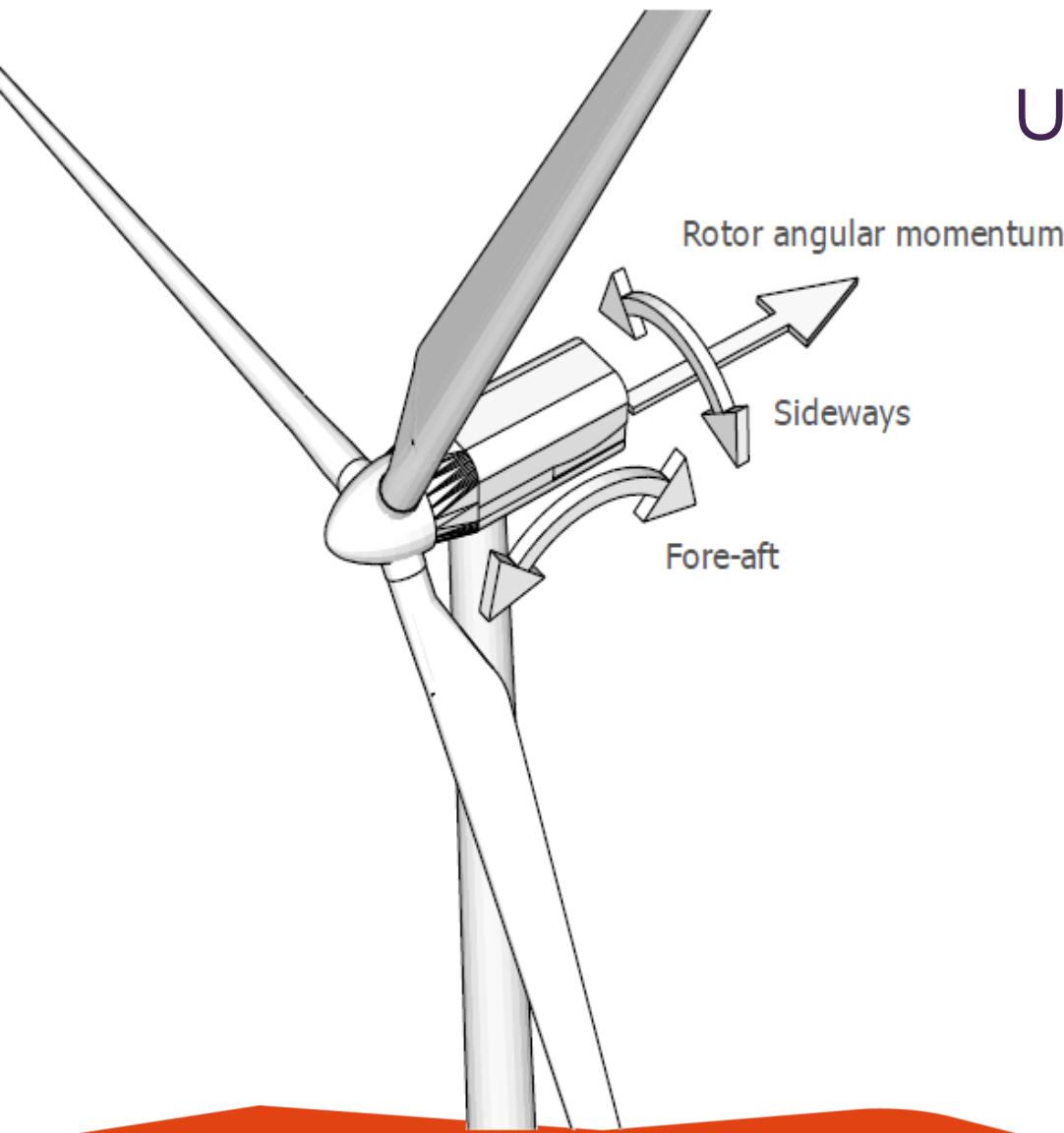


Analysis of operating wind turbines using smart sensors technology



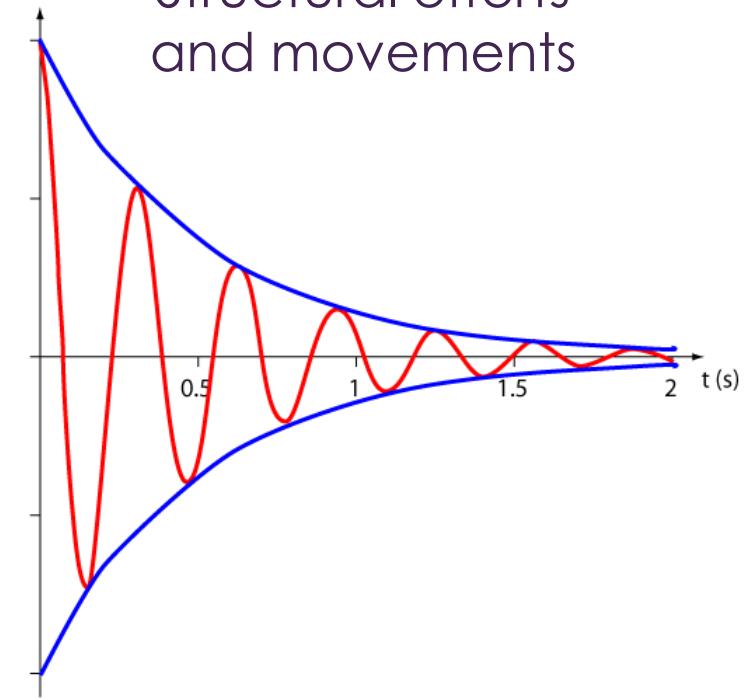
Bruno Pinto, R&D and Data
Analysis Manager

Study Case - Rotor balance

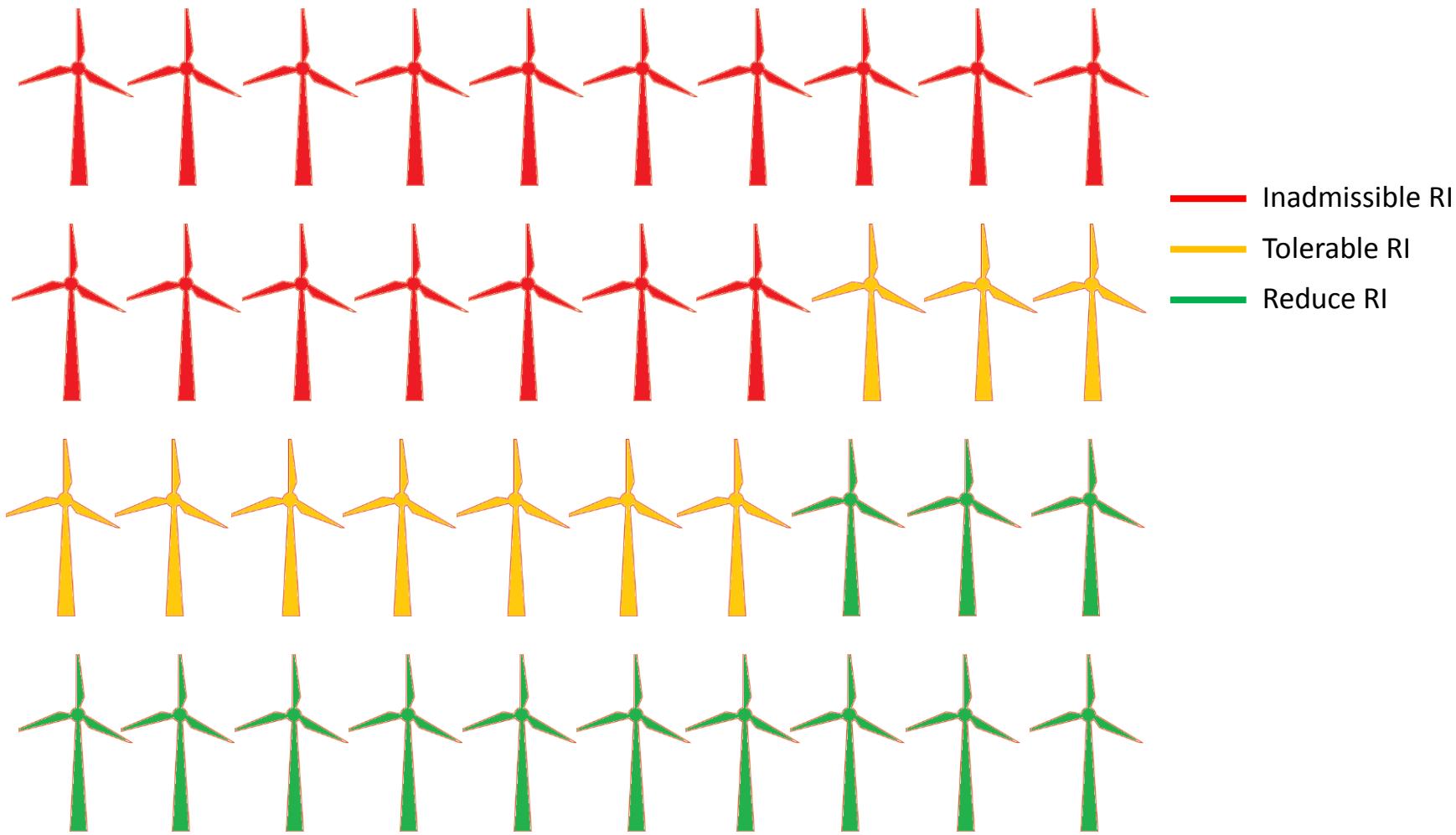


up to 4% AEP Loss

Structural efforts
and movements



Shares of Rotor Imbalance Levels



source: EWEA 2013 Poster; Christoph Heilmann, Berlinwind

Present-day analysis of operating wind turbines

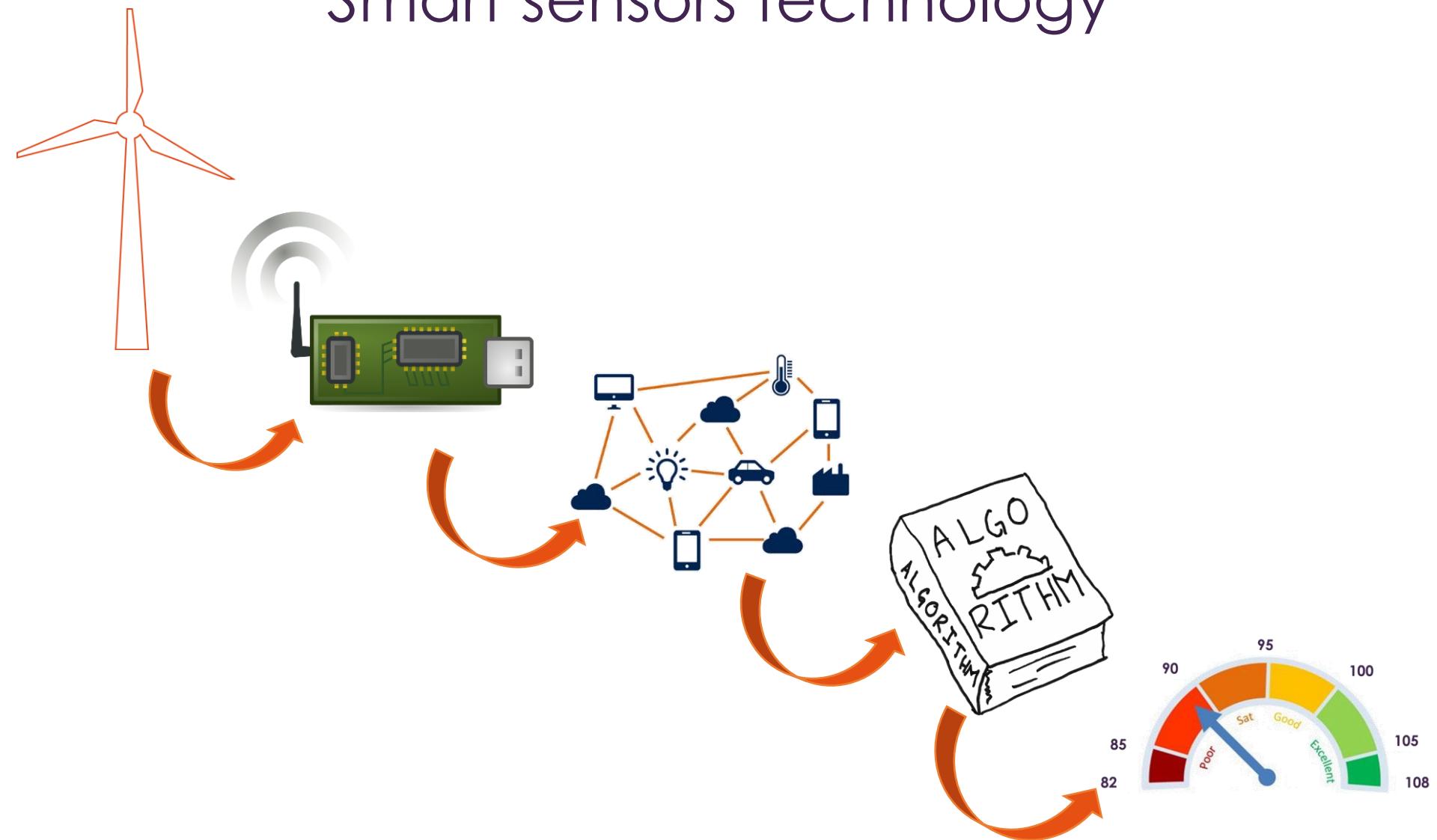
12 00:40:00	15,763	19
01-déc-12 00:50:00	16,5025141	19
01-déc-12 01:00:00	17,0718162	19
01-déc-12 01:10:00	16,6844959	19
01-déc-12 01:20:00	16,0488307	20
01-déc-12 01:30:00	14,217565	19
01-déc-12 01:40:00	14,8053115	19
déc-12 01:50:00	15,4169249	19
12 02:00:00	13,526	19

SCADA data

CMS/Spot Measurements

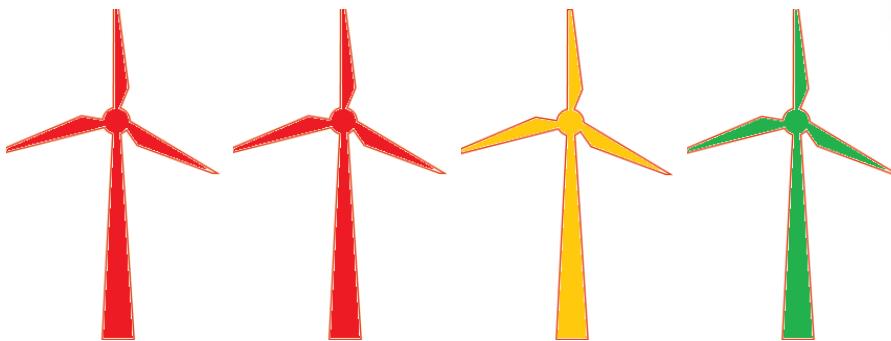


Smart sensors technology

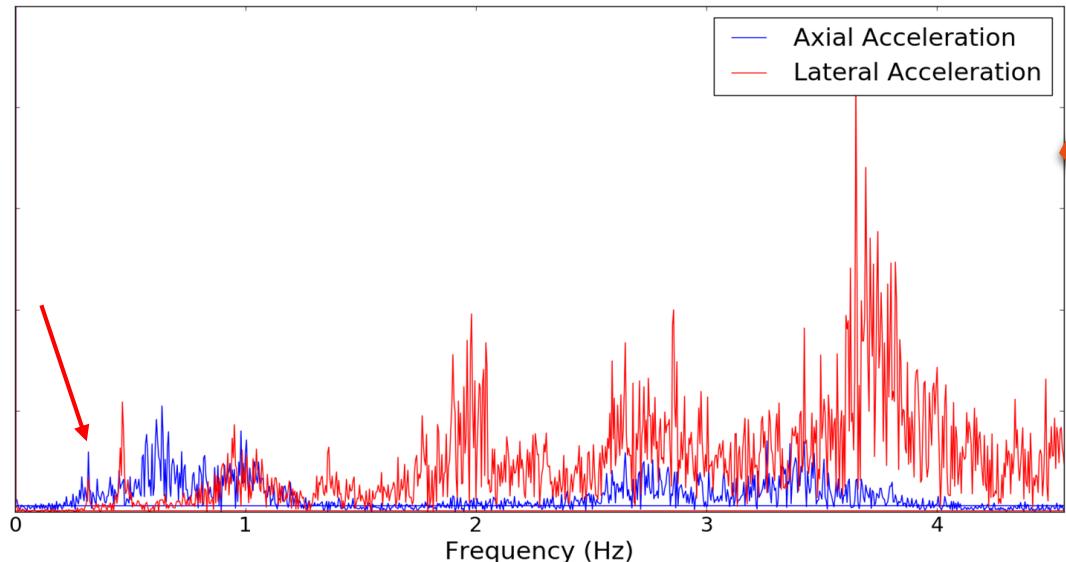


Study case

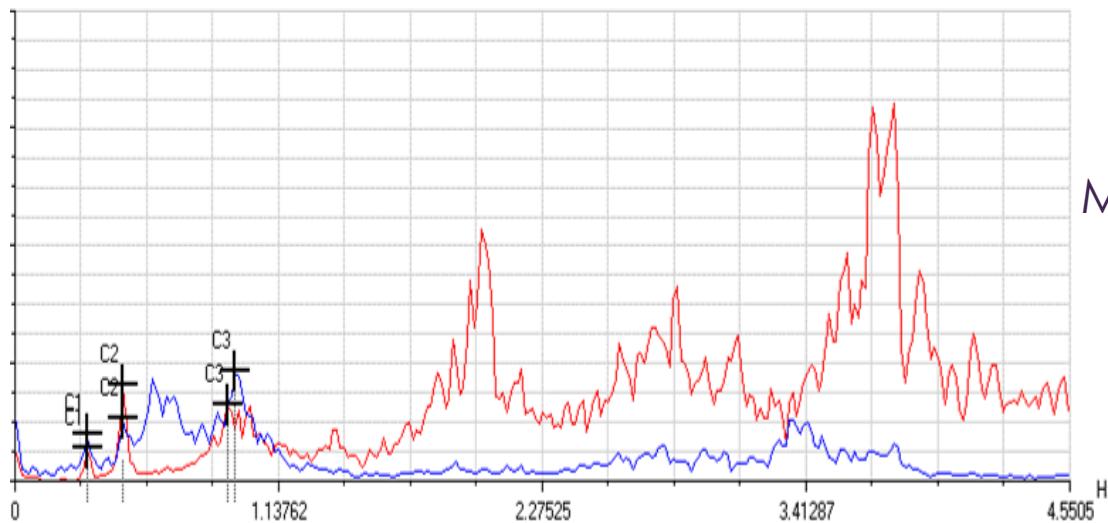
- 4 WT equipped
 - 1.7 MW, 74m diameter
- Results:



Vibration Data Analysis



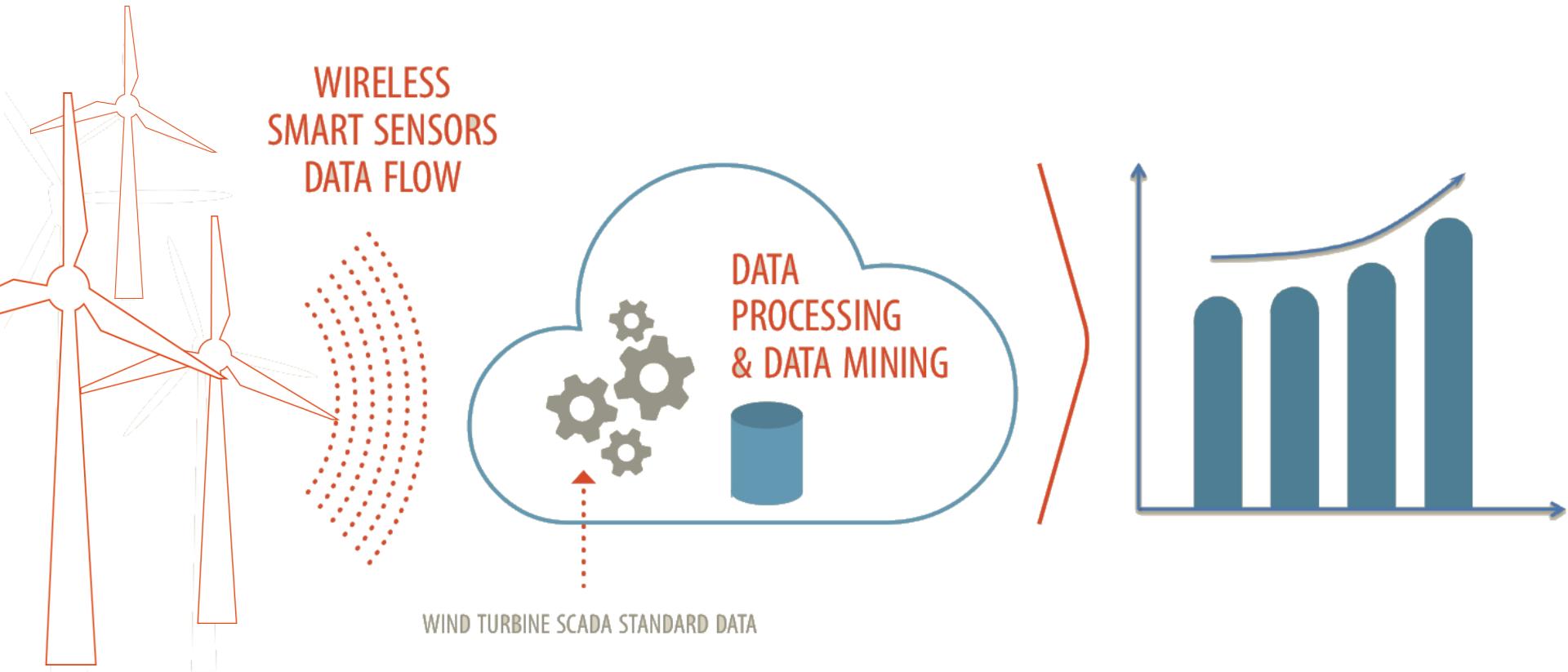
- + Low frequency analysis
- + Perfect conditions selection
- + Statistical treatment
- + Automated



Spot
Measurements

Diagnosis

Over 100 analysis /WT/month



Our vision



Performance



Easy to install



Independent



Ready for Mass deployment

Team, partners, references



8.2
Die Sachverständigen
für Erneuerbare Energien
*The Experts in
Renewable Energies*

IT-Translation



Thank you for your attention

bruno.pinto@sereema.com

