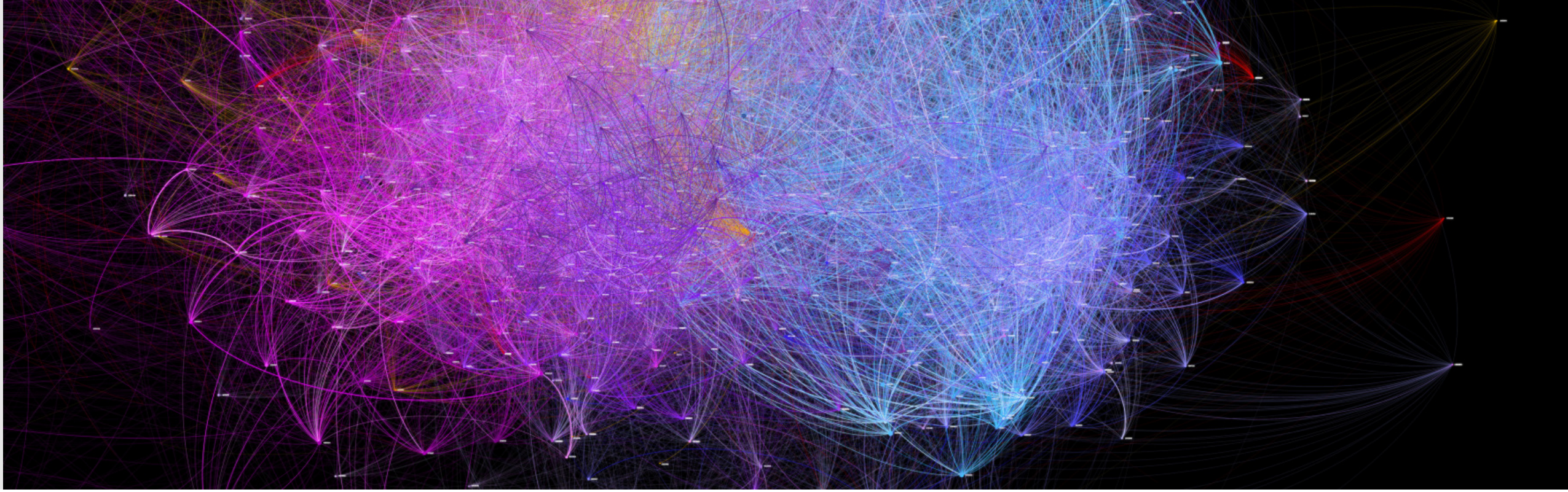


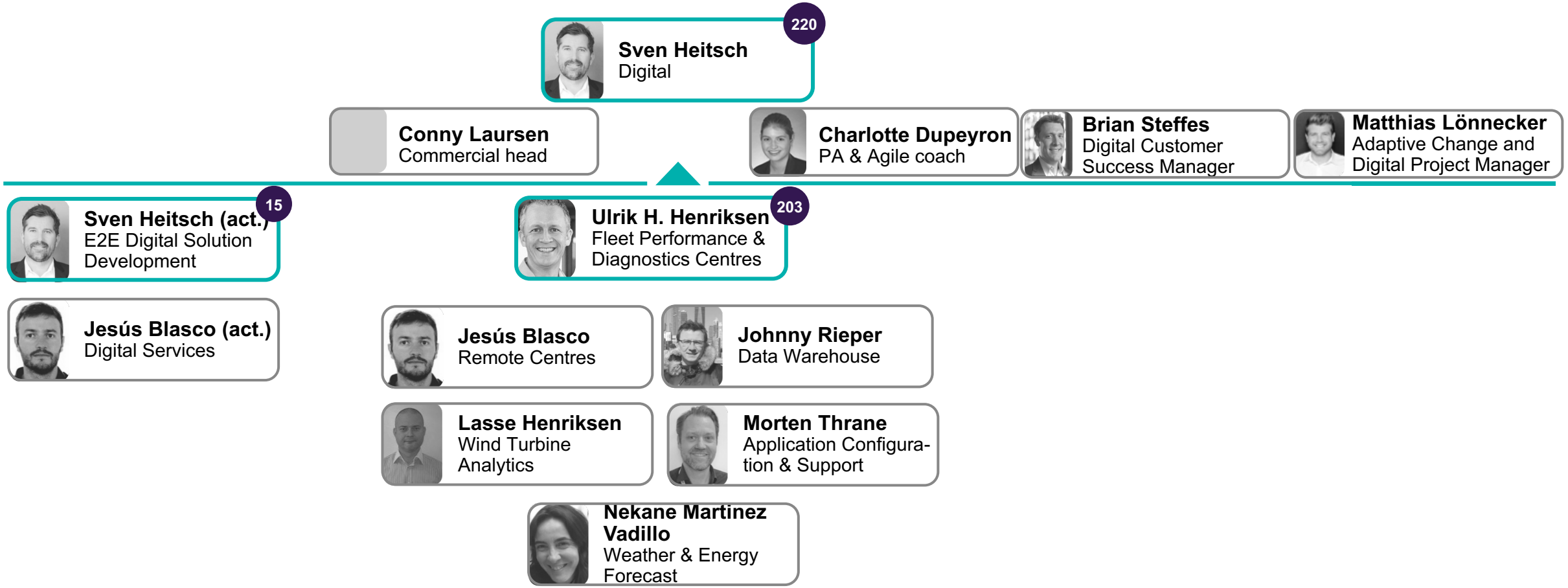
SE Service Digital

Lightning and Severe Weather Management for Wind Farms

© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY

Weather and Energy Forecasting Team – Organizational Chart



© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY

Siemens Gamesa Digital – Weather & Energy Forecast Team

1. Goal is truly autonomous windfarms with minimal human intervention

2. Remote monitoring and problem solving for wind turbines and predictive diagnostic models

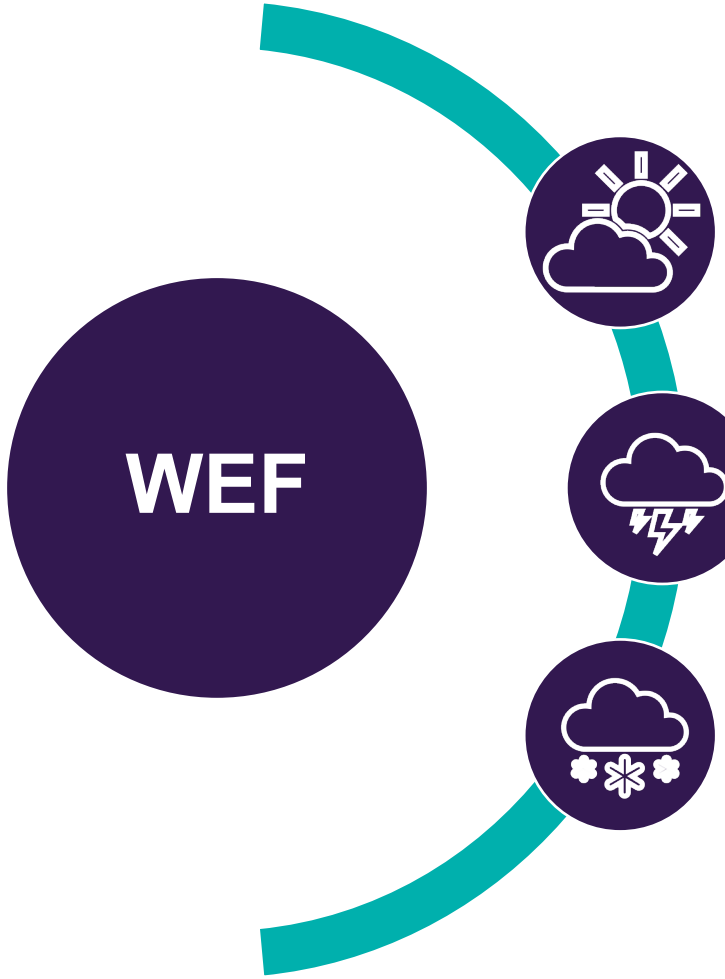
3. Past, present, and future weather and lightning conditions are an important input for this area

4. Safety of people is most important, followed by optimizing operations and maximizing revenues

5. Worldwide company and worldwide solution

© Siemens Gamesa Renewable Energy

SIEMENS Gamesa RENEWABLE ENERGY



Metoceanic and economic variables forecasts

Short, medium and long-range forecasts

Lightning Detection System and Severe Weather Warnings

Early detection of damages in blades. Preventive stop/restart of turbines

Consultancy Services

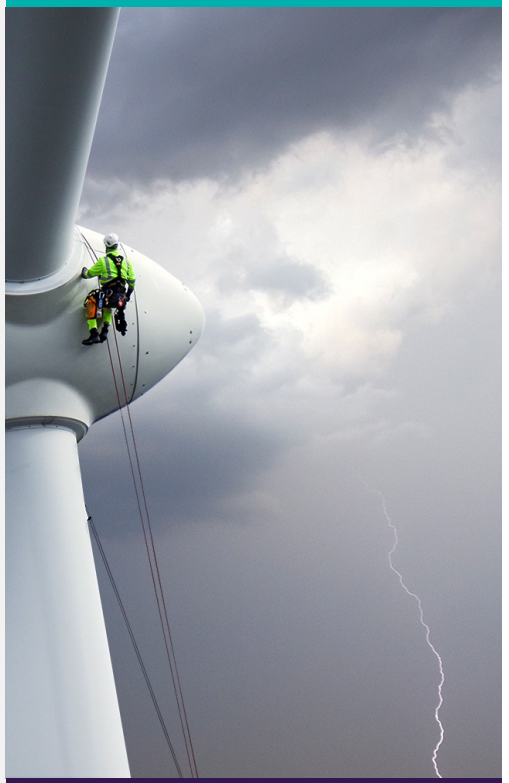
Long term weather and marine analysis

© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY

Use Cases for Lightning Data for Wind Farms

- Clear benefit is early detection of damages in blades
- In high lightning density in particular areas of the world, system captures all this and captures historical data for forensic reports for damage claims.
- Preventive stop and re-start of wind turbines for lightning and other severe weather.
  - When thunderstorms approach a pre-defined radius, the wind turbines are stopped until the storm passes, and no turbine has been damaged, after which time the turbines are re-started.
- Result = improvement in performance and protection of the integrity of assets

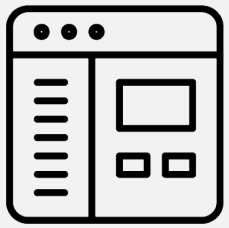


© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY

Earth Networks Products – Sferic Maps & Lightning API

Automation of all processes at Siemens Gamesa with goal of autonomous wind farms



Monitoring and visualization in the regions by wind farm operators via **Sferic Maps**, when and how they can work in wind farms

Consultancy services with historical weather data, or reanalysis data which serves as an important input in:

- Wind farm sighting apps
- Blade prediction models
- More precise pricing for blade integrity management

© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY

Thank you!

Service Digital - Fleet Performance & Diagnostics Centers

© Siemens Gamesa Renewable Energy

SIEMENS Gamesa
RENEWABLE ENERGY