

Making the Case for High Performing PMUs in Distribution Grids

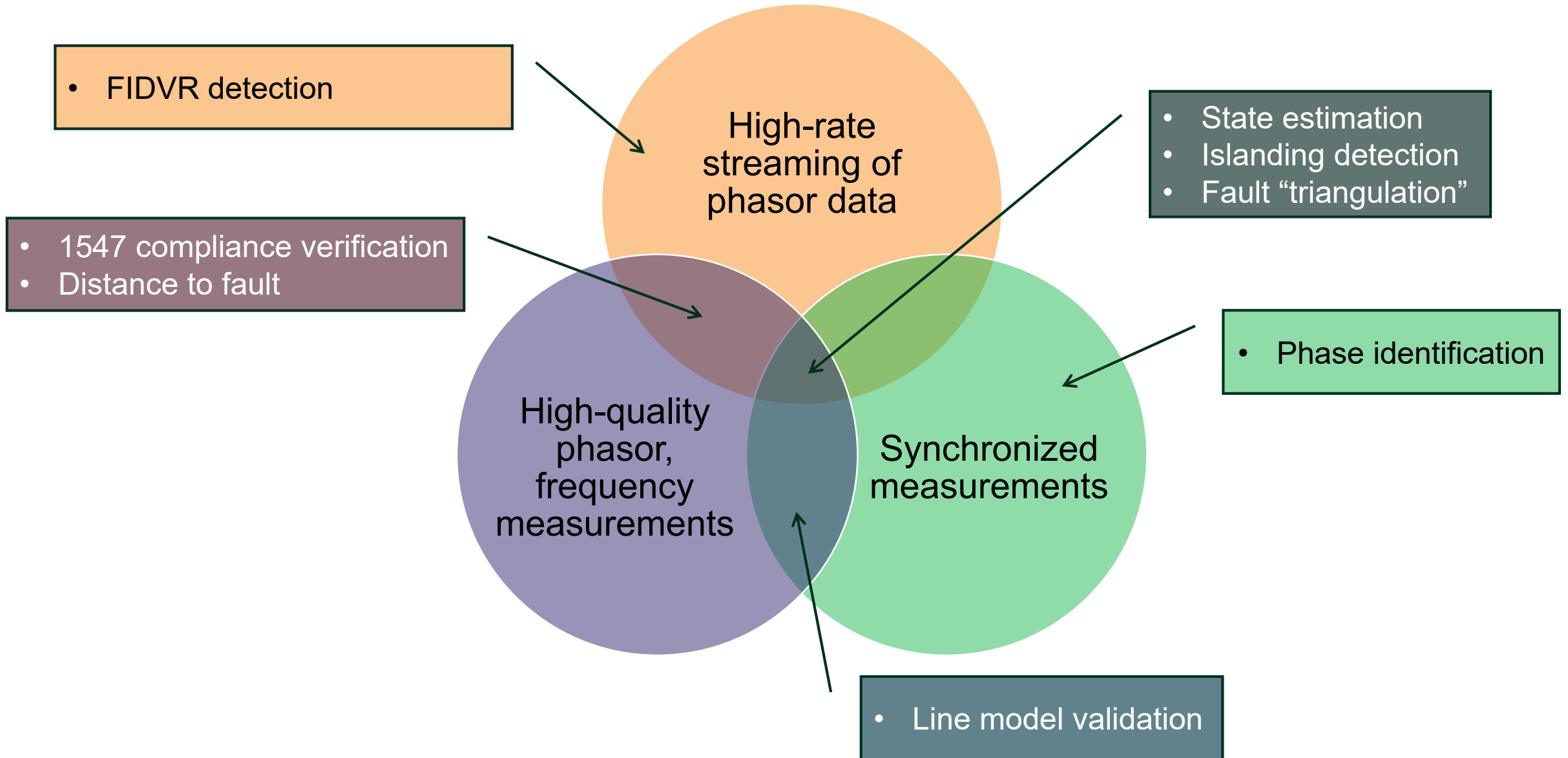
PRESENTED BY

Yoav Sharon

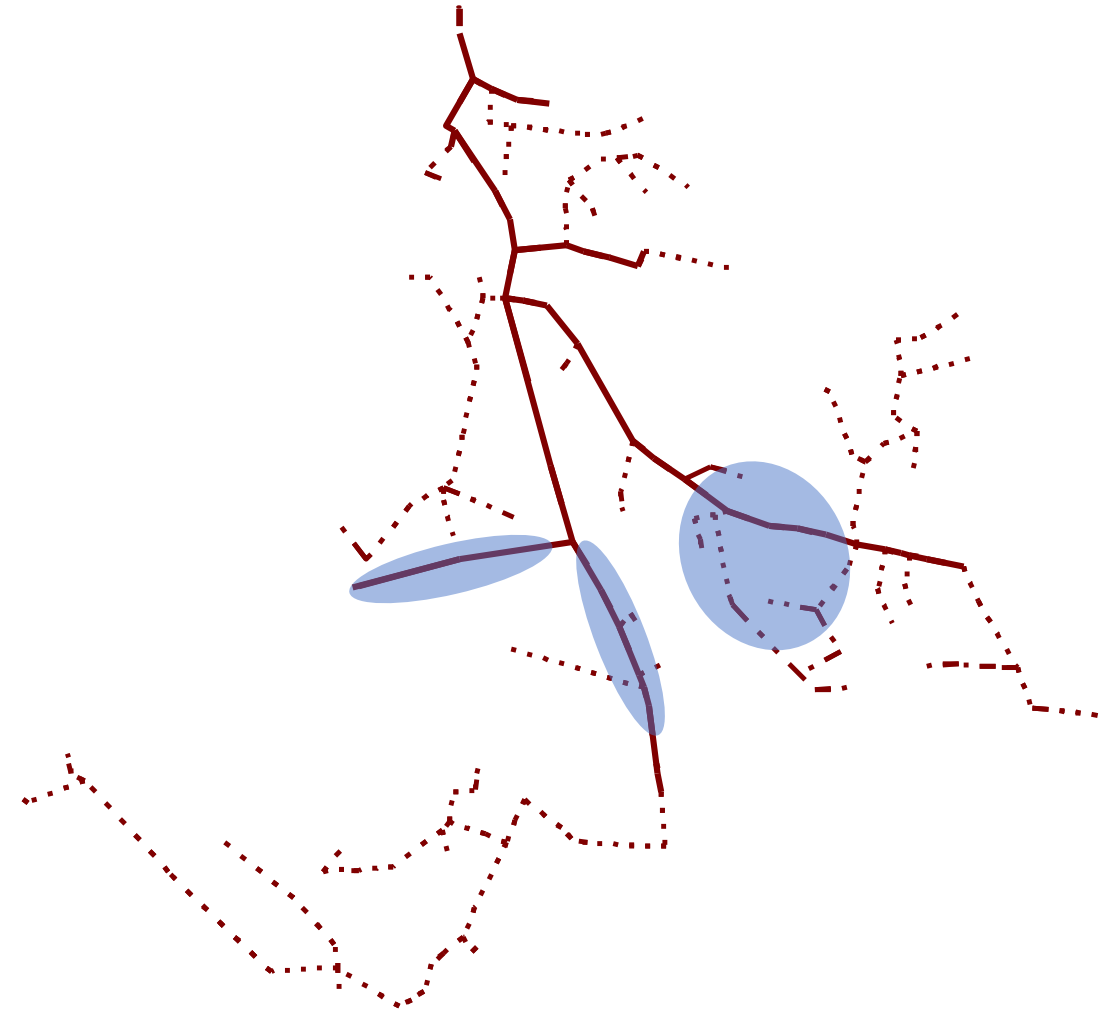
S&C Electric Company



PMUs: What Are They, What Can They Do?



Fault location using SCADA



Fault location using SCADA

Fault location using current & voltage phasors
from a single device
(distance to fault)



Fault location using SCADA

Fault location using current & voltage phasors from a single device

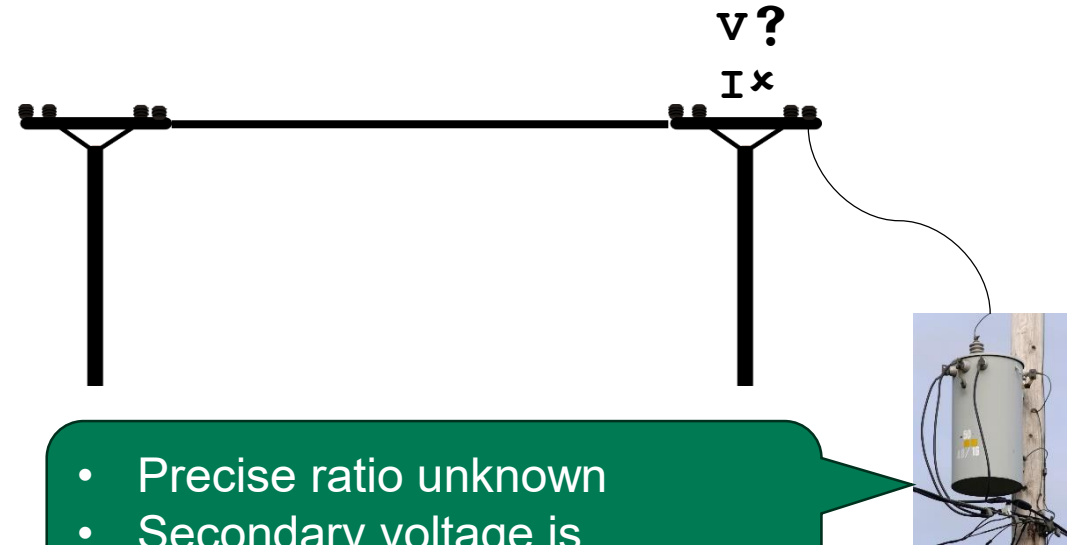
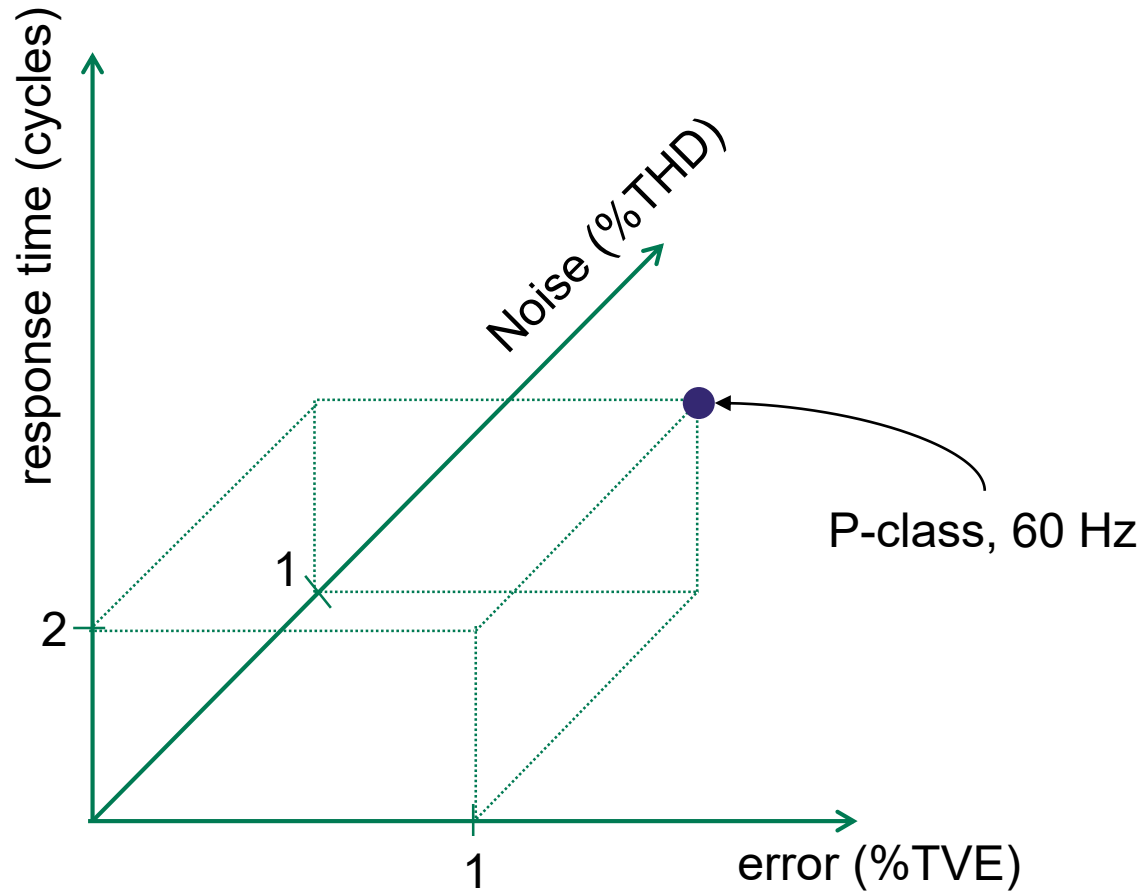
Fault location using synchrophasors from multiple devices
(fault triangulation)

Benefits of fault location:

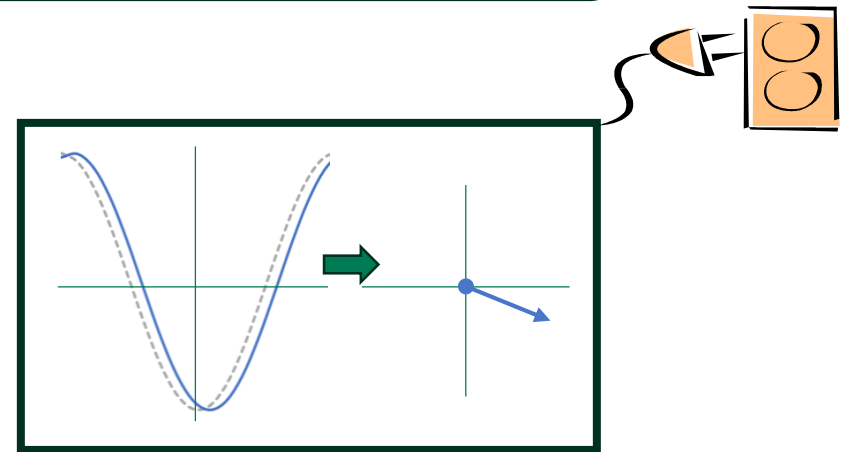
- Quicker restoration after permanent faults
 - Improved reliability
 - O&M saving
- Addressing momentary faults before they become permanent
 - Improved reliability
 - O&M saving



Not All PMUs Are the Same

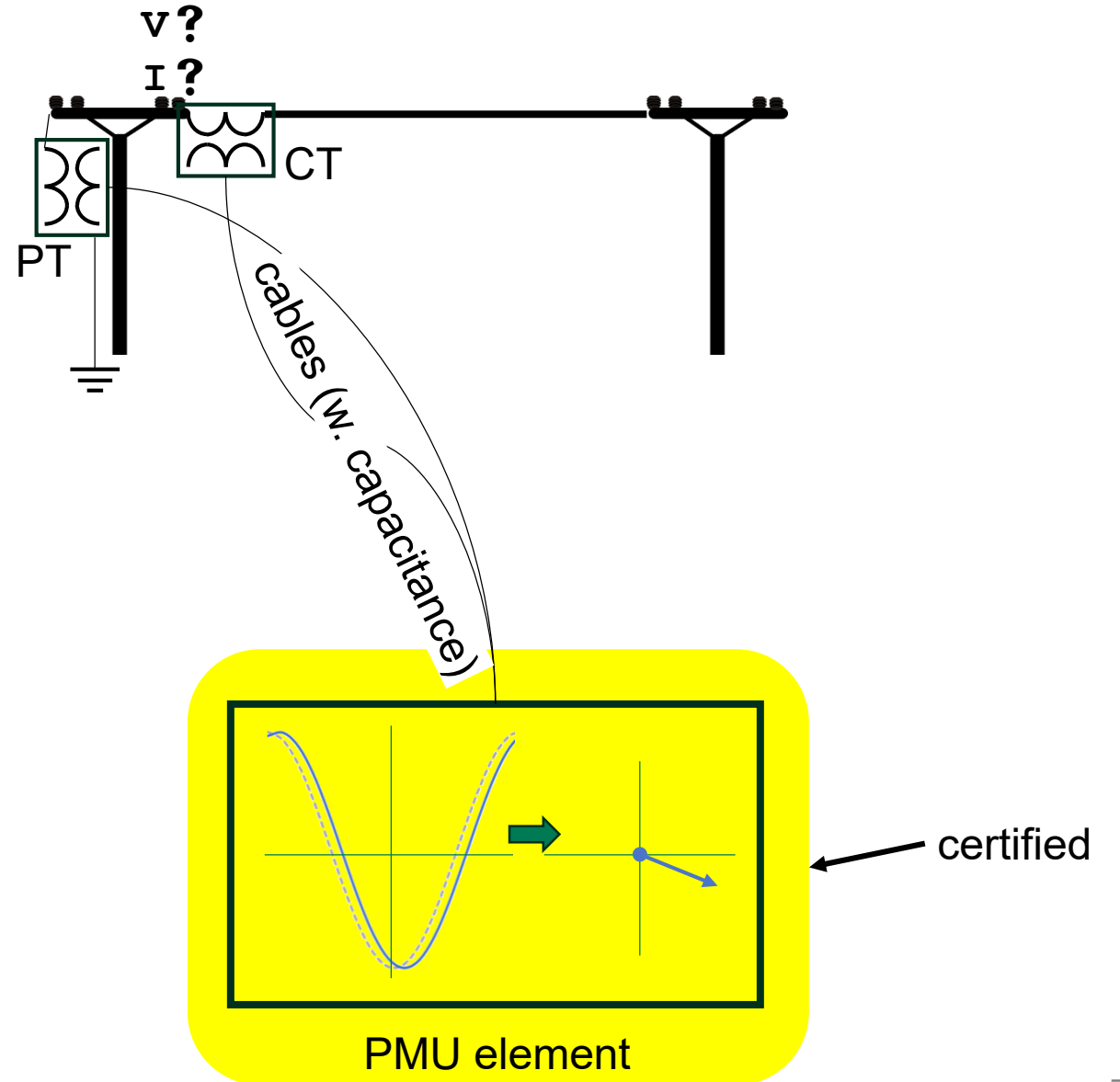
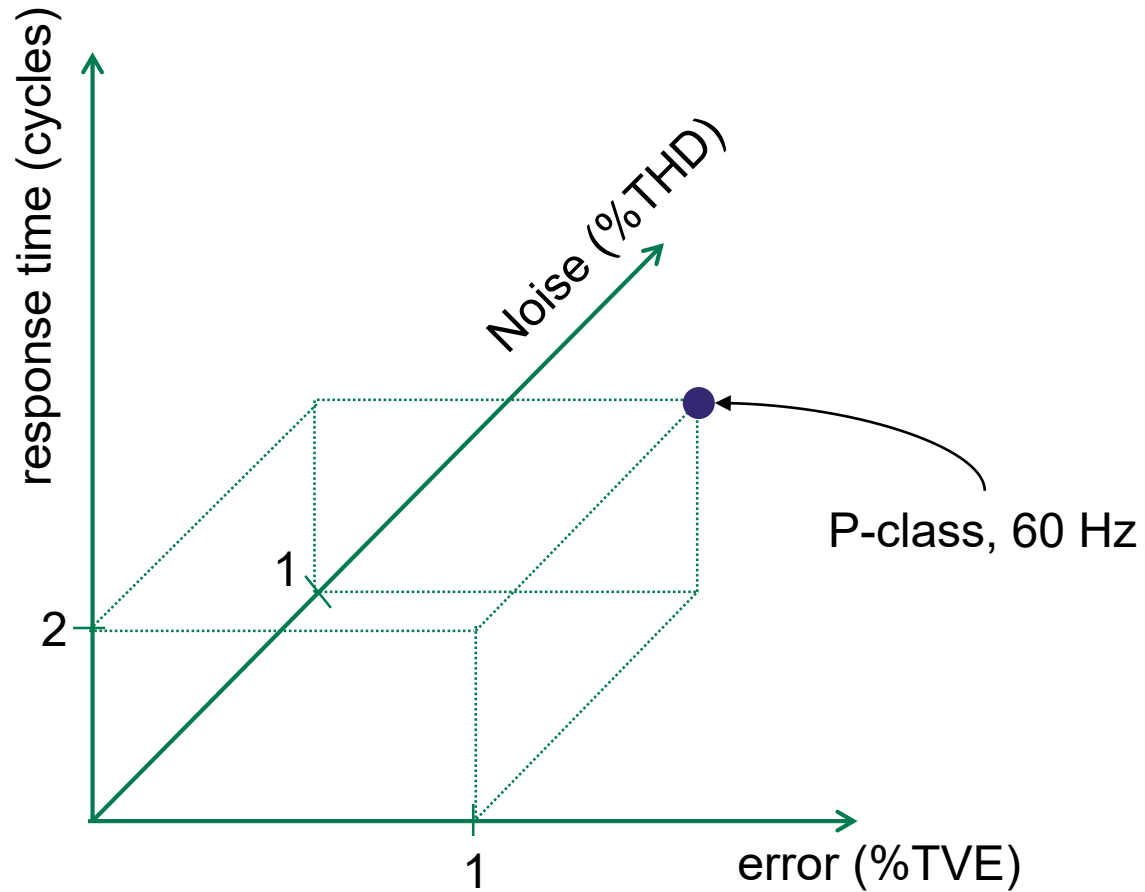


- Precise ratio unknown
- Secondary voltage is dependent on unknown load

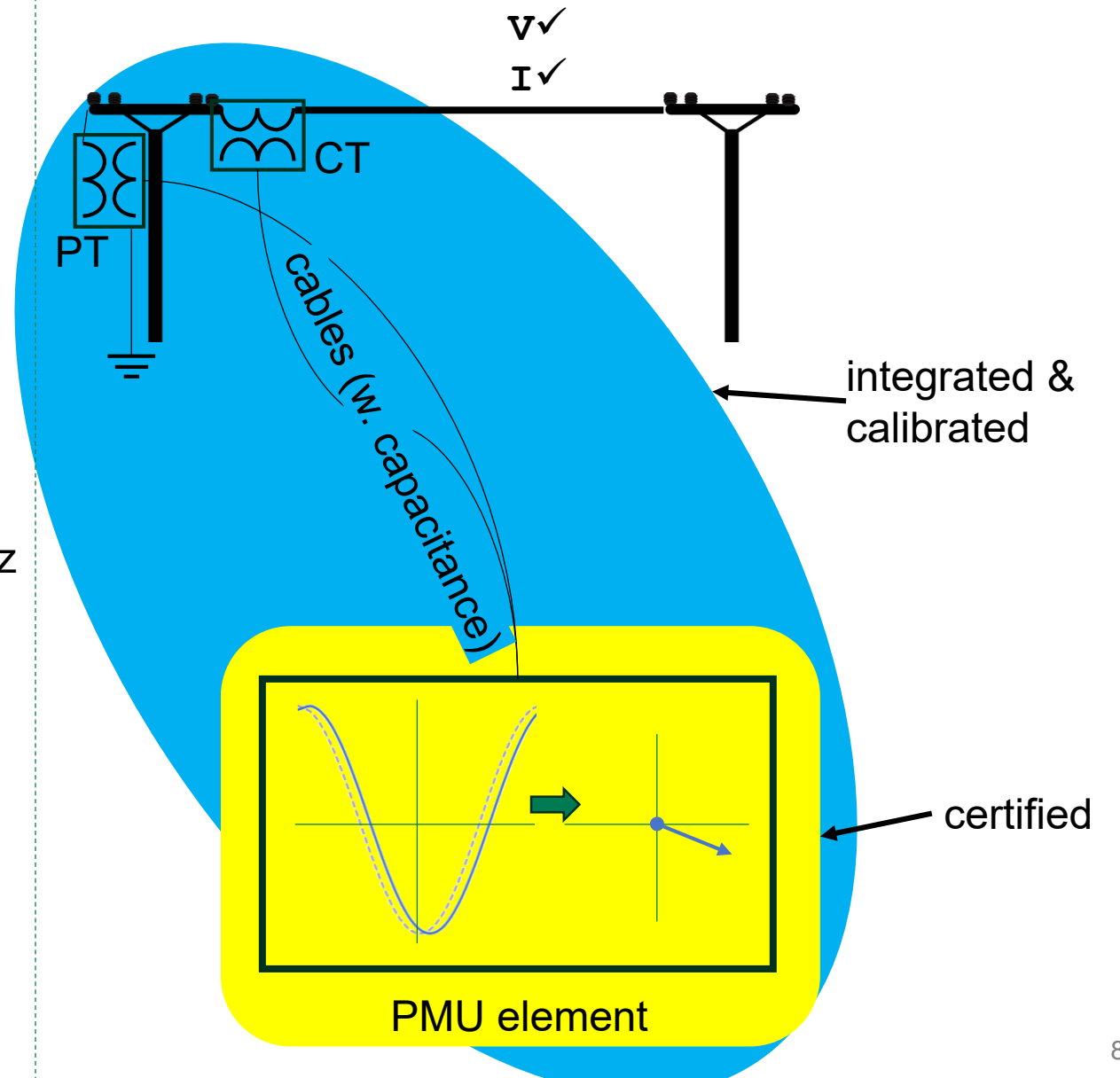
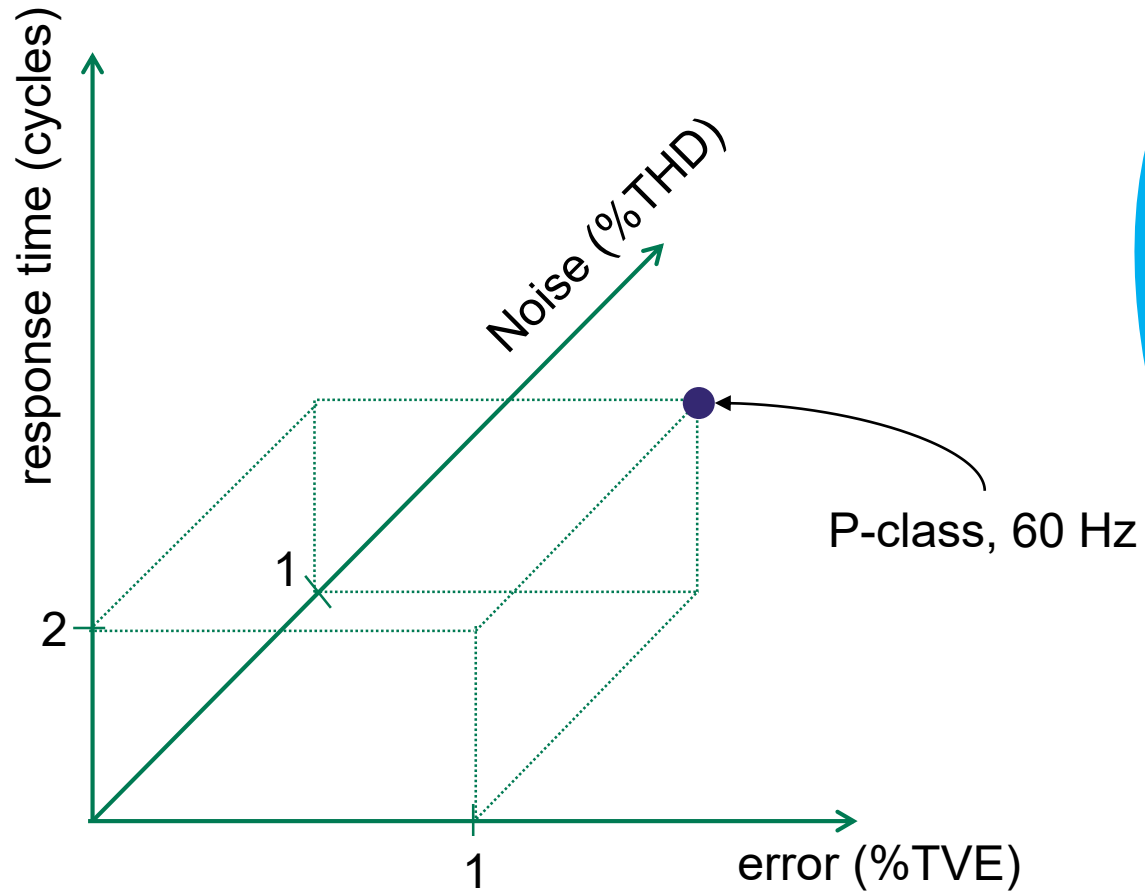


PMU element

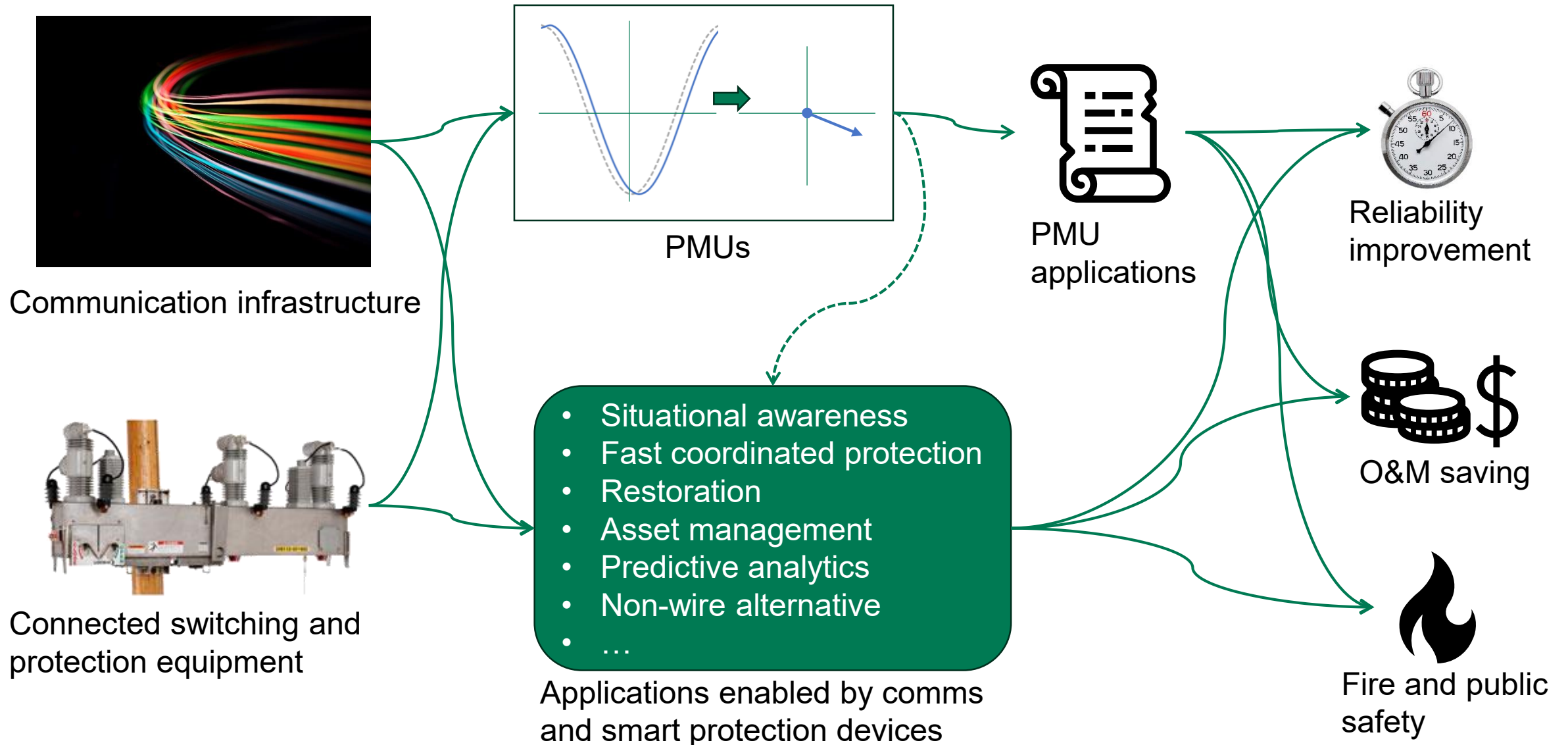
Not All PMUs Are the Same



Not All PMUs Are the Same



The Business Case for PMUs



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