

SynchroPhasor Interoperability

GRID

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ALSTOM

SynchroPhasors & Interoperability

Interoperability is especially relevant to SynchroPhasors:

SynchroPhasors is a **wide-area** technology

⇒ *need for power companies to exchange this data.*

Applications are **distributed** at the substation, PDC, and EMS

⇒ *need to internally exchange data across applications.*

Utilities are moving towards an open framework & design solutions with 'plug-and-play' type of interoperability.

flexibility to 'pick-n-choose' solutions while reducing integration/maintenance costs.

Some of the Current Limitations

Most WAMS systems are currently information islands, need to share data with SCADA and EMS applications.

SCADA & PMUs will co-exist for quite some time (complement each other).

⇒ Mechanism to transmit time aligned and non-time aligned data.

⇒ Mechanism for mapping synchrophasor measurements to power system network data.

The current IEEE C37.118 synchrophasor standard has deficiencies:

Communications: – Presently only supports real-time streaming data.

– No mechanism for re-requesting lost data.

– Cannot track delivery latency (i.e. “bottle necks”).

– Limited security (CRC checks).

Meta-Data: – No ownership information (e.g. Company, Vendor).

– No network connectivity information (e.g. mapping ‘V’ and ‘I’ meas.).

– No communications engineering information .

Current Initiatives Underway

Harmonization
C37.118 & IEC 81850

IEEE C37.118 **(PMU Performance)**

Ensures the “Correctness” & “Completeness” from a measurement perspective.

- measurement performance (‘M’ & ‘P’ class requirements)
- acceptable latency tolerance

IEC 61850-90-5 **(Data Transfer)**

Establishes the data transfer layer for publish/subscribe/event based data transmittal.

- Allows for time-aligned & non-time aligned data.
- DataSet constructs for providing subsets of information

Map measurement data to physical power system network elements & organizational entities.

- can inherit CIM class definitions (e.g. CurrentTransformer, VoltageTransformer).

CIM Standard **(Meta-Data)**

Unification of CIM & 61850

Questions?