e·on | Climate & Renewables

Smart ECR

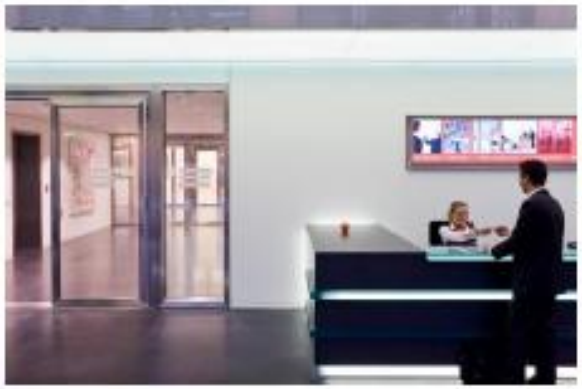
- IEC 61400-25

"The holistic approach for industry grade business processes within the distributed renewables world !"

Uwe Fischer

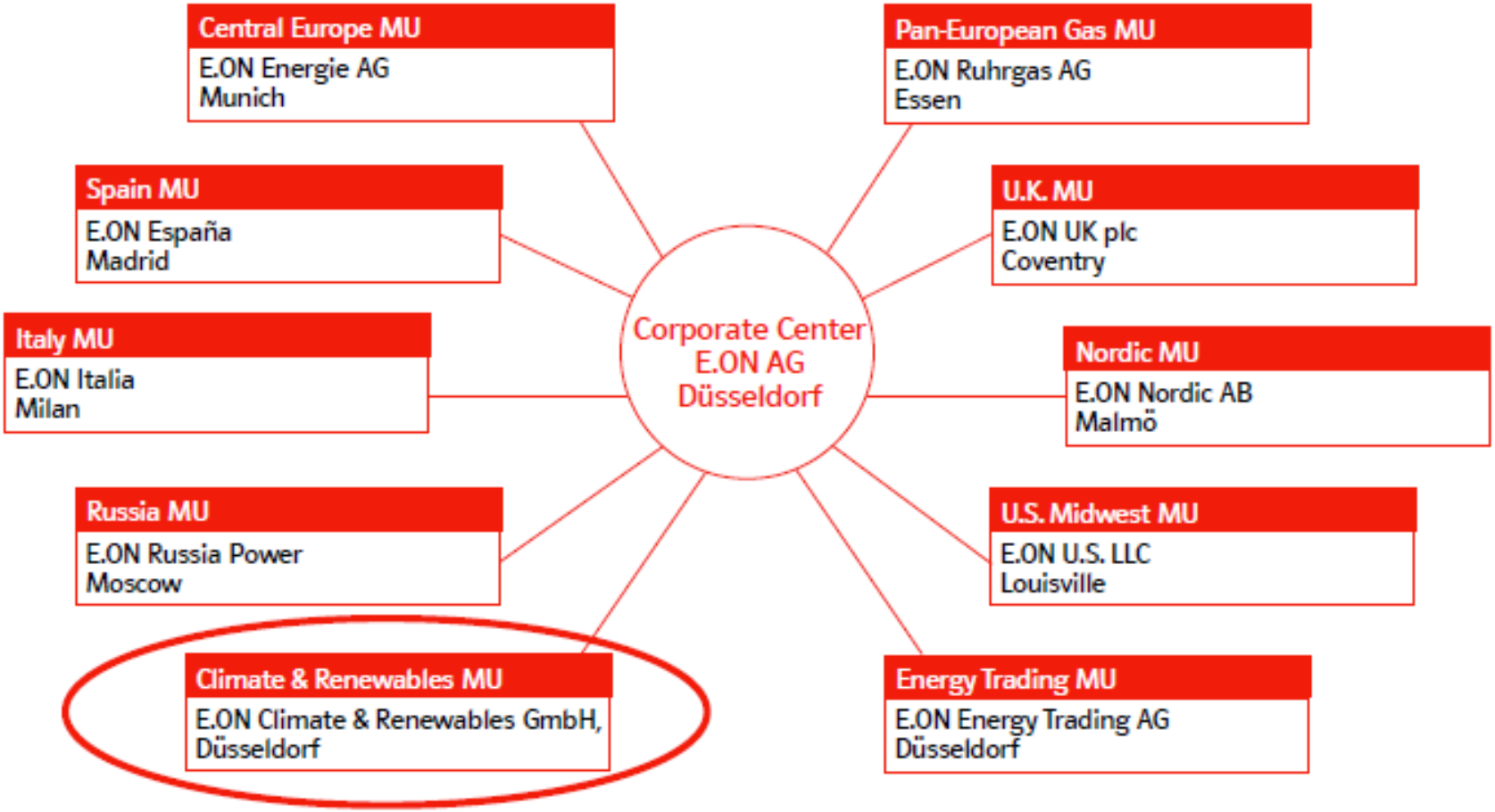
January 20th, 2011

About E.ON



- One of the world's largest investor-owned power and gas companies
- More than 88,000 employees generated sales of just under €82 billion in 2009
- Clearly focused player with leading market positions in power and gas and approximately 30 million customers
- Operations in more than 30 countries
- Created by VEBA-VIAG merger in June 2000

Climate & Renewables a Market Unit of E.ON



MU = market unit

Analytics
Turbine / Site
Region/ Vendor

Reporting
MTBR / MTBF
O&M € per KWh
Availability
HSSE Statistik

Power Dispatch
Forecasting
Turb. Maintenance
ISO / Grid

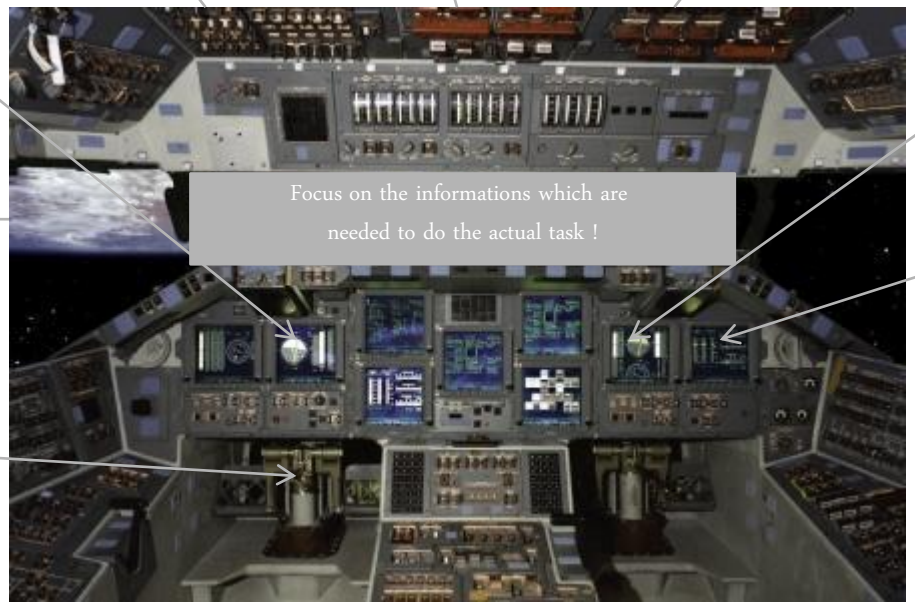
Turbine Control
stop
reset errors
start

HSSE
„dead man alert“
„men on site/turbine“
„authorisation“

lostProd
„stopped turbines“
curtailments
scheduled maintenance

Weather
wind/wave/sun forecast
ligthning/storms/tornados

Park /Node Control
Curtailment Wind
Curtailment Grid
Negative Costs
Emergency



Data Aquisition

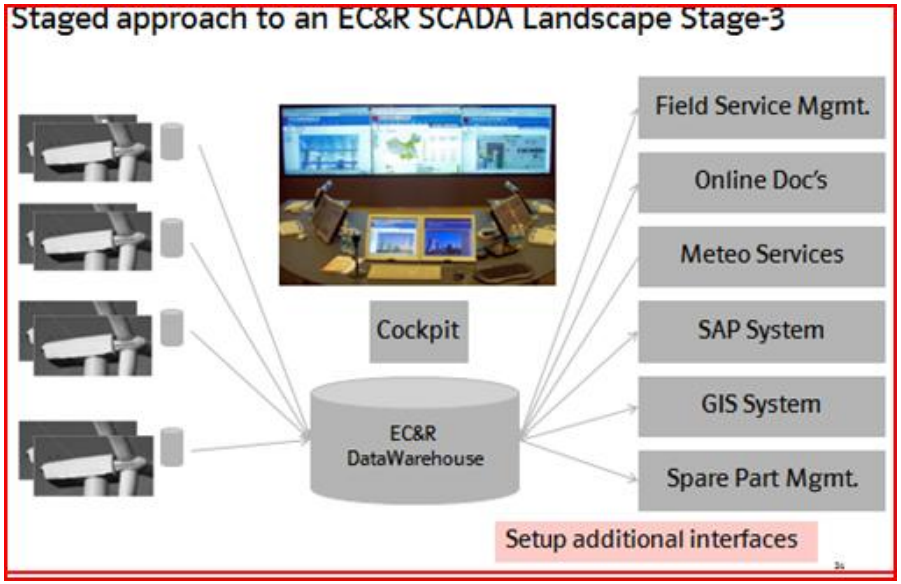
External Sources
Forecasts
Grid Meter
Market Prices

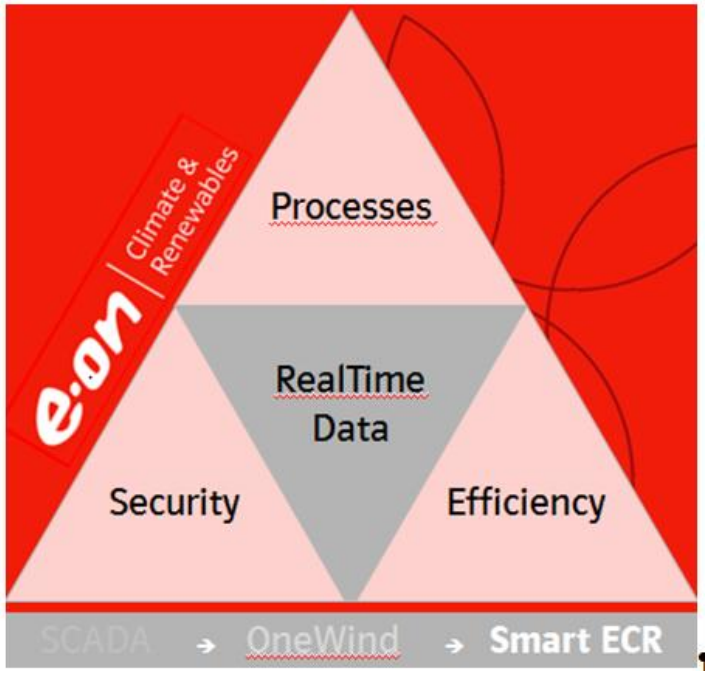
External Data Provision
EET, ENT

Wind Sites
Substation
OPC-Data

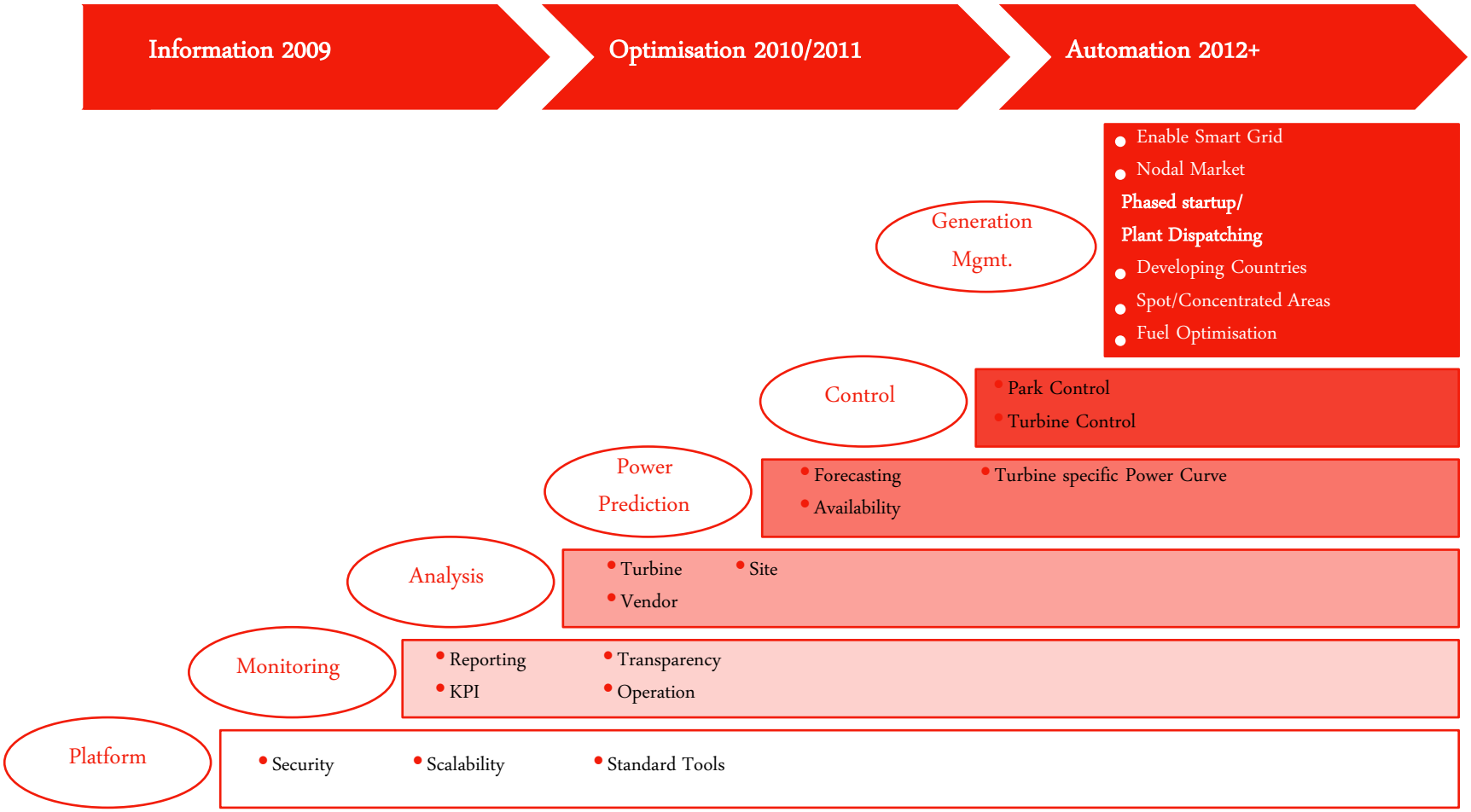
External Sources
Forecasts
Grid Meter
Market Prices

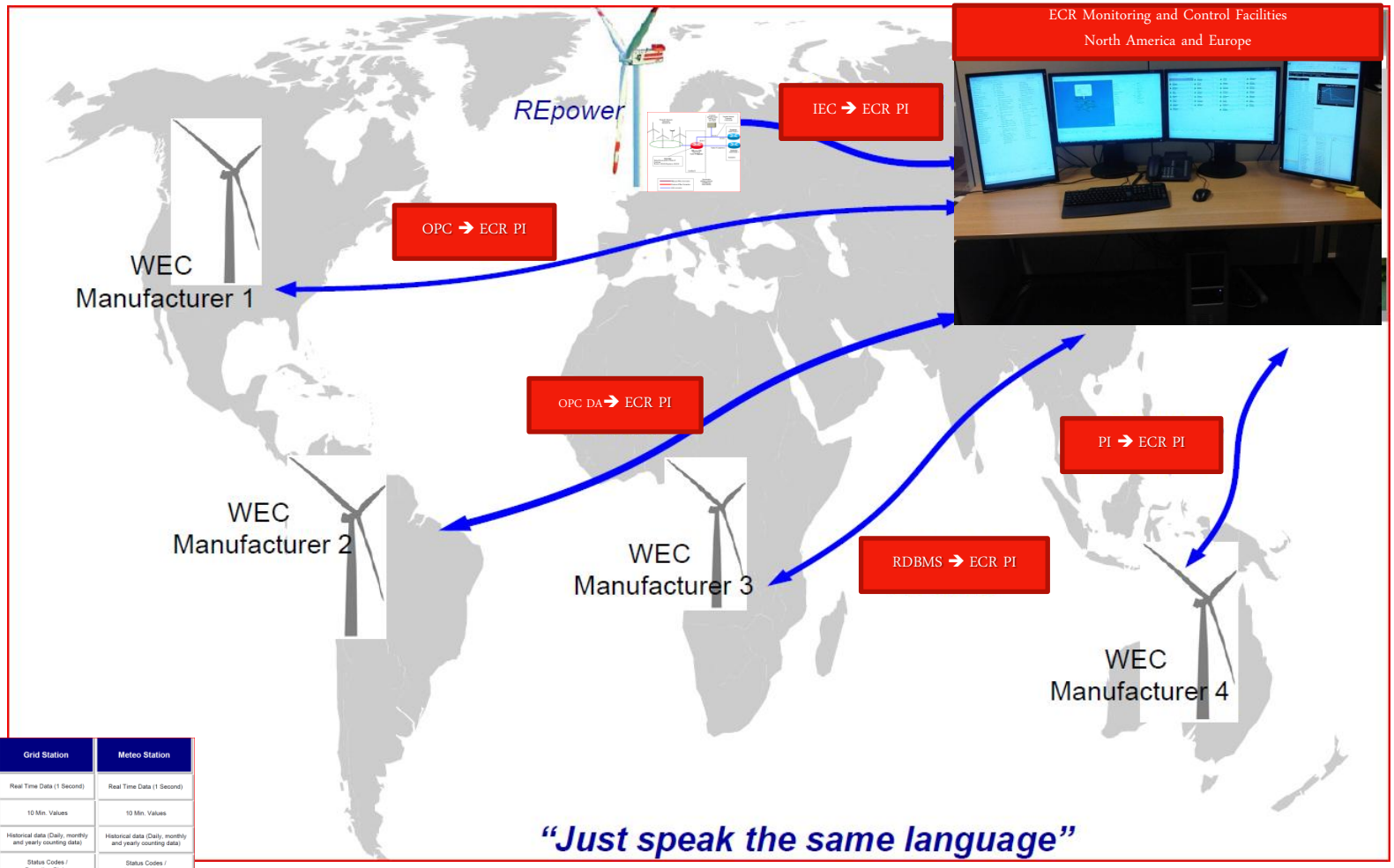
How to achieve this





The EC&R SCADA Roadmap





WEC	Grid Station	Meteo Station
Real Time Data (1 Second)	Real Time Data (1 Second)	Real Time Data (1 Second)
10 Min. Values	10 Min. Values	10 Min. Values
Historical Data (Daily, monthly and yearly counting data)	Historical data (Daily, monthly and yearly counting data)	Historical data (Daily, monthly and yearly counting data)
Status Codes / Operating States	Status Codes / Operating States	Status Codes / Operating States
IEC61400-25 Alarm Messages	IEC61400-25 Alarm Messages	IEC61400-25 Alarm Messages
Control Start/Stop/Reset	Set Points for P, Q, cos phi	No Control

Standard IEC_61400 25

established 2008

- Definition for Data Exchange
  - -Data sets and attributes
  - -Communication and interfaces

Industrial of Use IEC_61400 25

established 2010

- Enterprise Architecture and Networking
- Security and Reliability
- Enabling of Windturbine Controller
- Legal restrictions and paperwork

Our First IEC 61400-25 Connected Windturbine

Successfull implementation December 2010

- OEM Vendor Repower
- Turbine Controller Bachmann
- DA Sofware OSIsoft (SISCO)
- Real-time DataStore OSIsoft PI System

➔ Rollout to all Turbines started January 2011