

Host Utilities



Co - Host Utilities



ORGANIZER



India SMART UTILITY Week 2024

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समन्वय जयते
MINISTRY OF POWER
GOVERNMENT OF INDIA



समन्वय जयते
MINISTRY OF NEW AND
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GOVERNMENT OF INDIA



समन्वय जयते
MINISTRY OF POWER
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CENTRAL ELECTRICITY AUTHORITY

Session : Technologies for Decarbonization of Distribution Utilities

Digital Substation

Presented By

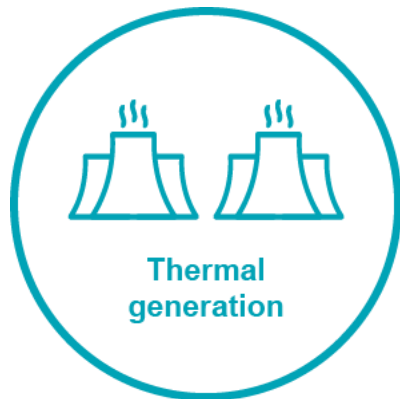
Nitin Mahajan, BD Manager, Synaptec

INTRODUCTION - Power Industry Challenge



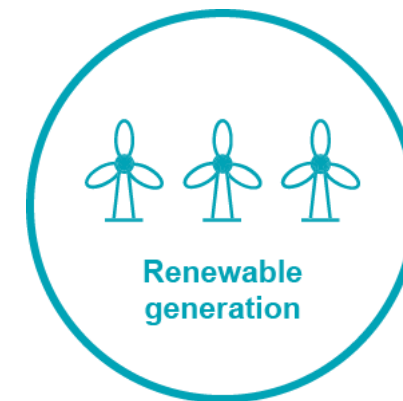
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Thermal
generation

Decarbonised, decentralised, & digitalised



Renewable
generation

Embrace renewables
Repurpose legacy infrastructure
Reduce cost
Safely optimise capacity



Without impacting

Availability / resiliency
Safety
Risk
Cost of energy

Requires more distributed measurements for better visibility and control

DES is a precision **measurement** technology that allows power system operators to **protect** and **monitor** their networks with unprecedented flexibility



Power supplies, copper wiring, active electronics



Dedicated data networking equipment cost



Available space in remote locations



Complex wide-area time synchronisation



Quick to install

Safely commissioned from a single location, requires no maintenance



Ultra-stable year-round

Simple and resilient sensors automatically adjust to environmental conditions



Synchronised

Measurements synchronised to within 1 μ s, & processed in under 200 μ s



Long distance

Easily compares multiple remote measurements across hard-to-reach locations



Cyber secure

Data is only produced in the safety of the substation environment

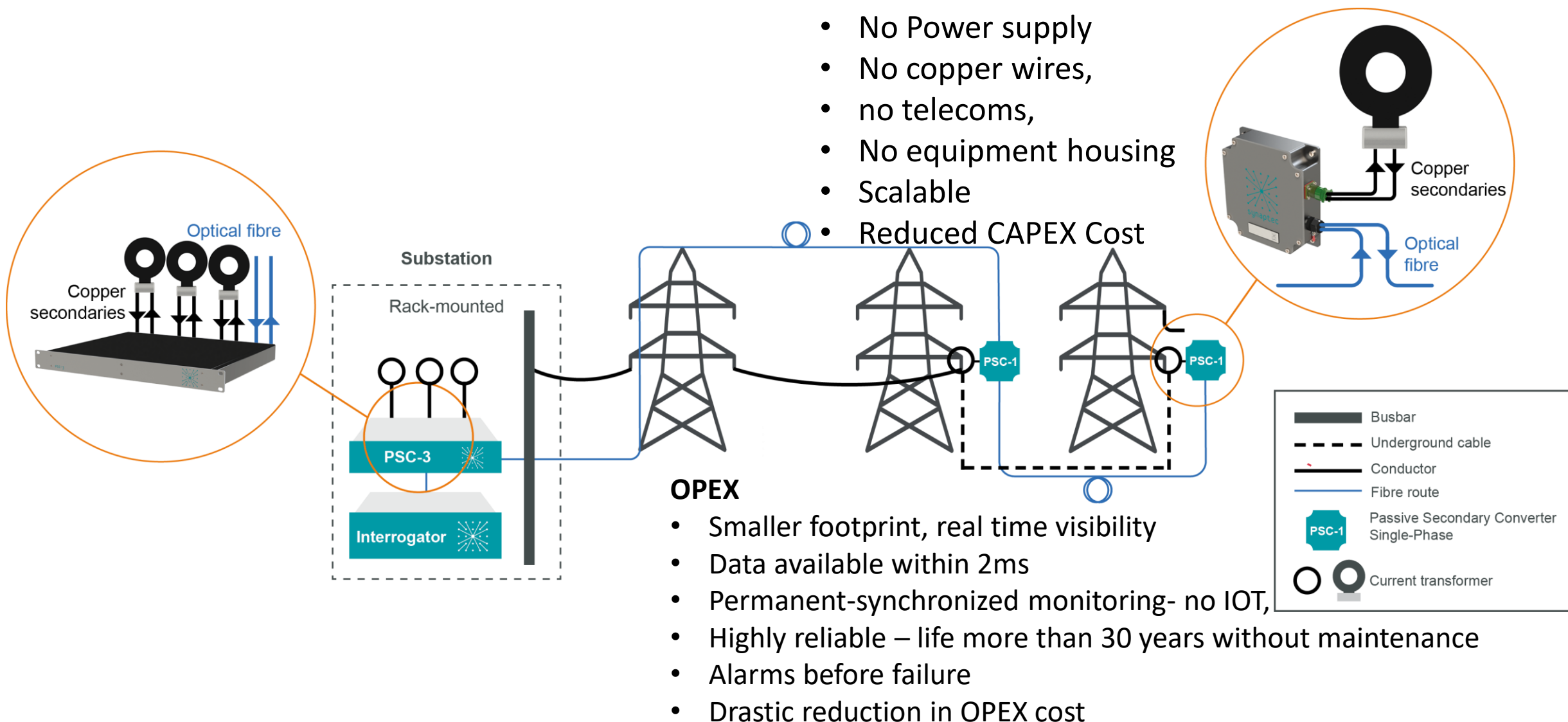


Passive

Uses existing optical fibre, enabling high-fidelity measurements of current and voltage

CPEX

- No Power supply
- No copper wires,
- no telecoms,
- No equipment housing
- Scalable
- Reduced CAPEX Cost



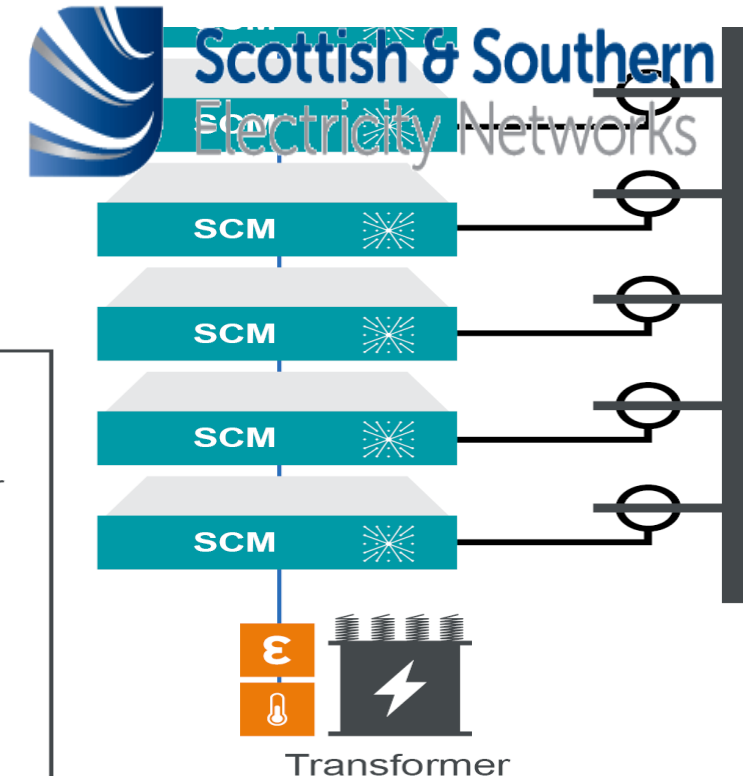
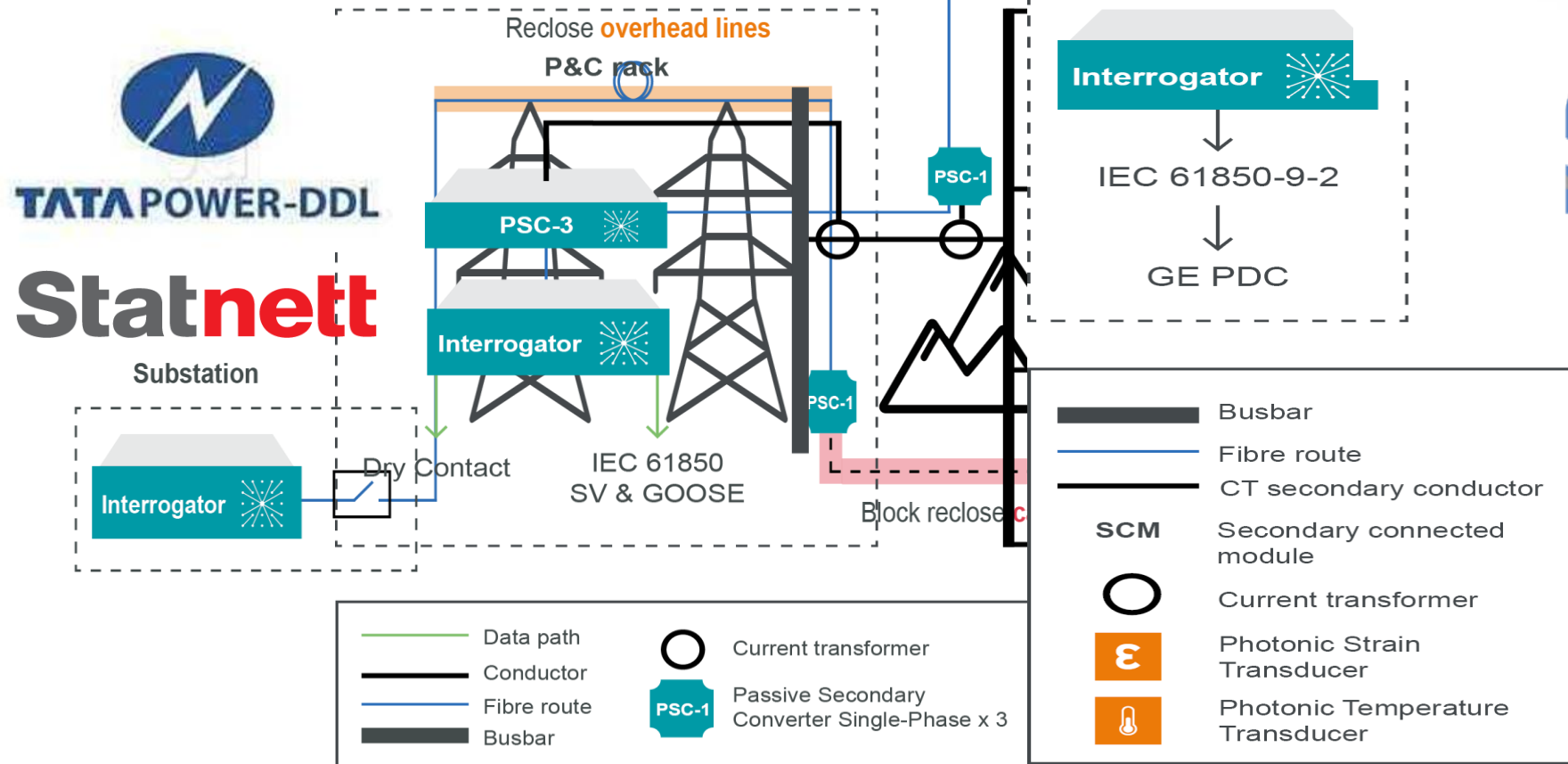
Applications



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1. Hybrid/mixed circuit protection – AR Block
2. Multi-ended system protection
3. Digital substation

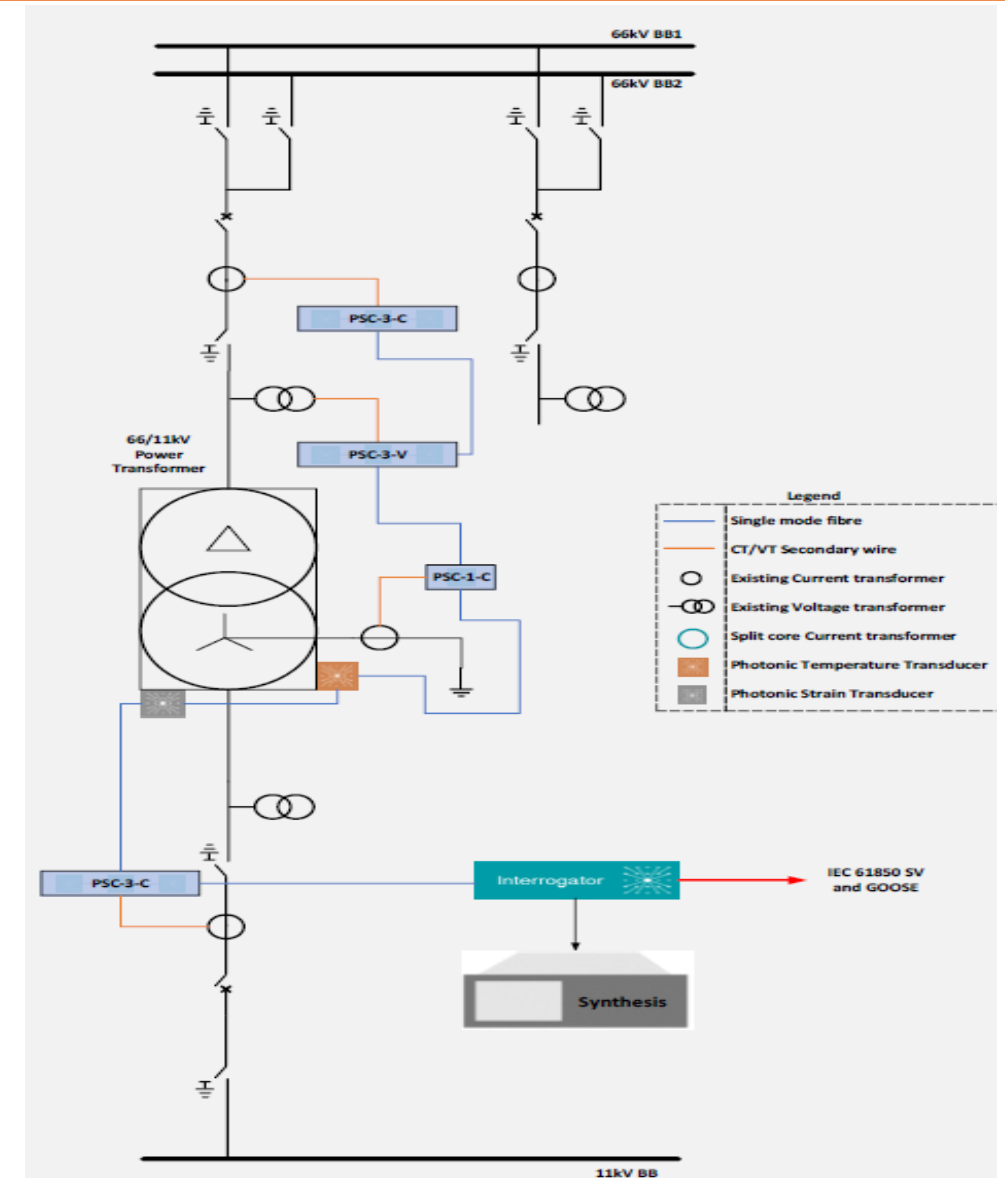




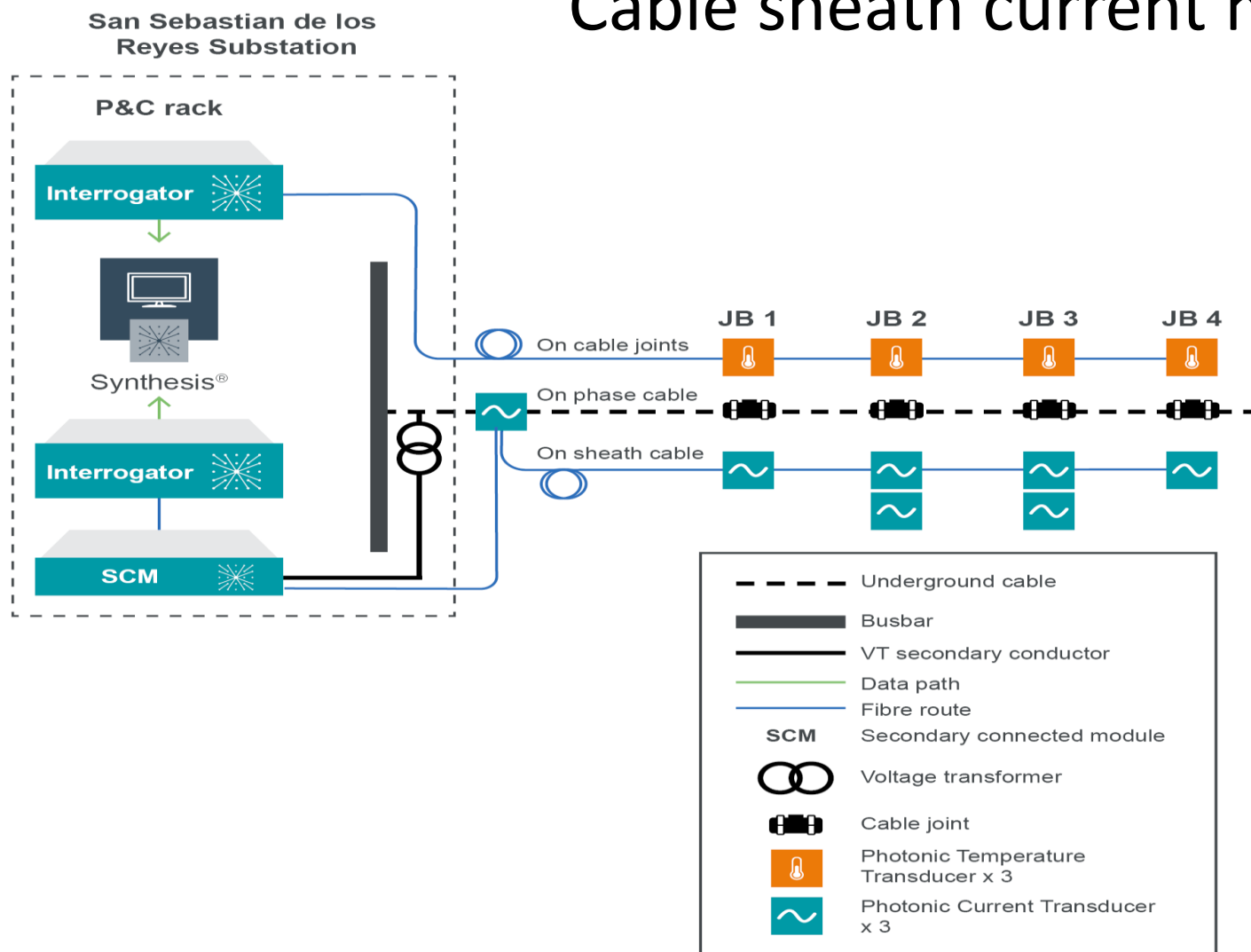
Synaptec Ltd. owes a big thanks...

- This demonstration project is being executed under the UK-India bilateral technical assistance programme - “Accelerating Smart Power and Renewable Energy in India” (ASPIRE), which is being implemented by FCDO, Govt of UK in association with the Ministry of Power, Government of India.
- Synaptec is collaborating with TPDDL for this demonstration project.
- KPMG is the implementation advisor to FCDO in relation to the ASPIRE Programme.

- TPDDL
 - Poorth Khurd 66/11kV substation
- Benefits:
 - Real time electrical and mechanical data acquisition
 - Correlation of data
 - Causal factors of issues/faults in s/s
 - Correlate electrical capacity to equipment health and vice versa
 - Remote substation / assets monitoring
- **TPDDL-Synaptec** collaboration is aimed at demonstrating benefits of digital sub stations. This collaboration is being implemented under the UK-India bilateral technical assistance programme - “Accelerating Smart Power and Renewable Energy in India” (ASPIRE).



Cable sheath current monitoring

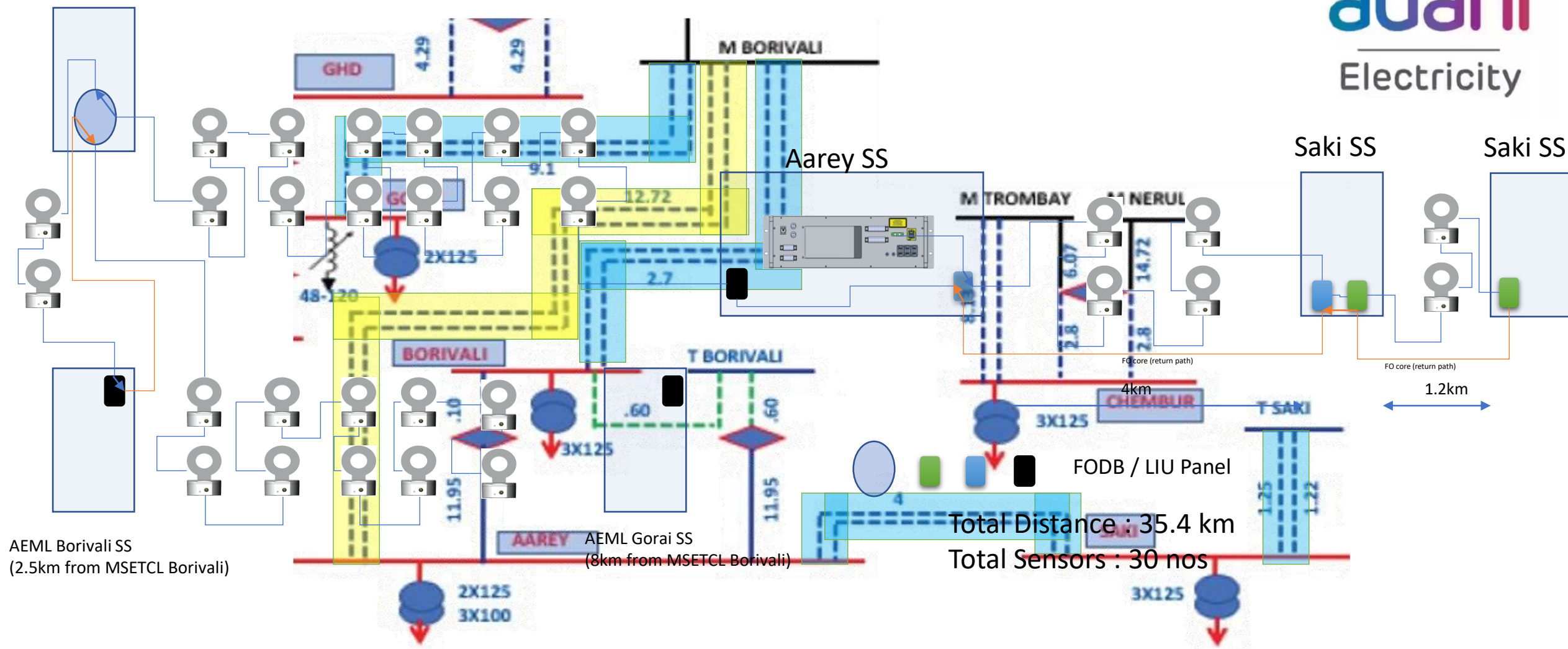


RED ELÉCTRICA
DE ESPAÑA

Cable sheath current monitoring



MSETCL Borivali SS (12km from Aarey)



KEY TAKEAWAYS / RECOMMENDATIONS



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Capex
Opex
Risk



Resiliency
Security
Safety
Control



- Wide area protection and control with no control power, data networks or expensive civil works
- Synchronous, scalable, permanent monitoring
- Earlier warning of more failure modes vs conventional technology
- Optimised scheduled maintenance

How does this help you?



THANK YOU

*For discussions/suggestions/queries email: **isuw@isuw.in***

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