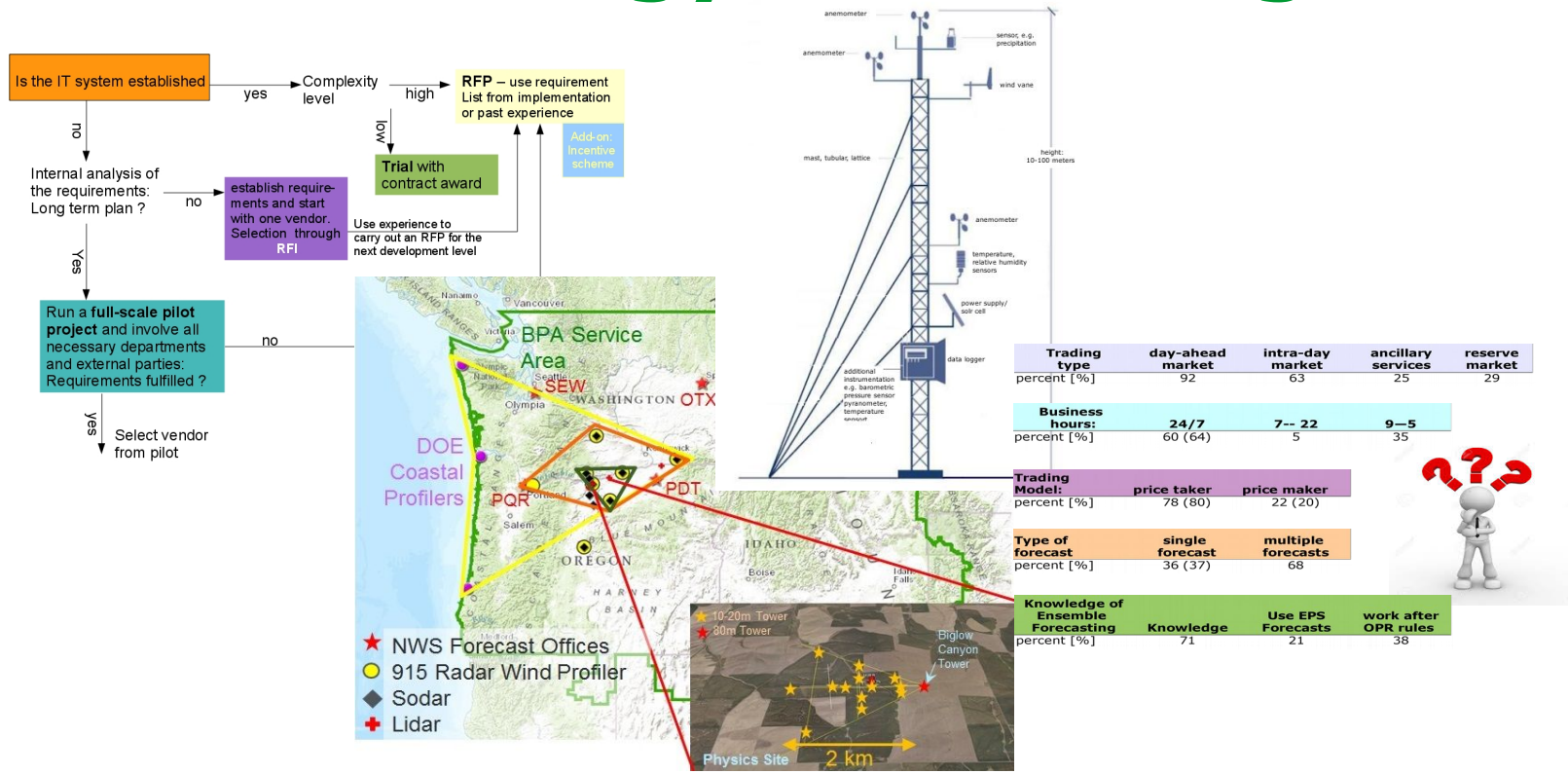


IEA Wind Task 36: Wind Energy Forecasting



Flowchart:

- Is the IT system established?
 - no → Internal analysis of the requirements: Long term plan?
 - no → establish requirements and start with one vendor. Selection through RFI → Use experience to carry out an RFP for the next development level → Trial with contract award → RFP – use requirement List from implementation or past experience → Add-on Incentive scheme
 - yes → Run a full-scale pilot project and involve all necessary departments and external parties: Requirements fulfilled?
 - no → same path as above
 - yes → Select vendor from pilot
 - yes → Complexity level
 - high → RFP – use requirement List from implementation or past experience → Add-on Incentive scheme

Map: BPA Service Area, DOE Coastal Profilers, NWS Forecast Offices, 915 Radar Wind Profiler, Sodar, Lidar, Physics Site, 2 km scale.

Wind Tower Diagram: anemometer, sensor e.g. precipitation, wind vane, mast, tubule, lattice, height: 10-100 meters, anemometer, temperature, relative humidity sensors, power supply/solar cell, data logger, additional instrumentation e.g. barometric pressure sensor, pyranometer, temperature sensor.

Trading type	day-ahead market	intra-day market	ancillary services	reserve market
percent [%]	92	63	25	29
Business hours:	24/7	7-- 22	9-5	
percent [%]	60 (64)	5	35	

Trading Model:	price taker	price maker
percent [%]	78 (80)	22 (20)

Type of forecast	single forecast	multiple forecasts
percent [%]	36 (37)	68

Knowledge of Ensemble Forecasting	Knowledge	Use EPS Forecasts	work after OPR rules
percent [%]	71	21	38

Session 4: Forecasting Benchmarking, Trials and Evaluations
 Atlanta, GA, June 21, 2017

Dr. Corinna Möhrlen, WEPROG

IEA Task 36: Forecasting for Wind Energy

2016 - 2018

Task Objective is to encourage improvements in:

- 1) weather prediction
- 2) power conversion
- 3) use of forecasts

Task Organisation is to encourage international collaboration between:

- Research organisations and projects
- Forecast providers
- Policy Makers
- End-users and stakeholders

Task Work is divided into 3 work packages:

- WP1: Weather Prediction Improvements inclusive data assimilation
- WP2: Development of a benchmarking platform & best practice guidelines
- WP3: Communication of best practice in the use of wind power forecasts

Follow us on our webpage: www.ieawindforecasting.dk

WP1: Weather Prediction Improvements inclusive data assimilation

1. **Compilation of list of available data sets, especially from tall towers**

List on Homepage → Topics → Task 1.1 Available Data Sets

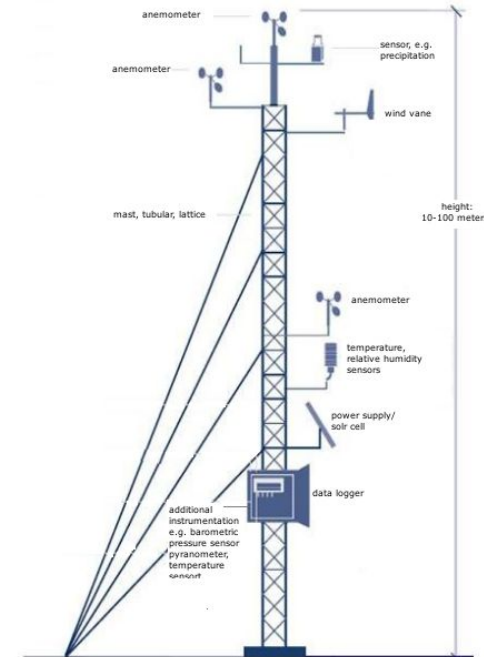
<http://www.ieawindforecasting.dk/topics/work-package-1/task-1-1>

2. **Announcement of field measurement programs and availability of data for research**

3. **List of recent and current meteorological experiments**

<http://www.ieawindforecasting.dk/topics/work-package-1/task-1-2>

3. **Verification and Validation of improvements through a common data set to test model results**



WP2: Benchmarking, Predictability and Model Uncertainty

1. Design and Evaluation of benchmark exercises:

- Best practice guideline for the Design of Benchmarks and trials
- Best practice guideline for forecast evaluation, benchmarks and trials

Started – first public draft version ready in autumn 2017

2. Evaluation protocols for deterministic + probabilistic forecasts:

- review of existing protocols **To be started in summer 2017**
- best practice
- critical assessment of new proposals

3. Uncovering uncertainty origins through the whole modelling chain.

Just started...

4. Set-up and dissemination of benchmark test cases and data sets

To be started in summer 2017

WP3: Closing the gaps of Forecast usage and Forecast Uncertainties in the Power Sector

Investigation about forecasts uncertainties in the business practices of actors in the power systems sector

- State of the art review
- Value from the use of probabilistic forecasts:
 - × Review of existing approaches and applications
 - × Evaluation and quantification
- best practices guideline

Use of forecasts in decision making

- State of the art review
- Knowledge sharing from demonstration/pilot projects

Role of short-term forecasting in decision making

- Assessment related to long term (multi annual) processes

Communication of wind and wind power forecasts to end-users.

- Review
- Recommendations
- Best practice guidelines
- Do we need a Standardisation of wind power forecasting products?

WP3: Closing the gaps of Forecast usage and Forecast Uncertainties in the Power Sector

State of the art review: What have we found out so far ?

- considerable **lack of knowledge** about tools and applications to deal with uncertainty
- **gap in understanding** existing solutions & relating them to solve “own” problems
- still a **mistrust** towards uncertainty information
- still **wrong perception** of probabilistic/uncertainty forecasts associated with speculation
- **big data: no concern** for overwhelming amounts of information, but **rather lack of understanding**

Communication and Dissemination

- 1 workshop (Barcelona, 2016), 1 Conference (WIW, 2016), more to come
- in preparation: Journal Paper, User-Guideline



Questionnaire: Forecasts uncertainties in the business practices of actors in the power systems sector

How to participate:

1. Go to our Webpage (www.ieawindforecasting.dk → news) or to our dropbox to collect a questionnaire
2. Fill it out and send it to [<ieawind36.wp3@gmail.com>](mailto:ieawind36.wp3@gmail.com) or upload it anonymously at our dropbox!



Dropbox

→ interview documents:

<https://www.dropbox.com/l/sh/2enjMxIGWsOvVvcGxBNjRo>

→ **submission:** <https://www.dropbox.com/l/sQH9I8nW9LQlhYZNEGlyRG>

Submission possible as "common user": Interview Provision

[<ieawind36.wp3@gmail.com>](mailto:ieawind36.wp3@gmail.com)

Purpose: no need to register with Dropbox to delivery the interview

3. Talk to me! Tell me about your "head aches", I'll bring them forward to include the topic in our guideline!



Follow us or join us...

Project webpage

<http://www.ieawindforecasting.dk/>

Workpackage-pages:

WP1: Weather prediction improvements

<http://www.ieawindforecasting.dk/topics/work-package-1>

WP2: Benchmarks and Evaluation

Task 2.1 Best Practice coming soon ...

Task 2.4 Test Cases

<http://www.ieawindforecasting.dk/topics/workpackage-2/task-2-4>

WP3: End Use and Communication

<http://www.ieawindforecasting.dk/topics/workpackage-3/task-3-1>

<http://www.ieawindforecasting.dk/topics/workpackage-3/task-3-5>

Contacts of Workpackage and Task Leaders at the WP-pages



Follow us or join us ...

Project webpage

<http://www.ieawindforecasting.dk/>

PUBLICATIONS: ALL OUR WOK IS MADE PUBLICLY AVAILABLE

<http://www.ieawindforecasting.dk/publications>

5 interesting information lists:

<http://www.ieawindforecasting.dk/news> → 5 Lists in Wind Forecasting Meteorology masts with online data over 100m height, useful for verification of wind speed predictions

Publicly available wind power forecasting benchmarks,
to test your model against

Current or finished research projects in the field of wind power forecasting

Meteorological experiments going on currently or recently

Future research issues