SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
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UNIT V: MONITORING AND CONTROL

TOPIC: **PHASOR MEASUREMENT UNITS AND WIDE AREA MEASUREMENT SYSTEMS**

TOPIC OUTLINE

- PHASOR MEASUREMENT UNITS
- FUNDAMENTALS OF PMU
- BLOCK DIAGRAM
- WIDE AREA MEASUREMENT SYSTEMS
- ARCHITECTURE OF WAMS

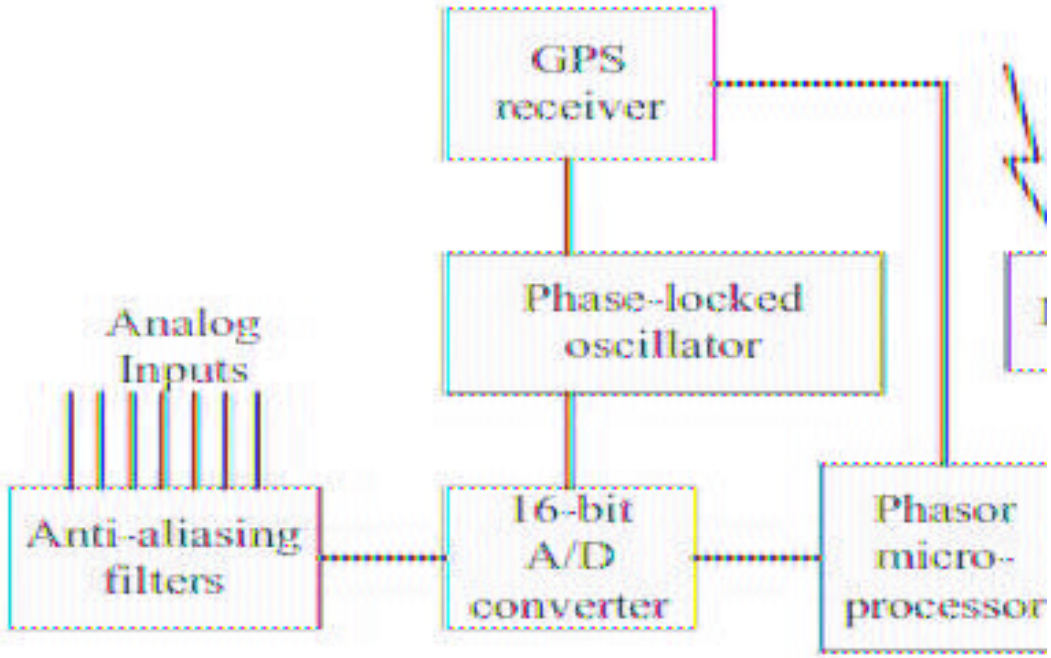
PHASOR MEASUREMENT UNITS

- As per definition of IEEE, PMU is defined as device that produces synchronised phasor, frequency and rate of change of frequency estimates from voltage and/or current signals and time synchronising signal
- Phasor Measurement Units (PMUs) provide real time synchronised measurements in power system with better than one microsecond synchronisation accuracy, which is obtained by Global Positioning System (GPS) signals

Fundamentals of PMU

- PMU technology provides phasor information (both magnitude and phase angle) in real time. Advantage of referring phase angle to global reference time is helpful in capturing wide area snapshot of power system.
- Effective utilisation of this technology is useful in mitigating blackouts and learning real time behaviour of power system.

BLOCK DIAGRAM

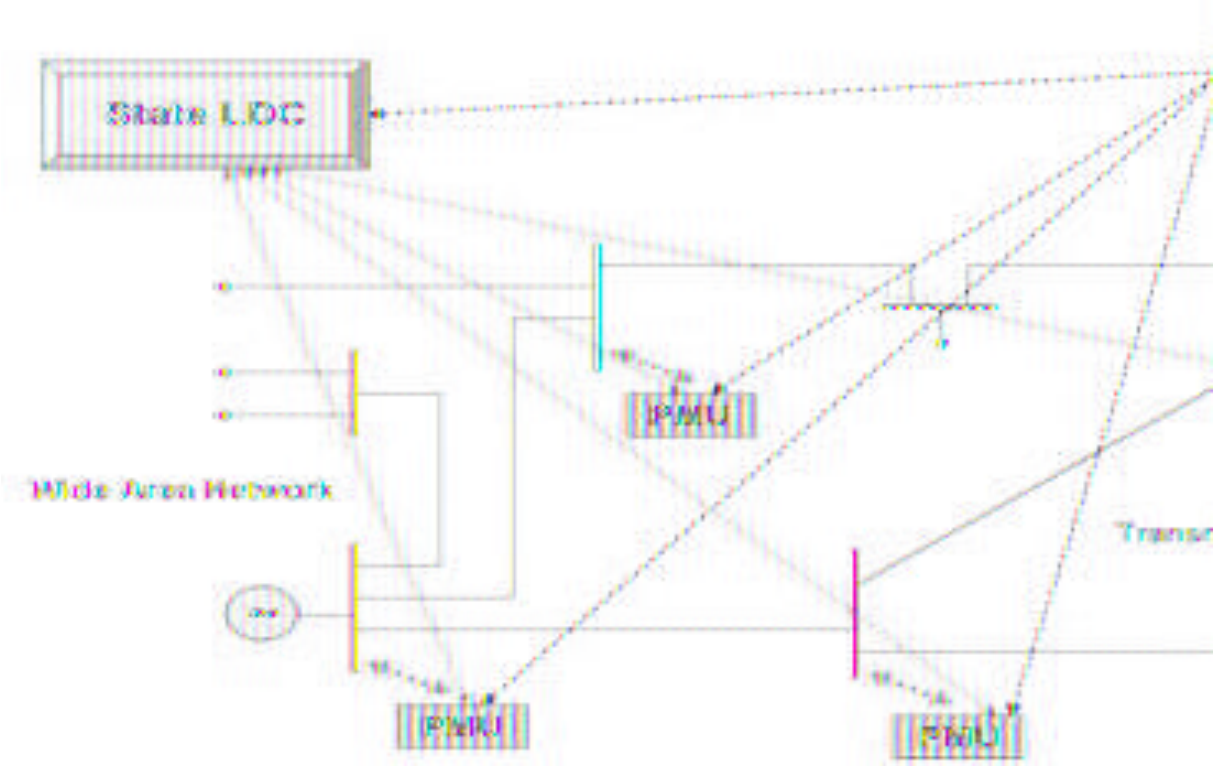


Wide area measurement systems

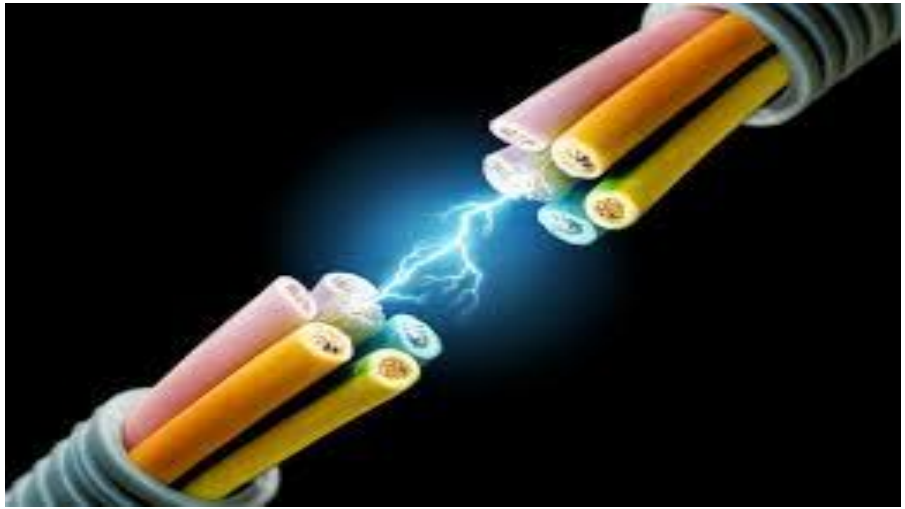
Wide area measurement system (WAMS) refers to a measurement system composed of strategically placed time-synchronized sensors (which are PMUs) which can monitor the current status of a critical area in real-time.

- The measurements from the WAMS are utilized by the wide-area control system (WACS) to control the transient and oscillatory dynamics of system voltage and frequency.
- A fast communication network which can operate at update rates of 10–20 Hz is crucial for the WAMS/WACS in order to deliver measurements from sensors to the control center and control signals from the control center to actuators

Architecture Of WAM



RECAP....



...THANK YOU