

It all depends on the application

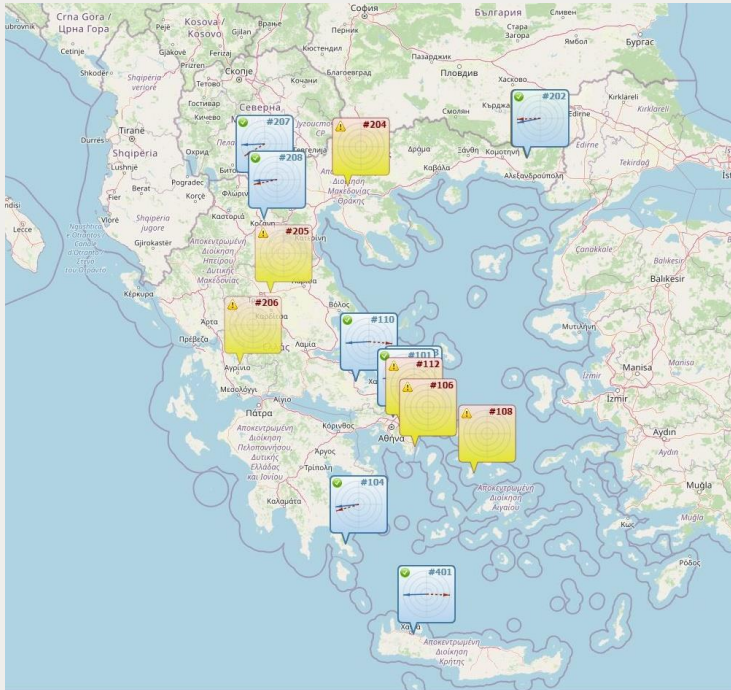
SC C2, PS1, Question 1.5:

How can we define the optimal number of synchro-phasor measurement devices for a given area?

Dalibor Brnobic, STER, Croatia



Example 1: H2020 FARCROSS



15 PMUs installed within WP6 in IPTO – Greek TSO:
400 kV: cross-border, main internal lines
150 kV: submar Crete-Peloponnese, Syros-Mainland

Applications (WP6 demos):
voltage stability, submarine cable monitoring, ZonellA protection, LFO (low frequency oscillation) detection

Group Discussion Meeting

Example 2: HOPS – Croatian TSO



70+ PMUs:
400 kV: all lines
220 kV: all cross-border, almost all internal
110 kV: all cross-border, selected internal
Selected generation units and WPPs
Applications:
integration with AGC controller, WAMS-based fault locator, synthetic inertial and primary frequency regulation response monitoring, ...

Example 3: ELIA – Belgium TSO



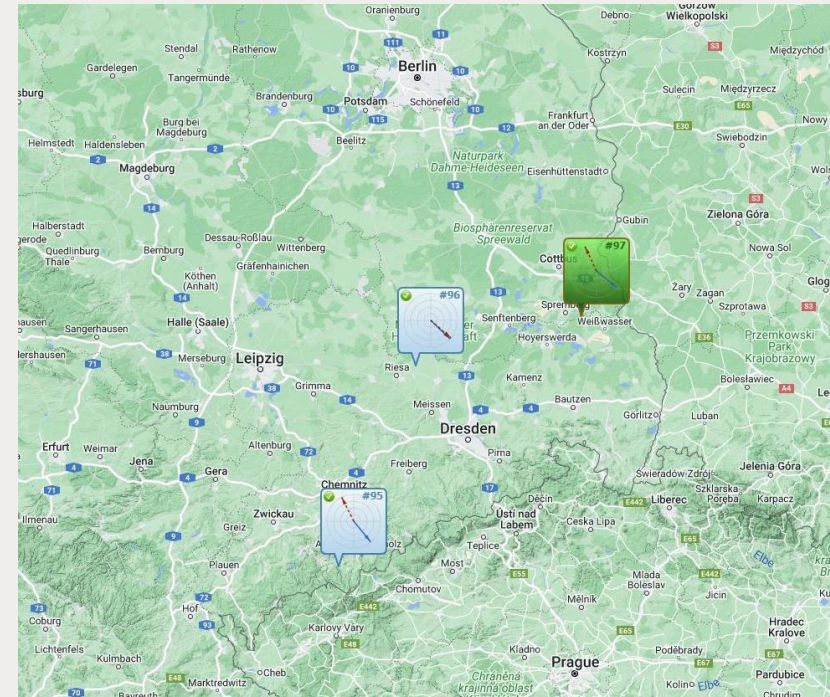
A set of 10 portable PMUs for key assets monitoring.
Easy repositioning - mobile telephone link to web based
WAMSTER PDC service: www.wamster.net

Campaigns:

Nuclear plant, LFO monitoring,
ALEGRO HVDC link Germany-Belgium commissioning
MOG, WPP connected to the North Sea energy hub

Group Discussion Meeting

Example 4: 50Hertz – TSO in Germany



Dedicated WAMS for black start tests.
Portable units + WAMSTER web PDC

23.10.2021 – 3 PMUs: s/s Markersbach, s/s Streumen
and s/s Graustein

23.7.2022 – 2 PMUs: s/s Altenfeld and s/s Remptendorf