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Limitations of Applying IEC 61850

Paper Reference
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The promise of IEC 61850 is NOT



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- a solution to World Peace and Hunger!!

- plug and play
 - blind interoperability

- interchangeability



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What it is



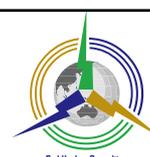
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- Configuration of the functions that need to communicate between devices
- Internal logics aren't communicating externally
 - Inputs to and outputs from may well need to communicate



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Expectation Rule ⁽¹⁾



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- **Don't expect to get what you haven't specified**
 - Functional Detail is Essential
 - Data structure and content
 - Logical Devices
 - Logical Nodes
 - Data Objects
 - Data Attributes
 - Data sets of information:
 - Fixed
 - Configurable (at engineering stage)
 - Dynamic (whilst in service)



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Expectation Rule (2)



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- Naming Conventions
- Operational/ Maintenance facilities
- Network Architecture
 - Reliability (careful what you wish for)
 - Maintainability
 - Traffic segregation, priority, performance
- Cyber security
- Function implementation
 - Multiple cats, multiple ways to skin
 - CIGRE WG B5.36 (Technical Brochure ~ August 2013)
- Engineering Tools
- Engineering process
- Documentation formats



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Not "just"



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<ul style="list-style-type: none">• Protection• SCADA <p>Also</p> <ul style="list-style-type: none">• Condition Monitoring• Disturbance Recording (COMTRADE)• Event Recording (COMFEED)• Synchrophasors	<ul style="list-style-type: none">• Metering<ul style="list-style-type: none">○ Power Quality○ Revenue• Distribution Management Systems<ul style="list-style-type: none">○ Scheduling○ Restoration• Electric Vehicles
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Is it future enabled?



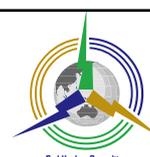
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- Device specific CID/IID cannot be used by other devices!
 - CID/IID produced by vendor specific tool
 - Not necessarily used by the IED at all
- Need SCD file
 - Multiple SCD (aka CID) not necessarily helpful
 - Highly preferable SSD as start



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The opportunity



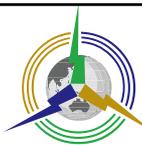
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- 7-3 Edition 2 – more CDCs
- T group expands the domain
 - Water
 - Gas
 - Industrial
 -
 - Flying a plane
- A matrix of Editions
 - Some Ed1, some Ed2, some Ed2.x, some Ed3



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Skills, Process, Ultimate Objective



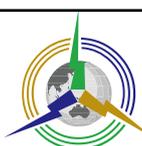
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- multiple engineers
- in multiple departments
- in multiple organisations
- over multiple phases
- in multiple primary and secondary projects
- coherently deployed over the next 100 years
- incorporating hundreds of functions,
- dozens of different IED box types
- from dozens of different vendors
- **to enhance reliability, reduces risks and is Reusable Engineering.**



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Thank You



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Hold that thought for question time at the end of this session