

re•li'•a•bil'•i•ty (ri, līə 'bilətē) *n.*

a person or thing with trustworthy qualities.

Task 33 · Reliability Data



New IEA Wind recommended practices

WindEurope Summit 2016, 29th Sep, Hamburg, Germany

Data collection and reliability assessment for O&M optimization of wind turbines

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Implementing Agreement for Co-operation in the Research, Development, and Deployment of Wind Energy Systems

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IEA Wind Task 33

Reliability Data - Standardizing data collection for wind turbine reliability and O&M analyses

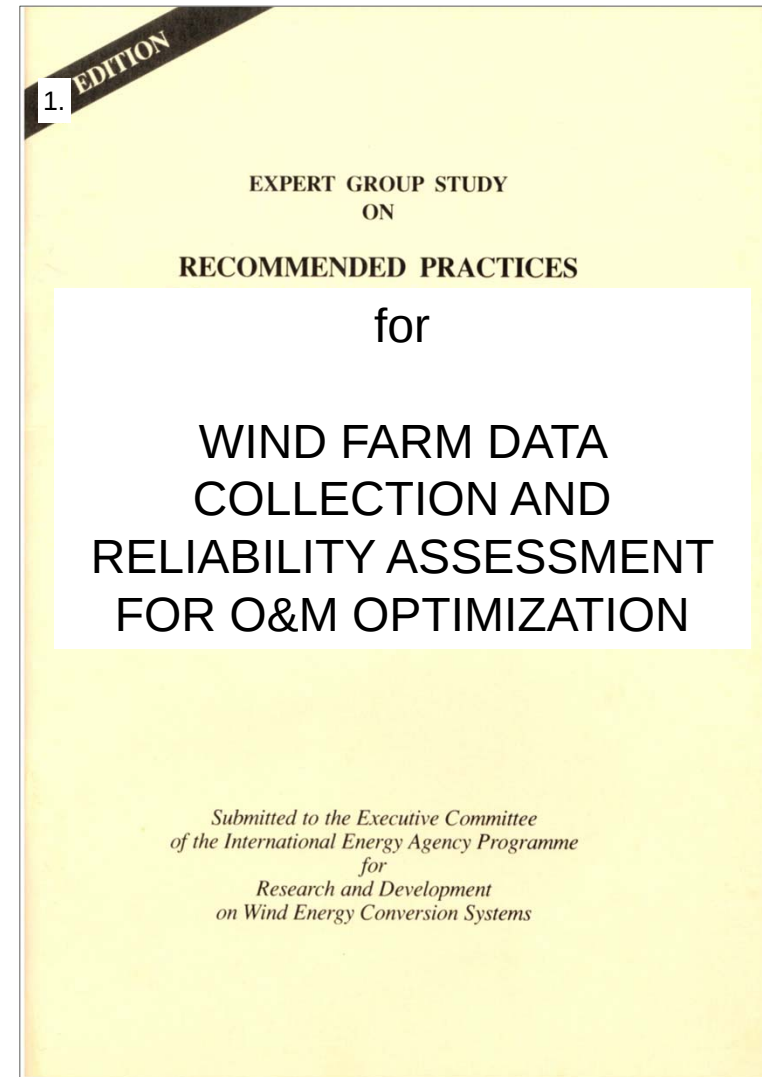
Task 33 – Participants

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Sweden	Chalmers University of Technology Vattenfall Research and Development AB
UK	Offshore Renewable Energies Catapult Atkinsglobal
USA	Sandia National Laboratories

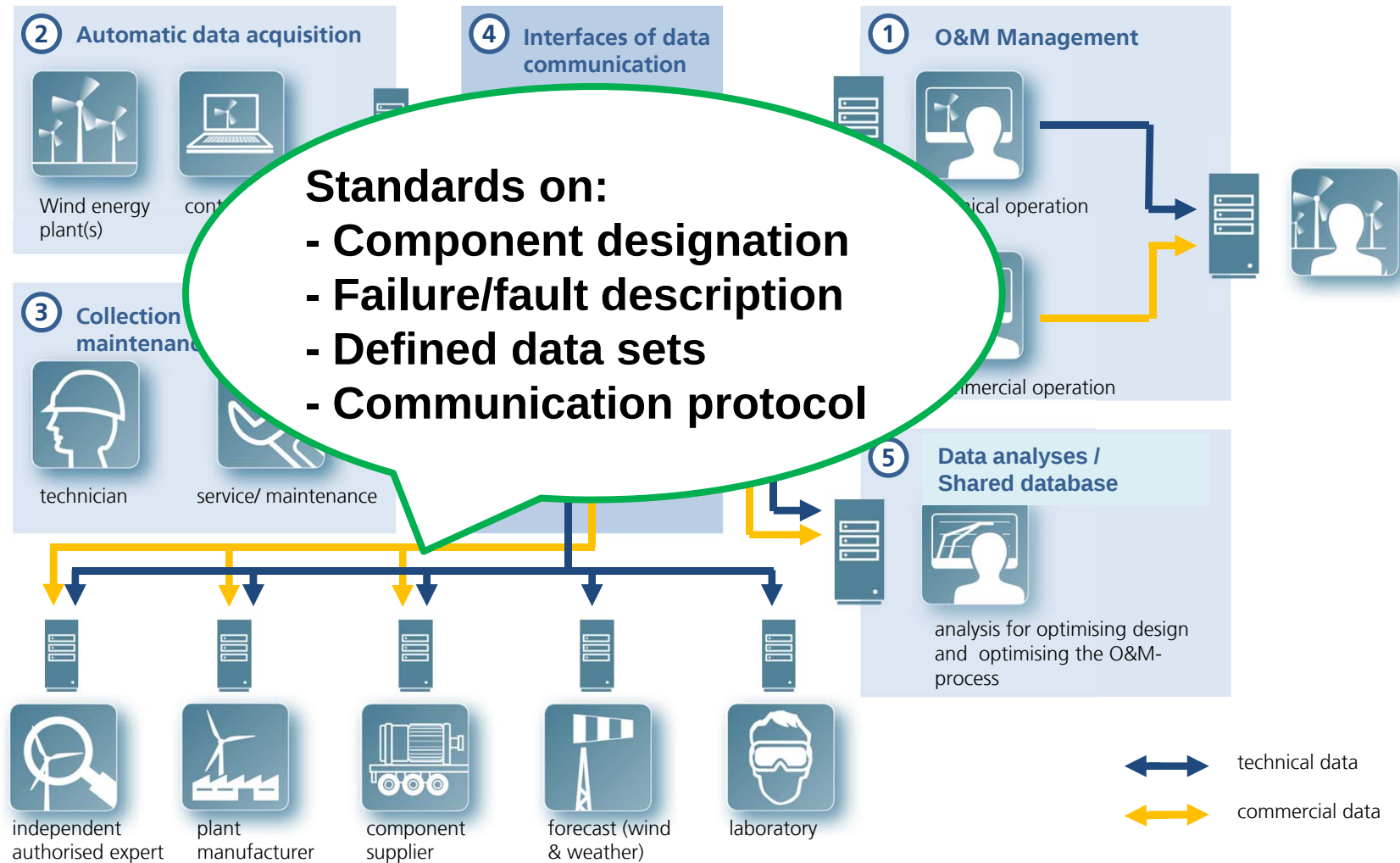


Goal of IEA Wind Task33

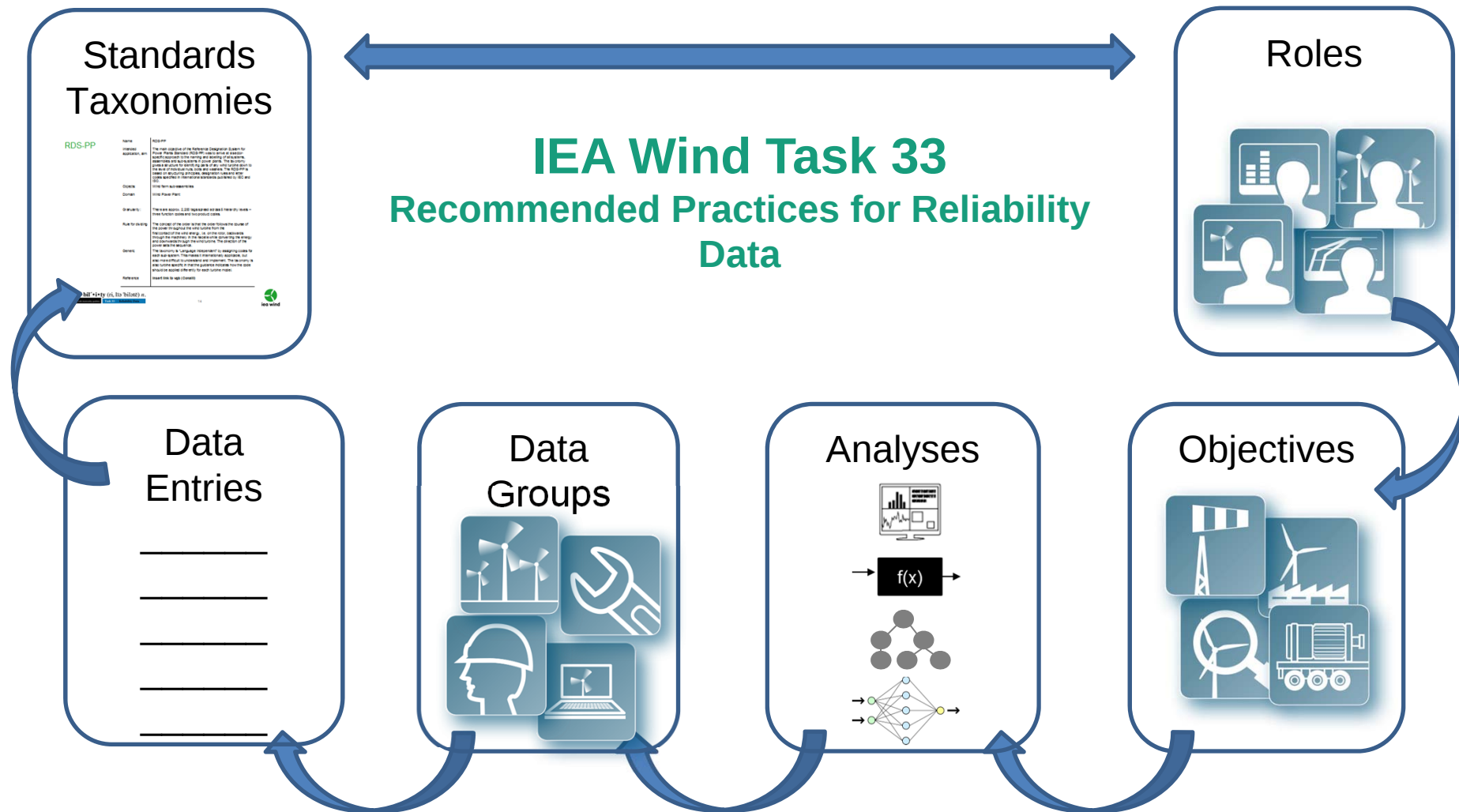
New 'Recommended Practices'



Management of O&M data



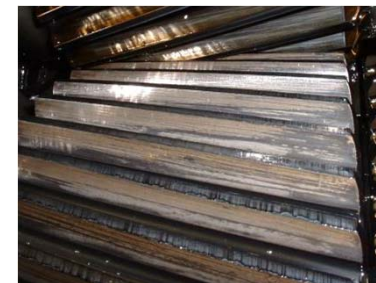
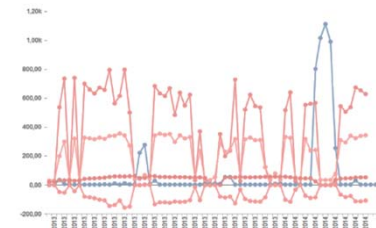
From roles to taxonomies



Data groups and sub-groups

Data groups	Sub-groups / objects
Equipment data (ED)	Identification
	Time data
	Technical information
Operating data / measurement values (OP)	Time stamp
	Measurement values (SCADA, etc)
	Operational states
Failure / fault data (FD)	Identification
	Time data
	Failure description
	Failure effect
	Failure detection
	Fault properties
Maintenance & inspection data (MD)	Identification
	Time data
	Task / measure / activity
	Resources
	Maintenance results

AEG KANIS	Typ	S 6472/2F
6 ~ Mot	Nr.	788/002
Y > 2x1100	V	2x1417 A
4700	kW	cos 0,92
NUR U V W	6000 /min	100 Hz
Erregung	43 V	425 A
Iso - Kl F	IP 44	20,1 t
VDE 0530 / 12.84 Kühlwassermenge 52,2 m³/h		



Standards covering data groups and entries

Data groups / taxonomies	Equipment data	Operating / measurement data	Failure data	Maintenance & inspection data
VGB RDS-PP®	0			
NERC GADS	0	-		-
ReliaWind	0			
ISO 14224	0*		++	++
FGW ZEUS		0	+	+
IEC 61400-25		+		
IEC 61400-26		+		

+	entries with a high level of detail
0	entries with a medium level of detail
-	entries on a more general level
*	not wind-specific

Data group equipment data

Equipment data (per hierarchical level of the plant)		
Sub-groups/objects	Entries	Complexity level
Identification		
	Identification code	A, B, C
	Coordinates, location	A, B, C
Time data		
	Start of operation	A, B, C
	Start of observation	C
Technical information		
	OEM	A, B, C
	Type	A, B, C
	Serial number	B, C
	Design data relevant for each equipment class and item	B, C
	Maintenance manual	C

Main recommendations

To owners / operators:

1. Identify your use-case and be aware of the resulting data needs
2. Start early: make sure you get all data during contract negotiation
3. Map all WT components to the designation systems RDS-PP® or GADS
4. Adopt taxonomies of ISO 14224 and ZEUS
5. Align operating states to IEC 61400-26
6. Train your staff understanding, what data collection is helpful for
7. Support data quality by making use of computerized means
8. Share reliability data to achieve a broad statistical basis

To wind industry in general:

9. Develop comprehensive wind-specific standard based on existing guidelines/standards, such as ISO 14224-2006 & FGW ZEUS
10. Develop component- / material-specific definition of faults, severity, and location

IEA Wind Task 33



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