GRIB and NetCDF in a world of competing standards

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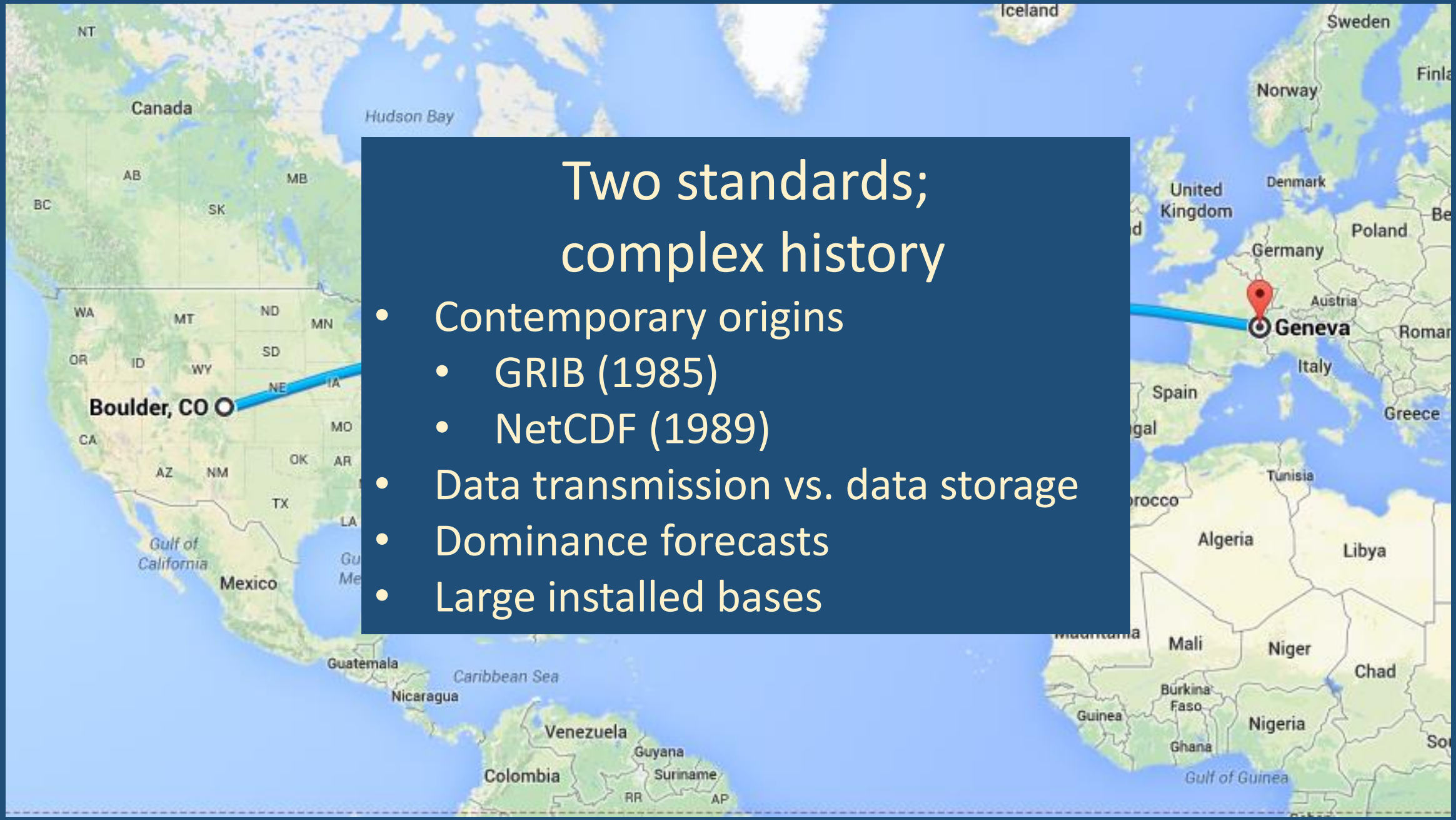

Two standards;
complex history
• Contemporary origins
• GRIB (1985)
• NetCDF (1989)
• Data transmission vs. data storage
• Dominance forecasts
• Large installed bases
Boulder, CO
Geneva
Canada
Hudson Bay
Iceland
Sweden
Norway
Denmark
United Kingdom
Poland
Germany
Austria
Italy
Spain
Greece
Tunisia
Algeria
Libya
Mali
Niger
Chad
Nigeria
Burkina Faso
Guinea
Ghana
Gulf of Guinea
Mexico
Gulf of California
Guatemala
Nicaragua
Caribbean Sea
Venezuela
Guyana
Suriname
Colombia

Model Packages

ICAO Weather Information Exchange Model (IWXXM)
METAR, SPECI, TAF, and SIGMET representations

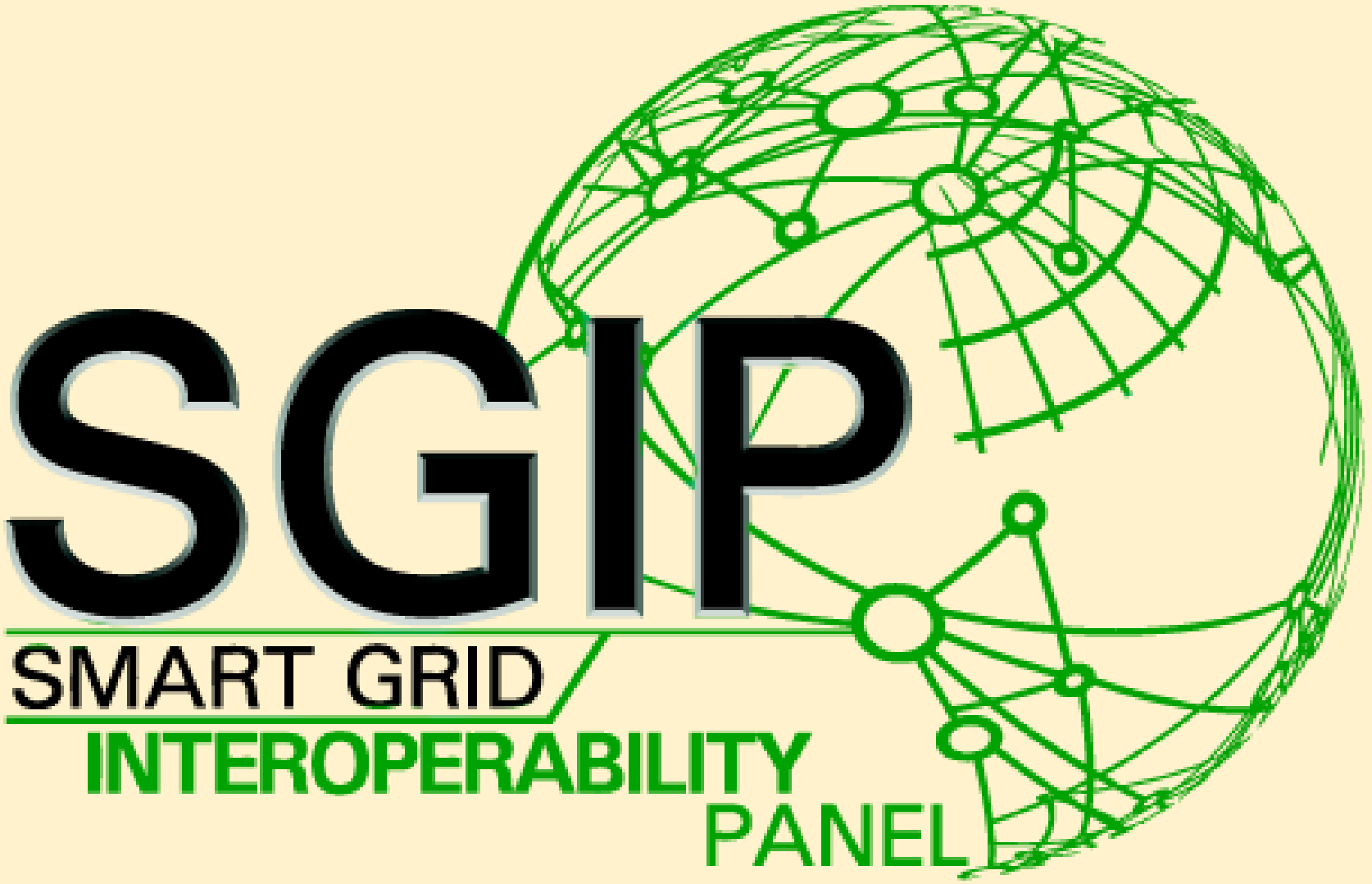
Simple Aeronautical Features (SAF)
Simplified features from the aeronautical domain, such as aerodrome and runway (related to AIXM)

Meteorological Community Exchange Model (METCE)
WMO logical data model, specifically Observations and Measurements (O&M) specializations

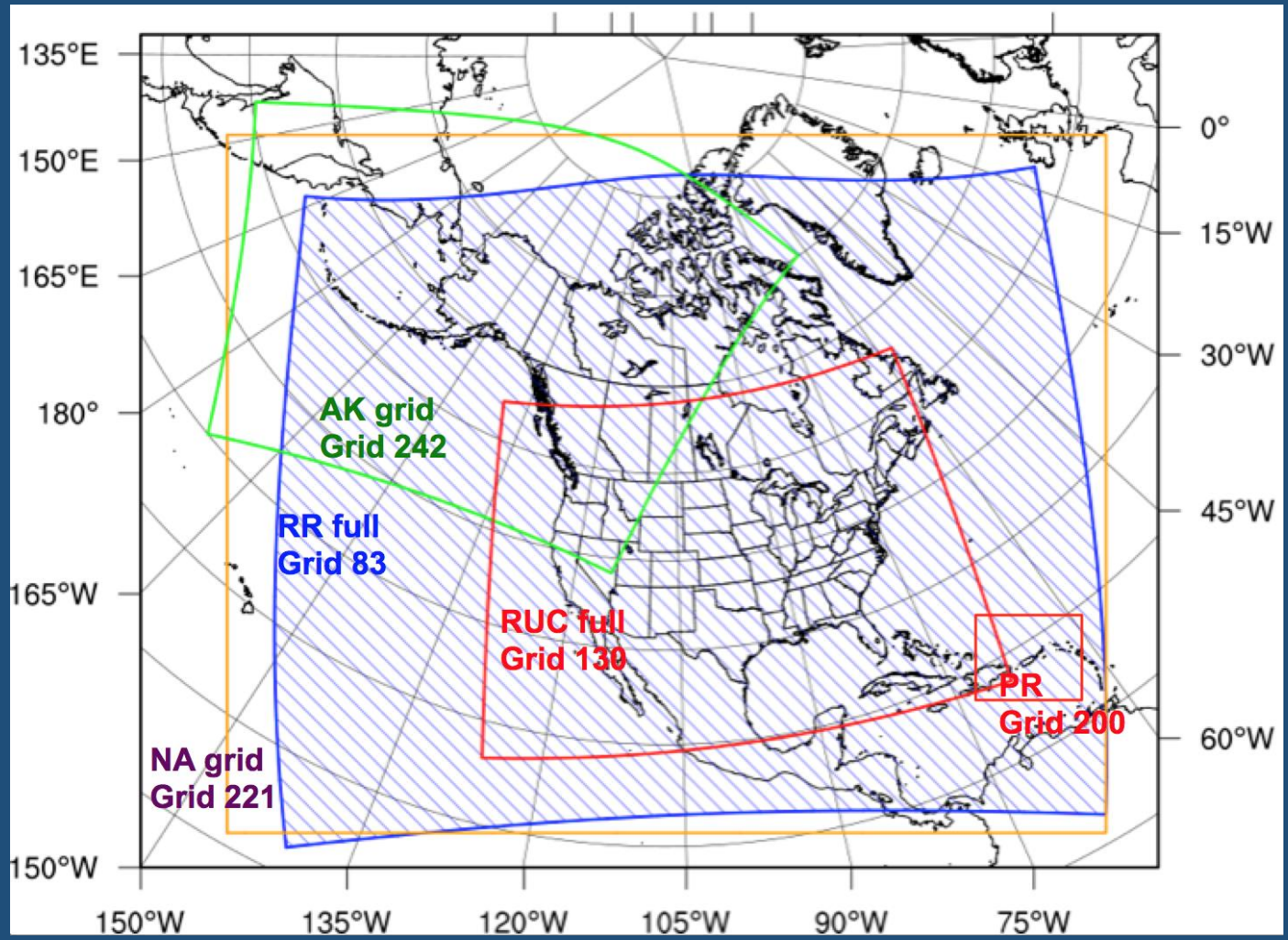
Observable Property Model (OPM)
Qualifications and constraints on observed properties

Federal Aviation Administration

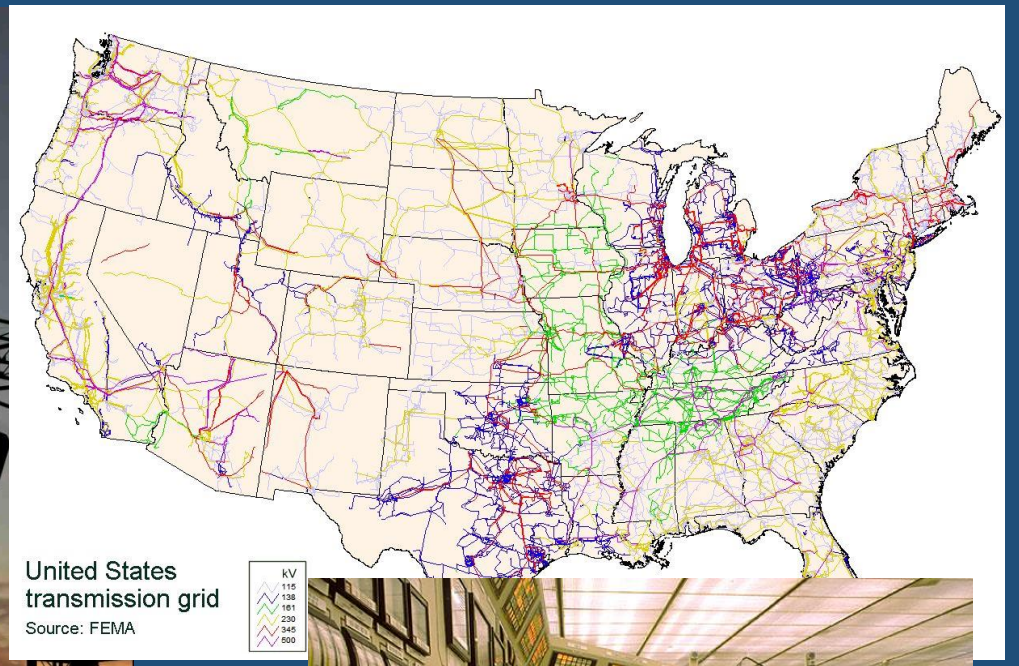
EUROCONTROL


SGIP
SMART GRID
INTEROPERABILITY
PANEL

Not this grid...

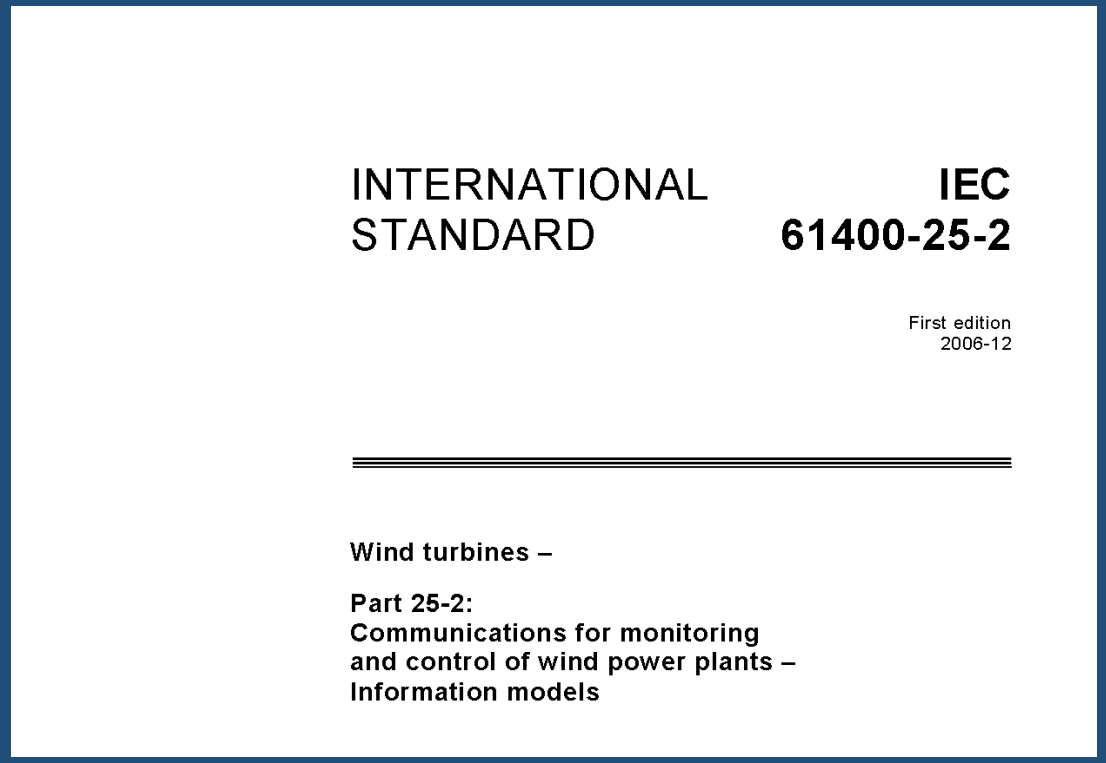


…but this grid.



International Electrotechnical Commission

Standard for wind turbines



INTERNATIONAL STANDARD

IEC 61400-25-2

First edition
2006-12

Wind turbines –

Part 25-2:
Communications for monitoring and control of wind power plants – Information models

Standard for power utility communication

IEC

IEC 61850-7-4

Edition 2.0 2010-03

INTERNATIONAL STANDARD

colour inside

Communication networks and systems for power utility automation –
Part 7-4: Basic communication structure – Compatible logical node classes and data object classes

Both standards contain meteorological parameters.

- Ambient temperature
- Wet bulb temperature
- Cloud cover level
- Humidity
- Horizontal wind direction
- Horizontal wind speed
- Vertical wind direction
- Vertical wind speed
- …and many more

It is easy for us to assume that the standards we develop and use are the only ones that matter.

Our partners and users often disagree.