



Presented by Victor Tan - Convener

Brisbane – 21/11/2019



cigre

For power system expertise

D2

**INFORMATION SYSTEMS
& TELECOMMUNICATION**



SC D2 Overview

Purpose

- Promote the interchange of technical knowledge, information and experience between all countries in the fields of power industry telecommunications, information and telecontrol systems. APD2 also provides a forum for information sharing and representation of local issues affecting its members.

Study Areas

- **Information Systems:** EPU-specific IS areas, asset management, customer relationship, smart meter systems, situational awareness
- **Cyber security:** Security policy and standards, securing EPU assets, technical security controls, risks and mitigation
- **Telecommunication:** Design, planning and operation of networks, optimising current technologies, emerging technologies, high availability, networks supporting time-sensitive and other EPU applications

2019 D2 Colloquium Helsinki

Helsinki, Finland; 11 – 14 June 2019

Around 150 participants

Areas of focus:

- Big data and machine learning
- Cyber security
- IoT



2019 D2 Colloquium Helsinki

- 42 Papers in the Helsinki Colloquium in the following areas:

Energy Transition Technologies

Big Data

Machine Learning

Cloud Computing

Cybersecurity

Threat Management

Security Assessment Tools

Cybersecurity maintenance

Blockchain Credential

Big Data for Cybersec

IoT

5G for Utilities

IoT Applications

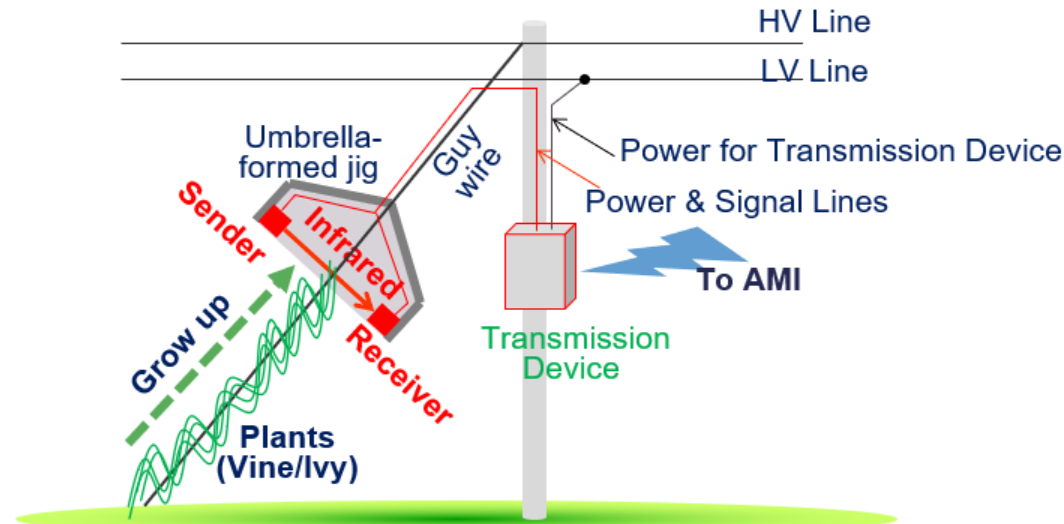
IoT Cybersecurity

2019 D2 Colloquium Helsinki

DETECTION OF CLIMBING PLANTS

8

- We attached an infrared sensor to the existing Umbrella-formed jig and connected to the transmission device



✓ We confirmed that we could remotely monitor the growth status of plants



Source: T. Kiuchi, T. Okabe, TEPCO Japan, D2 Colloquium 2019

2020 Paris Session (D2) – Areas of Focus

57 Paper abstracts approved

Emerging Technologies

Machine Learning & AI

IoT, Big Data, Analytics

Blockchain Applications

Cybersecurity

IoT, Big Data, Cloud challenges

DER

Threat Identification with Big Data and ML

Packet Switched Technologies

Migration to Packet Switched Networks

Integration of existing and new technologies

Time Critical Operational Services

Active Working Groups

WG	Title	Convenor	2019		2020		2021		2022	
			S1	S2	S1	S2	S1	S2	S1	S2
JWG C6/D2.32	Utilization of data from smart meter system	Y. MATSUURA (JP)								
WG D2.43	Enabling Software Defined Networking for EPU telecom applications	V. TAN (AU)								
WG D2.44	Usage of public or private wireless communication infrastructures for monitoring and maintenance of grid assets and facilities	P. MULVEY (IE)								
WG D2.45	Impact of governance regulations and constraints on EPU sensitive data distribution and location of data storage	H. KLIMA (AT)								
WG D2.46	Cybersecurity future threats and impact on EPU organizations and operations	D.K. HOLSTEIN (US)								
JWG B5/D2.67	Time in Communication Networks, Protection and Control Applications – Time Sources and Distribution Methods	R. DE VRIES (NL)								
JWG D2/C6.47	Advanced consumer side energy resource management systems	A.A. NEBERA (RU)								
JWG D2/C2.48	Enhanced information and data exchange to enable future transmission and distribution interoperability	G. TAYLOR (GB)								
JWG B2/D2.72	Condition Monitoring and Remote Sensing of Overhead Lines	A. KULKARNI (GB)								

Active Working Groups – Global D2 Contributors Distribution



Active Working Groups – AU D2 Contribution

Victor Tan (VTAN)

Greg Helps (Enet)

Louise Watts (SAPN)

WG	Title	Convenor	2019	2020	2021	2022
		Victor Tan (VTAN)			S1	S2
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Andrew Bain

Manoj Kumar (CommTel)

Benjamin Haines (Ausgrid)

Victor Tan (VTAN)

Publications

Technical Brochures and Publications

- Technical Brochure published since August 2018
 - TB 762 “Remote Service Security Requirement Objectives”
 - TB 746 “Design, Deployment, and Maintenance of Optical Cables associated to Overhead HV Transmission Lines”
- Technical Brochure published in 2019
 - TB 782 “Utilization of Data from Smart Meter System”

2019 Australia D2 Activities

Australia D2 Panel Meeting held in TasNetworks, Hobart : 24 – 26 July 2019.

- 24 attendees
- 4 guest speakers from TasNetworks, Keysight, CommTel and Nozomi



2019 Australia D2 Activities

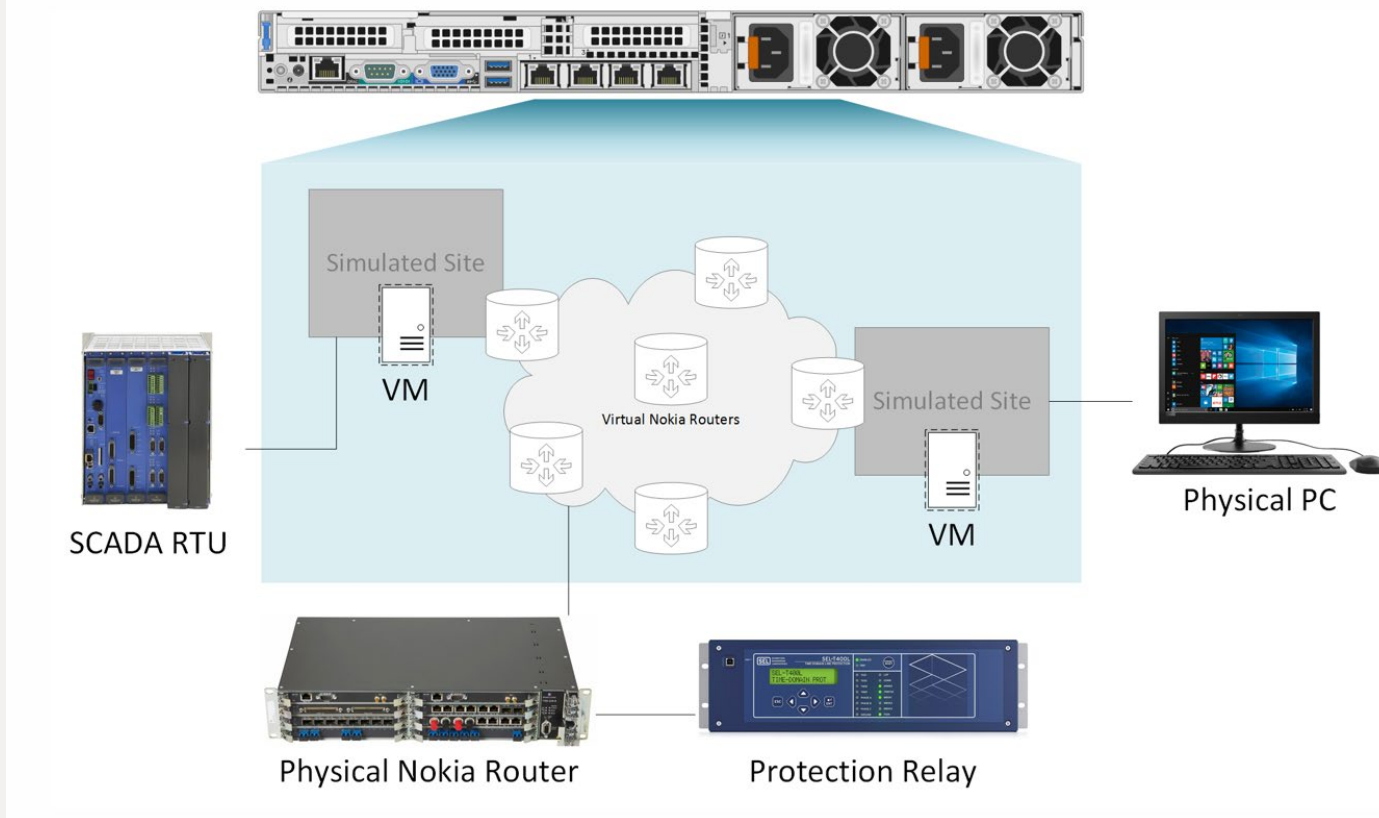
- Some of the presentation and discussion topics:
 - ✓ **Cybersecurity**
 - ✓ **Dealing with legacy infrastructure and equipment obsolescence**
 - ✓ **IoT, 4G, 5G**
 - ✓ **MPLS**
 - ✓ **Fire planning issues for Telecommunications equipment/site**
 - ✓ **Strategy Development**
 - ✓ **Impact of restructure on Telecommunication operations**
 - ✓ **...and many many more**



2019 Australia D2 Activities

- Example presentation – Power Utility Telecommunications Lab

IP/MPLS Network Virtual Lab



2019 Australia D2 Activities

- Panel member survey on the following topics:
 - ✓ **Battery technology**
 - ✓ **Teleprotection over Ethernet**
 - ✓ **Telecommunications Technology Mix in OT**
 - ✓ **Use of AI/Machine Learning in Cybersecurity**
 - ✓ **Use of radio and cellular services in distribution networks**
 - ✓ **PPE (personal protective equipment) policy**
 - ✓ **AMI planning and implementation**

You	Stage (No plan / Early planning / Trial / Production)	Transport Tech (T/T, MPLS, SDH, DWDM, PDH, MPLS-TP, etc)	Prot scheme (Point-to-point, multipt, dict km)
PWC	TRIAL	IP/MPLS	POINT-TO-POINT
NESTOR POWER	TRIAL	MPLS-TP	POINT-TO-POINT
ENET	TRIAL	IP/MPLS	PTP / Multipt
TRANSGRID	EARLY PLANNING	MPLS-TP	PTP / Multipt
ENERGY OLD	TESTING	IP/MPLS	PTP / Multipt.
TURNER	No PLAN		
Euroenergy	2 links in service		
Genesys	Early planning		
Tele (Foster Gm)	Design in progress		
ET POWERLINKS	AGREED MIGRATION FROM SDH/PDH 30 LINKS MIGRATED TO DATE + PROPOSED 30 IN 2015		
POWERLINK	NO		

What is the transport tool. mix for what in your org?	C.T. N.T.
You	Multiple choice of: SDH, PDH, MPLS-TP, Carrier 4G, private collection for set of 4G, microwave, others? , UHF?
TRANSMITTER	SDH, PDH, CARRIER, MW, UHF MPLS-TP (soon to be)
RECEIVER	SDH / PDH, CARRIER, IP/MPLS MW
POWER	PDH / SDH / MPLS-TP, MICROWAVE,
	SDH, PDH, MW, UHF, IP/MPLS, LTE
BT	SDH / PDH, 3G, UHF, CARRIER WAVE 700
energy	IP / MPLS, 3G/4G, UHF
analysis	PDH, UHF, SAT, MW, TP, G
3G/4G	IP/MPLS, PDH, SDH, 3G/4G MPLS, SINGLE-CELL MICROWAVE, UHF, COPPER RING CABLE, FIBRE
AREA NETWORKS	PDH, SDH, IP/MPLS, UHF, CARRIER SDH / 3G/4G, MICROWAVE, PLDT, FIBRE
RELAY	DWDM / SDH
WAVELENGTH	PDH / SDH, IP/MPLS

PPE POLICY FOR TELCO GROUP	
PAOLO	
YOU	WHAT IS YOUR PPE POLICY? HOW DOES IT AFFECT YOUR WORK GROUP?
TASKNET WORKS	<p>TELCO SITE - STEEL CAP BOOTS. HELMET & HEAVY WORK CLOTHING & TOOLS WORKS. (HANDS...)</p> <p>CLASSICS / COACHES - ROSE ASSIGNMENT</p> <p>POWER SYSTEM - BOOTS / HELMET / HEAVY / CLASSICS</p> <p>WORK W/ W/TH IT. MINOR SEVERAL FOR NMS ARC-FLASH</p>
SAPN	<p>LONG SLEEVE H/HS SHIRT / LONG TROUSERS</p> <p>STEEL CAP & HIGH SIDE BOOTS, HELMET, SAFETY GL</p>
WRIGHT GLD	<p>LONGS SITES - STEEL CAPED BOOTS, LONG SLEEVES / BOOTS</p> <p>HEAD HAT, 10 VIS, GOGGLES BASED ON RISK ASSESSMENT.</p>
EVERLINK	SARIVE
onegis	<p>Common Sites: Boots, Viz Vests, Long sleeves</p> <p>Safety glasses when needed.</p> <p>Other : where needed add o'ally, had hat</p>
STEAN POWER	<p>SAME AS POWERLINK /</p> <p>ECSLD.</p>

[illegible]

2019 Australia D2 Activities

- Site visit on the last day to a Telecommunication site



Looking Forward

2020:

- July – Australia D2 Panel meeting (venue TBD)
- August – Paris Session

2021:

- July – Australia D2 Panel meeting (venue TBD)
- Oct – Kyoto - Symposium (C6, C2, C2, C5, D2)
ACtive Distribution Network Planning, Operation
and Control