SETTING DEVICE AND FUNCTIONS UNDER TEST
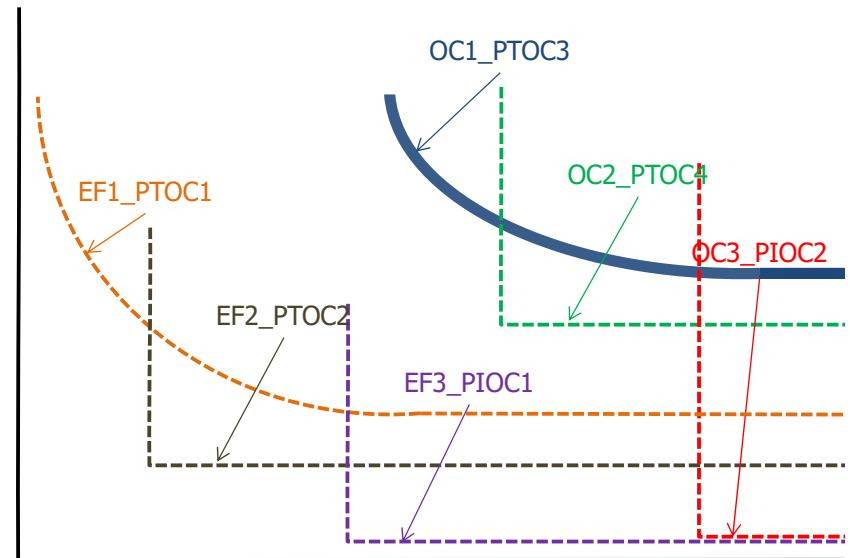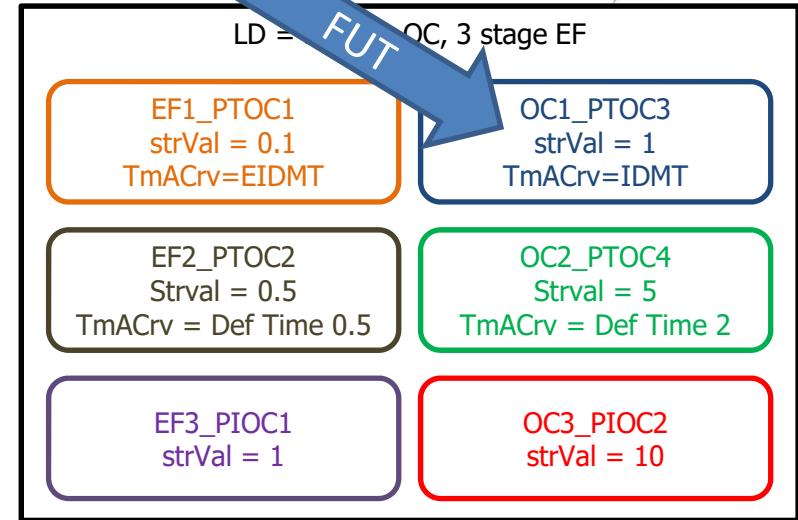
PS 2 , Q2.6
Rod Hughes (AU)
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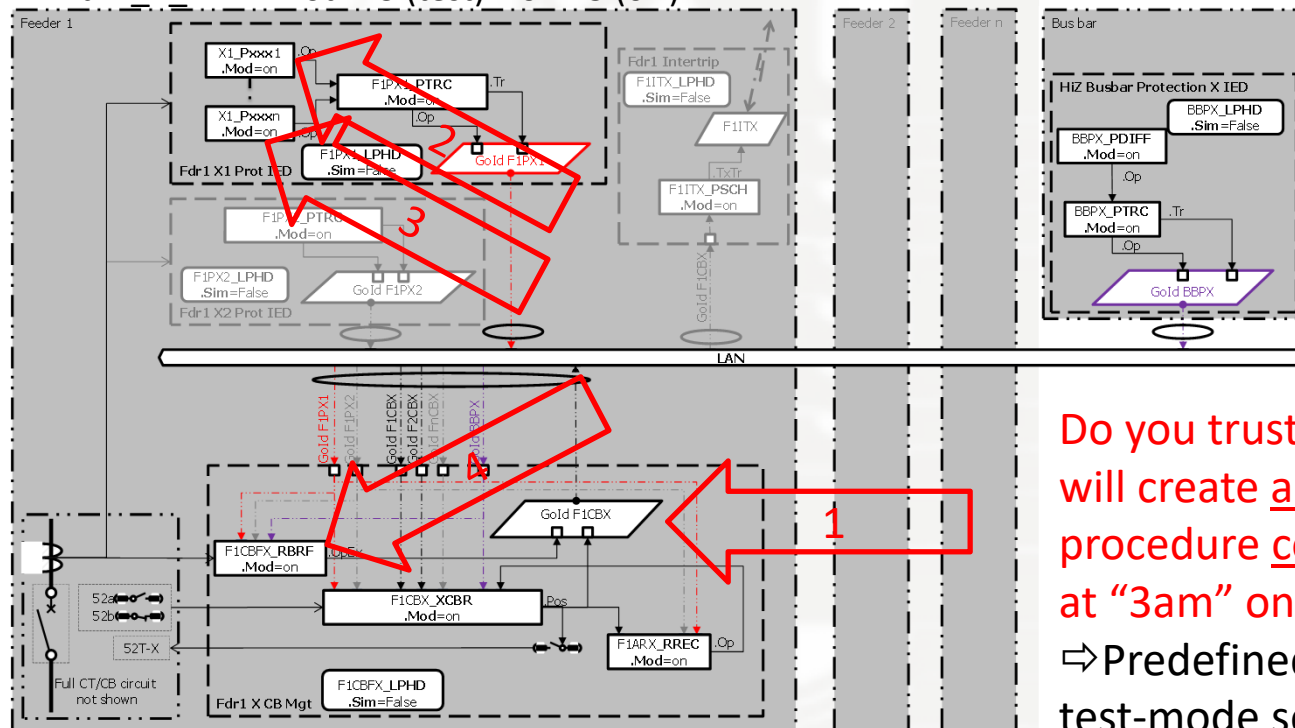rodney.hughes@ghd.com

presented by Peter Bishop
CIGRE AU B5 Convenor

- CIGRE AU SEAPAC 2015 :
  - Four different proprietary solutions 🙁
  - More in earlier SEAPAC
- Frequent approach is a single push button on IED front panel to: "Isolate GOOSE", a few use station HMI screen
  - Note: we don't isolate wires, so why isolate GOOSE?
    - Isolating GOOSE is like disconnecting the fibre!

- We should **isolate functions**!!
  - Need to test individual elements of multifunction IED means
    - Leave FUT OC1_PTOC3 working with certain modified behaviours (e.g. no physical trip)
    - Completely turning off certain other elements : OC2_PTOC4, OC3_PIOC4, EF1_PTOC1, EF2_PTOC2, EF3_PIOC1
    - Controlling how the **OTHER IEDs** behave when receiving messages from DUT/FUT

LD = ___ OC, 3 stage EF   FUT

EF1_PTOC1
strVal = 0.1
TmACrv=EIDMT

OC1_PTOC3
strVal = 1
TmACrv=IDMT

EF2_PTOC2
Strval = 0.5
TmACrv = Def Time 0.5

OC2_PTOC4
Strval = 5
TmACrv = Def Time 2

EF3_PIOC1
strVal = 1

OC3_PIOC2
strVal = 10

OC1_PTOC3

OC2_PTOC4

OC3_PIOC2

EF1_PTOC1

EF2_PTOC2

EF3_PIOC1

Can now test full curve of OC1_PTOC3

- Quality ".q" has multiple bits defined in IEC 61850-7-3
- IEC 61850-7-4 Ed2 Annex A **PLUS** revision according to TISSUE 1331 !!!
- Feeder 1 has X and Y protection, feeder is in service, CB closed
  - Testing Feeder1 X Protection MUST NOT TRIP CB
  - Do trip CB for receipt of other Feeder CB Fail operation
  - Do trip CB for receipt of Busbar Prot operation

- Send MMS command to Fdr1 X CB Management IED
  1. Fdr1_X_XCBR.Mod = 2 (blocked) no trip output if incoming message has .q12 = 1
- Send MMS commands to Fdr1 Protection IEDs
  2. Fdr1_X_OC1_PTOC3.Mod = 3 (test) GOOSE issued with .q12 = 1
  3. .Mod = 5 (off) for X prot OC2_PTOC4, OC3_PIOC4, EF1_PTOC1, EF2_PTOC2, EF3_PIOC1
  4. Fdr1_X_RBRF.Mod = 3 (test)   or = 5 (off)

Do you trust the technicians will create <u>and follow</u> this procedure <u>correctly</u> at "3am" on-site?
⇨ Predefined & Automated test-mode sequencing!