



Australia
AP B5
SEAPAC 2009

S17 Engineering IEC 61850 Rod Hughes

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Engineering IEC 61850



Engineering process

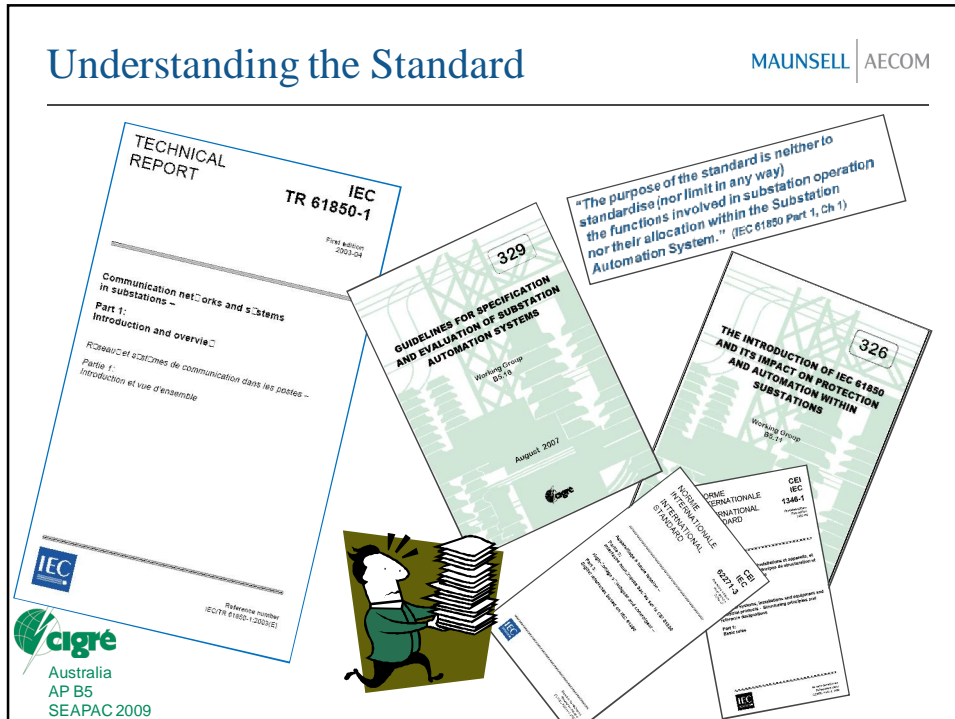
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- Not just buying compliance
- Design management
- Design approval
- Testing processes
- Using GOOSE



Understanding the Standard

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IEC 61850 Part 7 Table 1

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	Part 1	Part 5	Part 7-1	Part 7-2	Part 7-3	Part 7-4	Part 6	Part 8-1, 9-x
	Introduction	Requirements	Principles	ACSI	CDC	LN	SCL	mapping to MMS
UTILITY								
Manager								
Engineer								
VENDOR								
Application Engineer								
Communication Engineer								
Product Manager								
Marketing								
CONSULTANT								
Application Engineer								
Communication Engineer								
others								

important		
partly important		
minor importance		

Interoperability

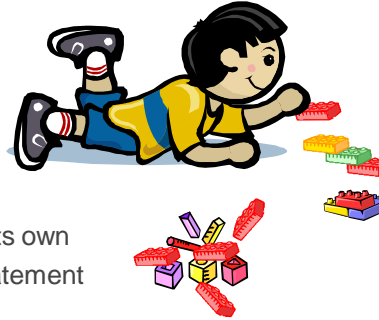
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1Amp CT, 1Amp relay
10P100 F20 = 5VA 10P 20
- AS 1675 or AS 60044

NOT PLUG & PLAY

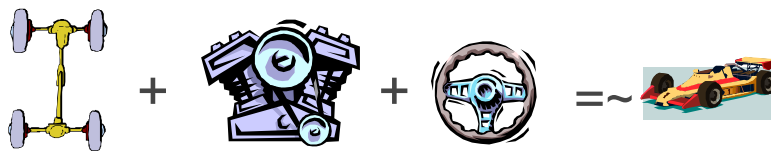
ENGINEER & PLUG IN

- Conformance Certificate not sufficient on its own
- Protocol Implementation Conformance Statement



Being Capable

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National Electricity Rules

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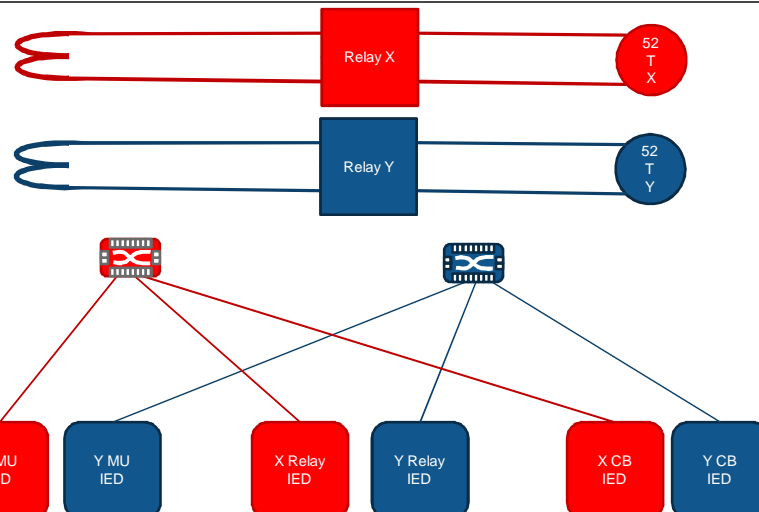
S5.1.9 Protection systems and fault clearance times Network Users

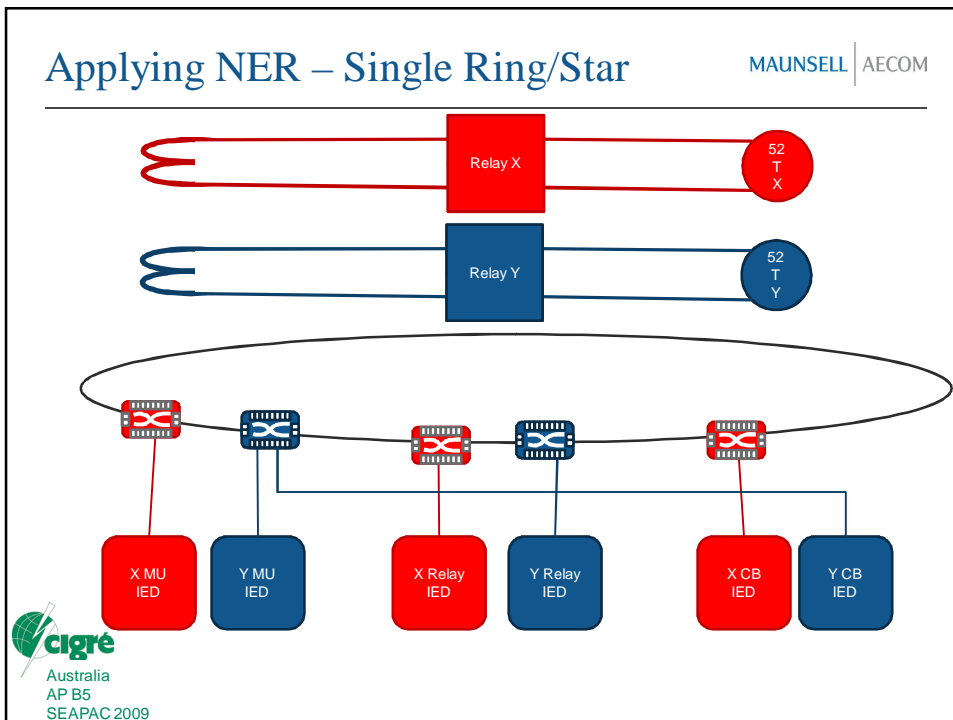
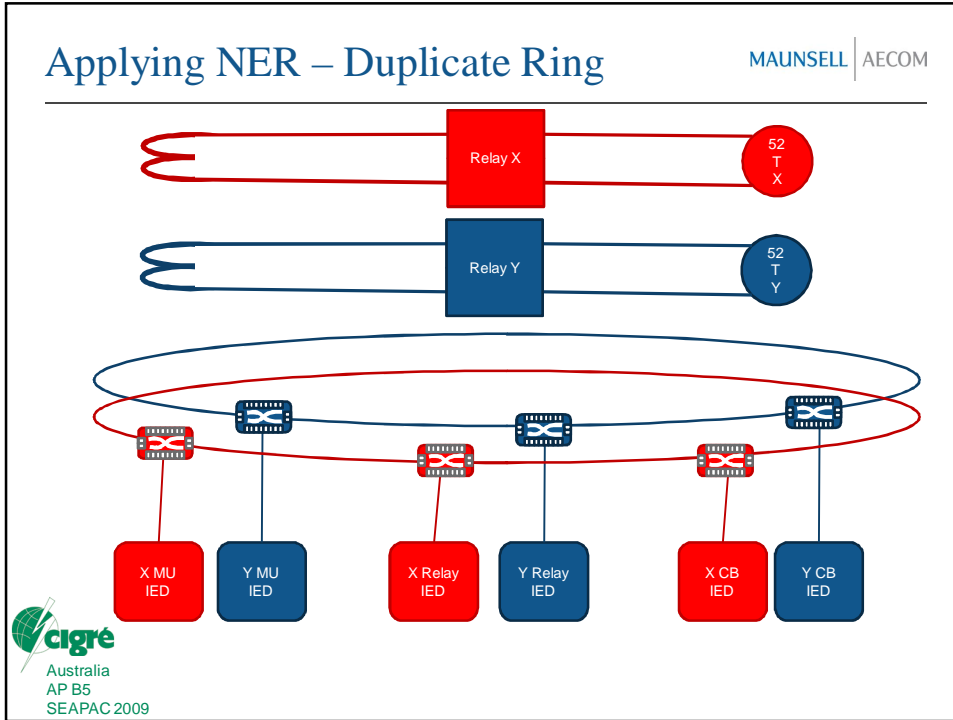
- “(d) If the fault clearance time determined under clause S5.1.9(e) of a primary protection system for a two phase to ground short circuit fault is less than 10 seconds, **the primary protection system must have sufficient redundancy** to ensure that it can clear short circuit faults of any fault type within the relevant fault clearance time **with any single protection element (including any communications facility upon which the protection system depends) out of service.**”

**Failure or abnormality of any one element
should not stop the other system working**

Applying NER – Duplicate Star

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SSD and SCD

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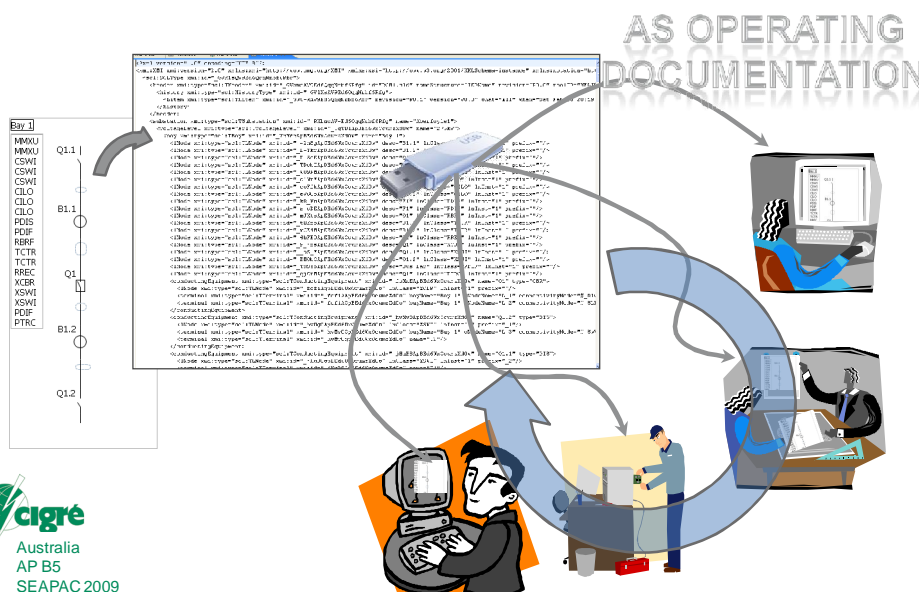
- Master design
- Reusable
- Link all primary plant and secondary equipment
- All functions, schemes and communication
- Combination of all electrical drawings
- Integrates device template ICD
- Creates CID
- Feedback in IID



SSD	System Specification Description
SCD	System Configuration Description
ICD	IED Capability Description
CID	Configured IED Description
IID	Instantiated IED Description

Integrated XML Design Files

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GOOSE

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- Collation of essential information
- Reports
- Commands
- Reusable design
 - Reduced retesting



Generic Object Oriented Substation Event

Engineering into IEC 61850

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- Understand what it is
- Develop new skills and domains of knowledge
- Apply our conventional wisdom
- Leverage experience

