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CONSEIL INTERNATIONAL DES GRANDS RESEAUX ELECTRIQUES
INTERNATIONAL COUNCIL ON LARGE ELECTRIC SYSTEMS

STUDY COMMITTEE D2
INFORMATION SYSTEMS AND TELECOMMUNICATION

2017 Colloquium
September 20 to 22, 2017
Moscow – RUSSIA

Preferential Subject N° - PS3

Evolving Telecommunications for Next Generation Power Systems

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Telecom Services, ESB Networks, operates a company owned and built telecommunications network within the Republic of Ireland. This network carries traditional serial SCADA , IP based SCADA, Energy Metering, Operational Telephony, Teleprotection and Differential Protection. The network also carries a number of distinct IP WANs including those for Hydro Station operation, Phase Measurement and Disturbance monitoring.

Services are provided to the Transmission System Operator (Eirgrid), the Distribution System Operator (ESB Networks) as well as ESB Generation and Wholesale Markets. ESB corporate WAN and Voice are also carried

This network has grown from a modest microwave based PDH core intended to meet the needs of the TSO and Generating stations and is now a large integrated fibre and microwave based network capable of natively carrying both SDH and IP traffic.

The reach of the network is further extended by availing of APNs and VPNs on public carriers to give connection to MV pole top reclosers and disconnects as well as various sensors including fault passage indicators.

The increasing demand for IP based applications, the multitude of smart grid applications and the need for greater geographical coverage is driving a new network iteration which will provide a scalable Operational IP infrastructure with separate (either physical, TDM or wavelength) TSO and DSO networks. This network will also continue to provide native SDH to support differential protection schemes and the various legacy applications which are expected to remain in use for some time.

A variety of conflicting parameters such as latency, bandwidth, resilience, time synchronisation distribution, security, geographical reach all need to be considered in the efficient deployment of suitably designed communication infrastructure for connecting traditional and new applications. Cost is also a factor in this deployment.

Extensive trials are taking place to establish the viability and technical suitability of various radio technologies to further extend network coverage and provide communication with devices and sensors on the MV and LV networks.



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The traditional TDM based network can no longer provide the bandwidth required for new higher bandwidth IP based applications such as Disturbance Recorders, Phasor Monitor Units, Energy meters etc. However there is an ongoing requirement to maintain the TDM network to cater for the traditional applications such as IEC101 SCADA and power line protection.

ESB Networks are deploying a new fibre based Core SDH network which will carry a high speed operational IP core network, the existing fibre based SDH network, and also the wider reaching operational IP aggregation network. The existing Core and Access Microwave radio network will also be interconnected to the Operational IP fibre network.

This Operational Core network will be the main back-bone network for all new applications that require connectivity within and beyond the HV substation.