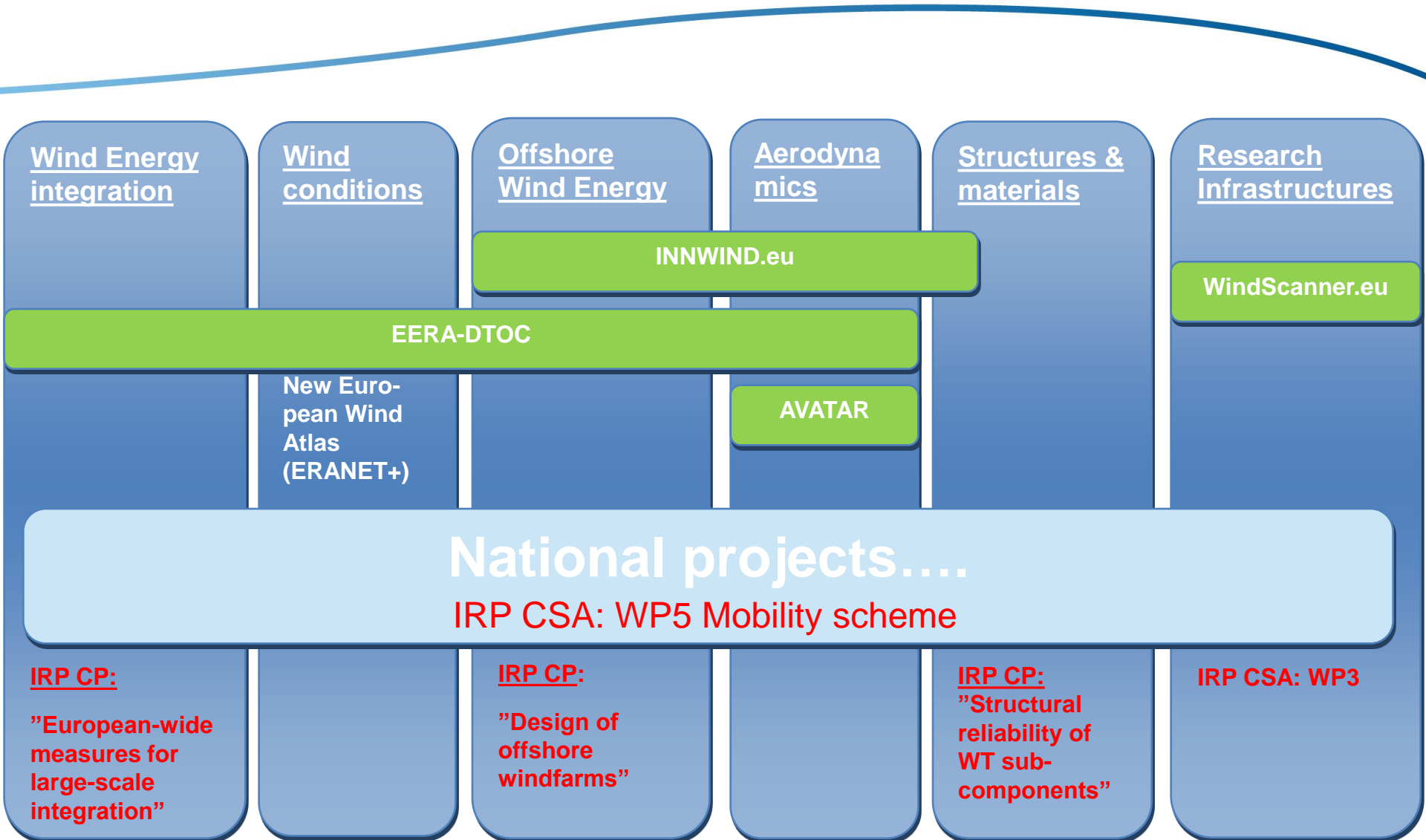
- to ensure a public list of available data sets through EERA,
- to support cross-cutting activity between the Sub-programs of EERA Joint Program to stimulate further data sharing and
- ensure relevant information on data bases and projects are exchanged.
- EERA also plan for the WindScanner Research Infrastructure Science2.0 within the next 1-2 years. WindScanner will provide novel data for research.



EERA DTOC sub-programs and projects



EERA DTOC sub-programs and projects



DTU examples

- WindData.com
- Poseidon demo
- Envision PP2B
- Wake meander
- Double wake
- Wake turbulence
- DAN-AERO
- Blyth wind farm
- Benakanahalli
- Walney

Fraunhofer IWES examples

- RAVE alpha ventus
- Kassel met-tower

- MARINTEK
- Blind tests

Invitation to the 2015 “Blind test 4” Workshop

Combined power output of two in-line turbines at different inflow conditions

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Abstract:

This note describes a 4th blind test case organized by NOWITECH and NORCOWE. We invite you to submit predictions for the described test cases and participate in a two-day workshop to be held in Trondheim, scheduled for October 2015. Here, the results from the predictions will be discussed and a comparison with measurements will be presented.

Schedule:

- March 27th, 2015: Blind test invitation sent out
- Oct. 1st, 2015: Deadline for submission of simulation results
- End of Oct, 2015: Blind test workshop in Trondheim (you will be informed about the exact dates later)

CENER examples

- Windbench.net

CRES examples

- Greek wind atlas from RAE
- Met-data from CRES
- OPTIMAT BLADES
- PROTEST project



ECN examples

- ECN's test site Wieringemeer
- ECN's scale farm
- MEXICO model rotor experiment
- Egmond aan Zee met data
- Mast IJmuiden
- Lichteiland Goeree
- Meteomast OWEZ
- Metocean buoy Borssele



Industry examples

- Rødsand-2 (E.On, Sweden)
- Shetland Island (Vikingenergy, UK)
- DAN-AERO-MW (DTU, Siemens, Vestas, DONG energy, LM Wind Power)
- SPARTA (ORE Catapult, Crown Estate, offshore wind farm owners/operators)
- Anholt (DONG energy)



Pros and Cons

Let us discuss

- Pros
 - How to engage industrial partners?
 - Benefit for you/us?
- Cons
 - Where and when to be cautious?
 - Other issues?

Actions

- Time schedule and actions























