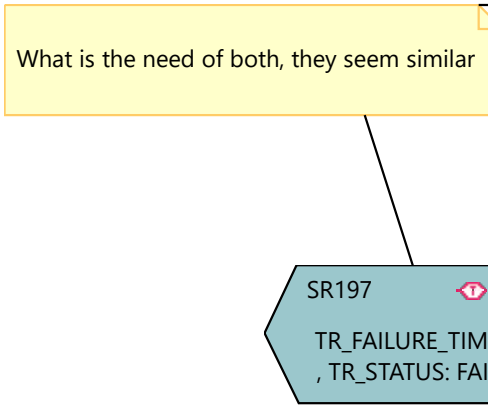
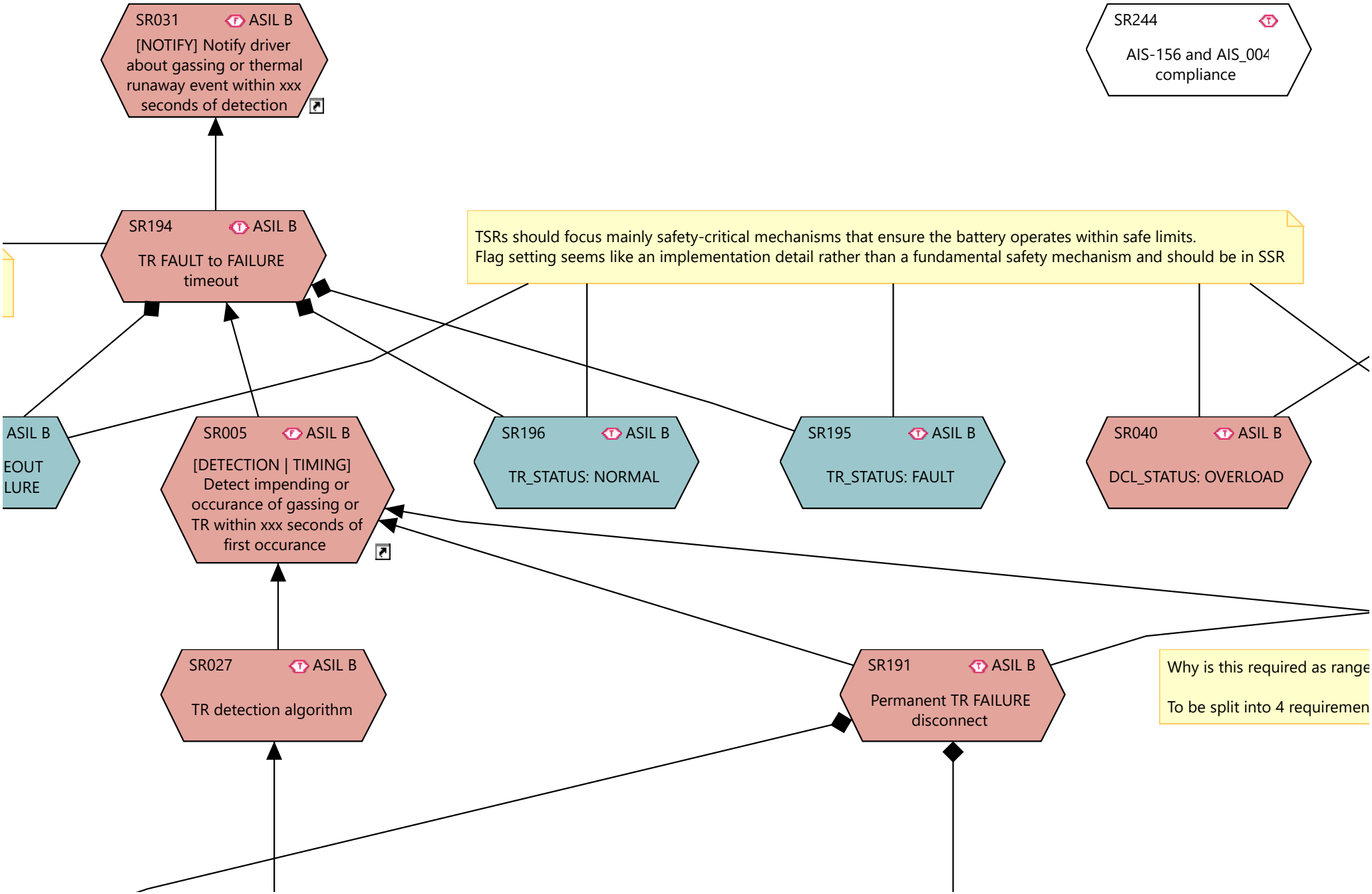
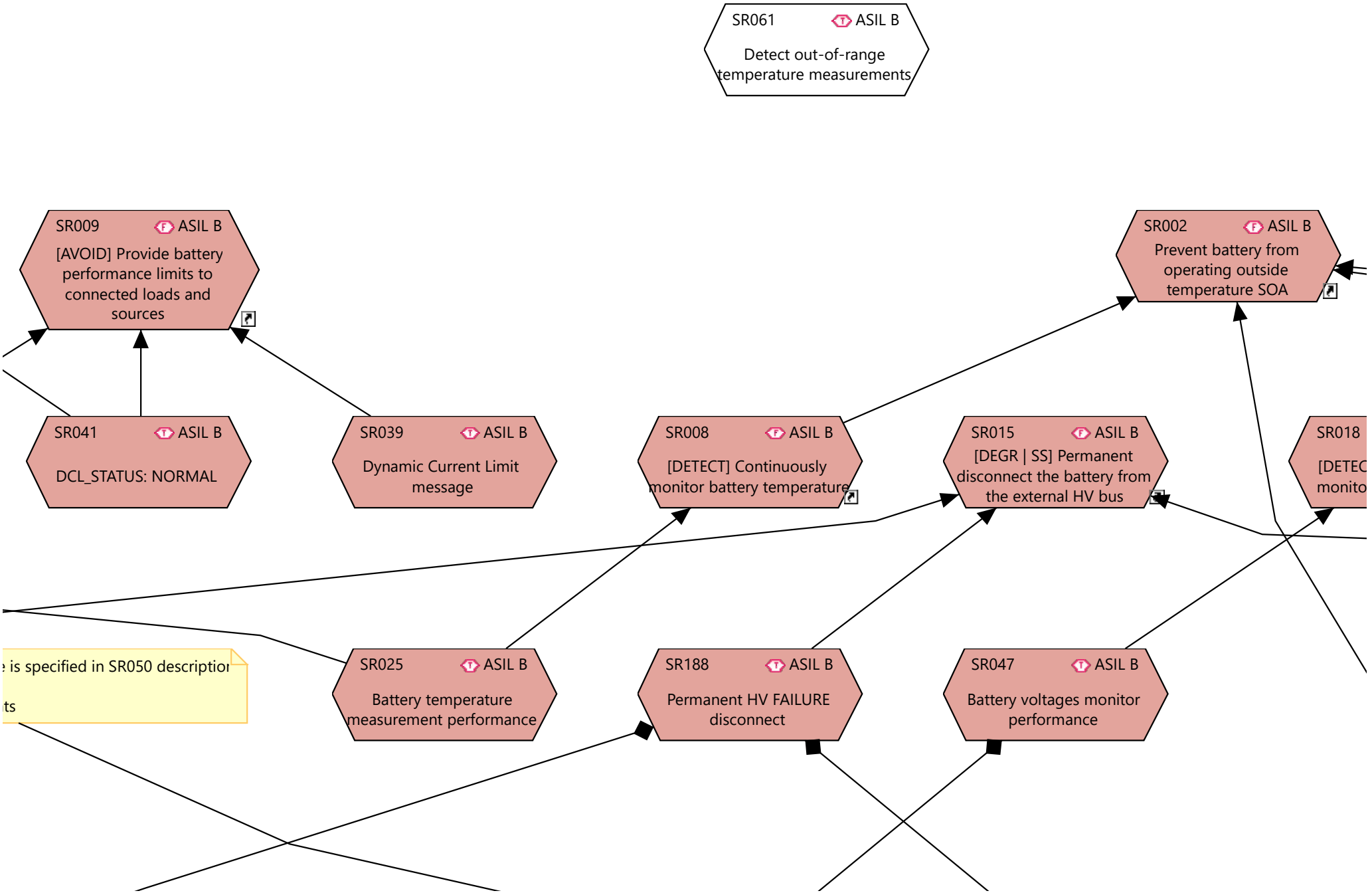
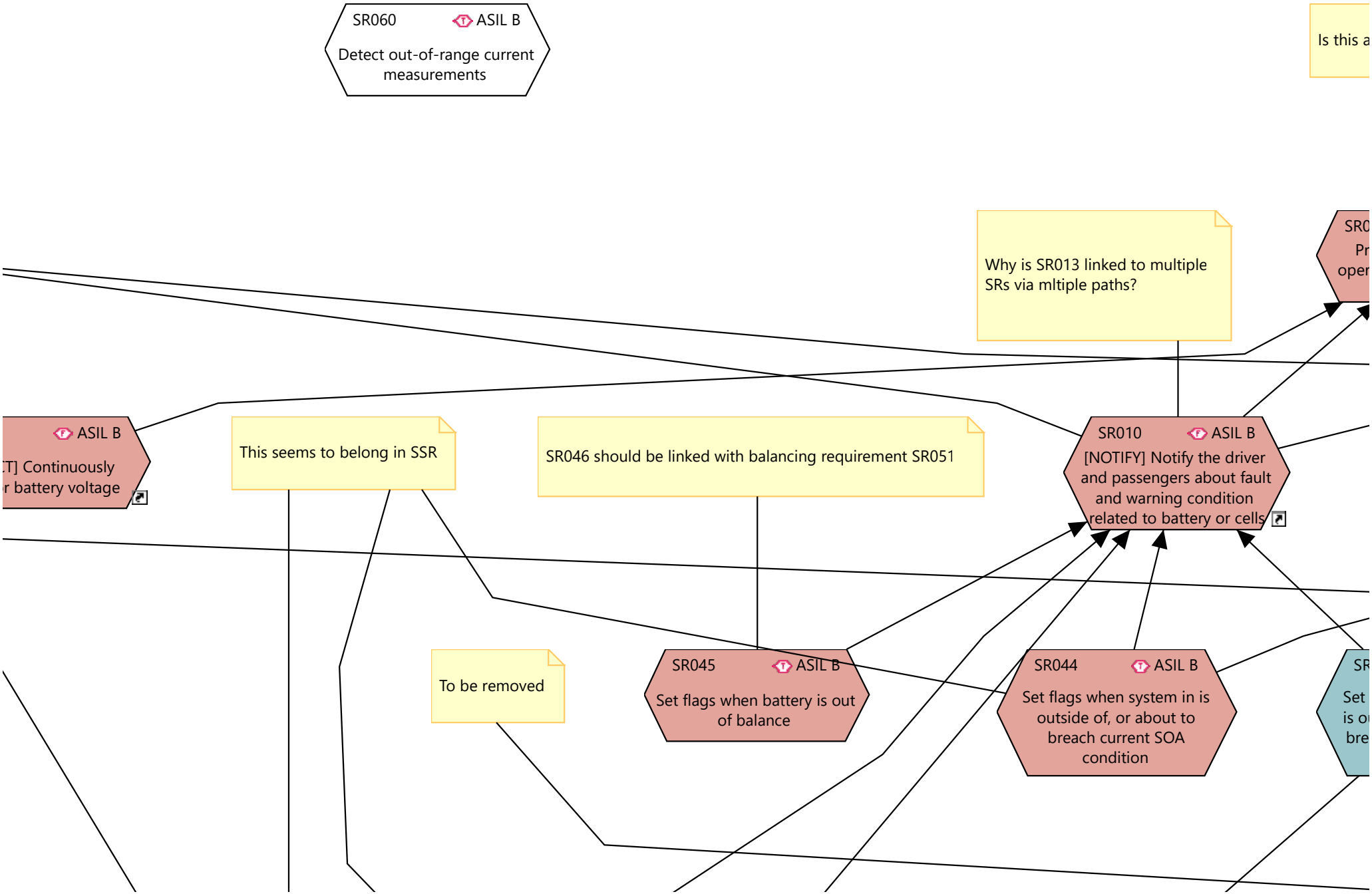

What is the need of both, they seem similar
SR197
TR_FAILURE_TIM
, TR_STATUS: FAI


SR031
ASIL B
[NOTIFY] Notify driver about gassing or thermal runaway event within xxx seconds of detection
SR244
AIS-156 and AIS_004 compliance
SR194
ASIL B
TR FAULT to FAILURE timeout
TSRs should focus mainly safety-critical mechanisms that ensure the battery operates within safe limits.
Flag setting seems like an implementation detail rather than a fundamental safety mechanism and should be in SSR
ASIL B
EOUT
LURE
SR005
ASIL B
[DETECTION | TIMING] Detect impending or occurance of gassing or TR within xxx seconds of first occurance
SR196
ASIL B
TR_STATUS: NORMAL
SR195
ASIL B
TR_STATUS: FAULT
SR040
ASIL B
DCL_STATUS: OVERLOAD
SR027
ASIL B
TR detection algorithm
SR191
ASIL B
Permanent TR FAILURE disconnect
Why is this required as range
To be split into 4 requiremen

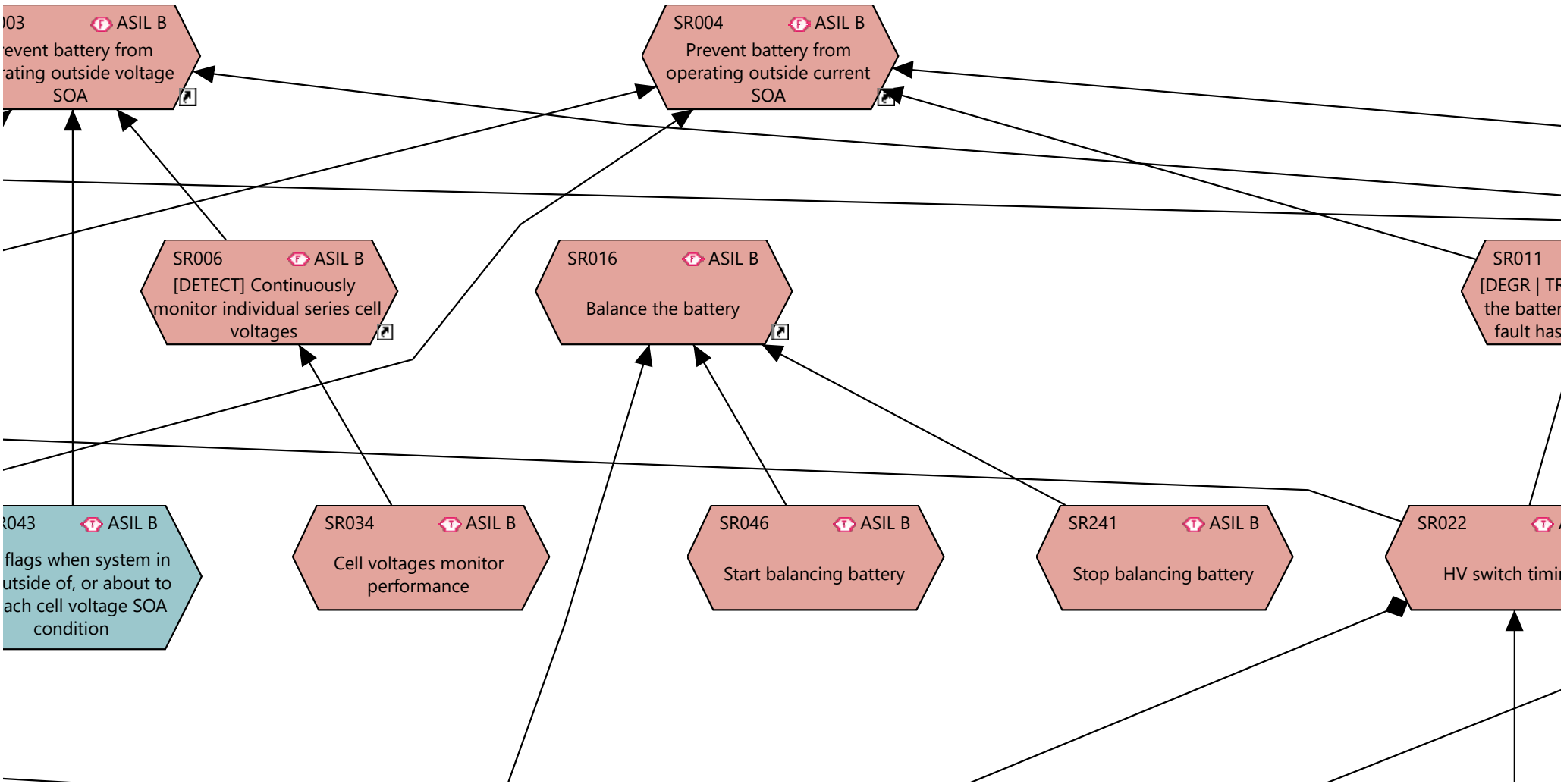

SR061
ASIL B
Detect out-of-range temperature measurements
SR009
ASIL B
[AVOID] Provide battery performance limits to connected loads and sources
SR002
ASIL B
Prevent battery from operating outside temperature SOA
SR041
ASIL B
DCL_STATUS: NORMAL
SR039
ASIL B
Dynamic Current Limit message
SR008
ASIL B
[DETECT] Continuously monitor battery temperature
SR015
ASIL B
[DEGR | SS] Permanent disconnect the battery from the external HV bus
SR018
is specified in SR050 description
ts
SR025
ASIL B
Battery temperature measurement performance
SR188
ASIL B
Permanent HV FAILURE disconnect
SR047
ASIL B
Battery voltages monitor performance

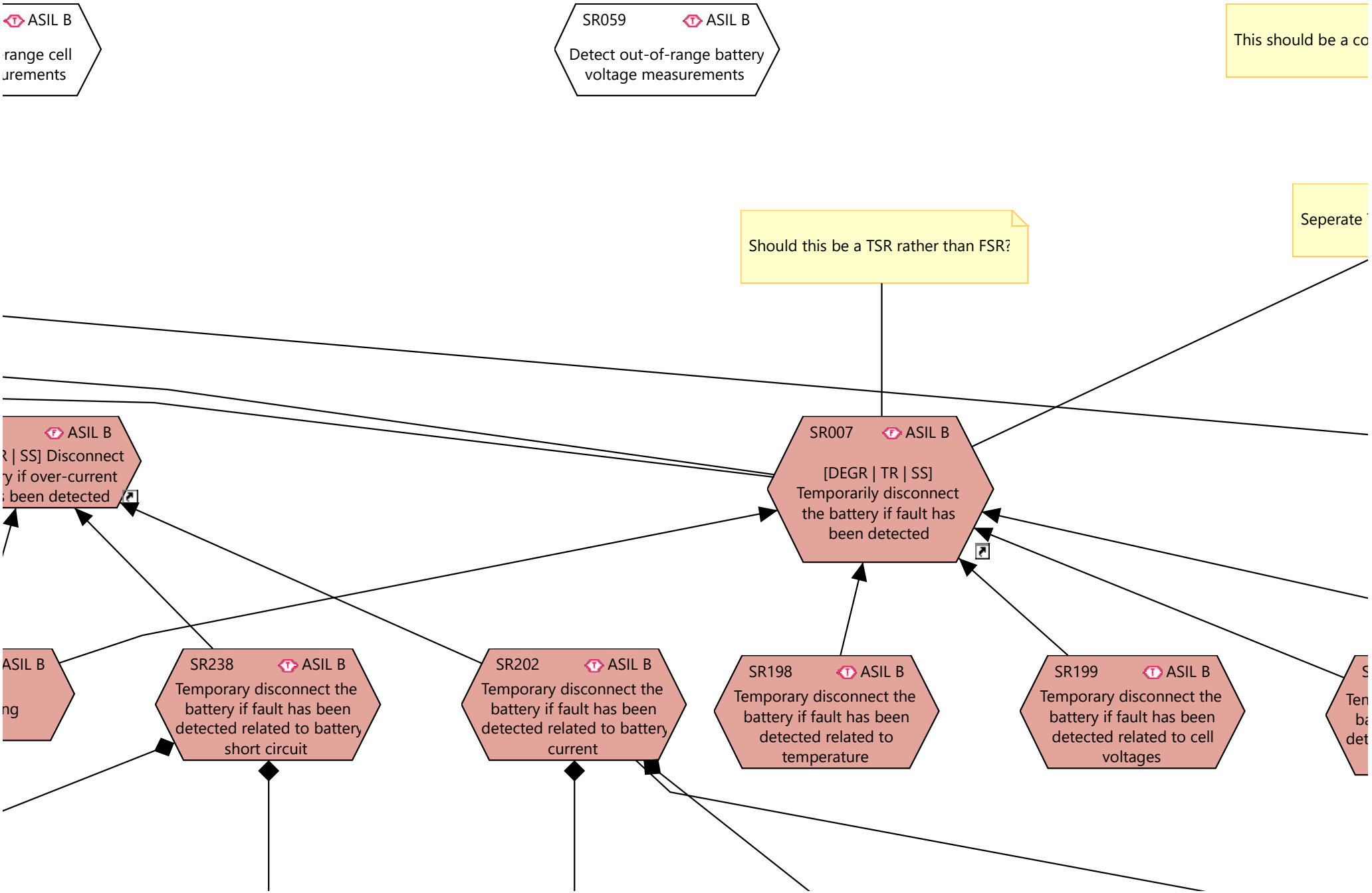

SR060
ASIL B
Detect out-of-range current measurements
Is this a
Why is SR013 linked to multiple SRs via mltiple paths?
SR0
Pr
oper
ASIL B
[T] Continuously
r battery voltage
This seems to belong in SSR
SR046 should be linked with balancing requirement SR051
SR010
ASIL B
[NOTIFY] Notify the driver and passengers about fault and warning condition related to battery or cells
To be removed
SR045
ASIL B
Set flags when battery is out of balance
SR044
ASIL B
Set flags when system in is outside of, or about to breach current SOA condition
SR
Set
is o
bre

valid FSR as battery aging and wear affect performance and longevity but do not directly cause safety hazards

SR063

Detect out-of-
voltage measu

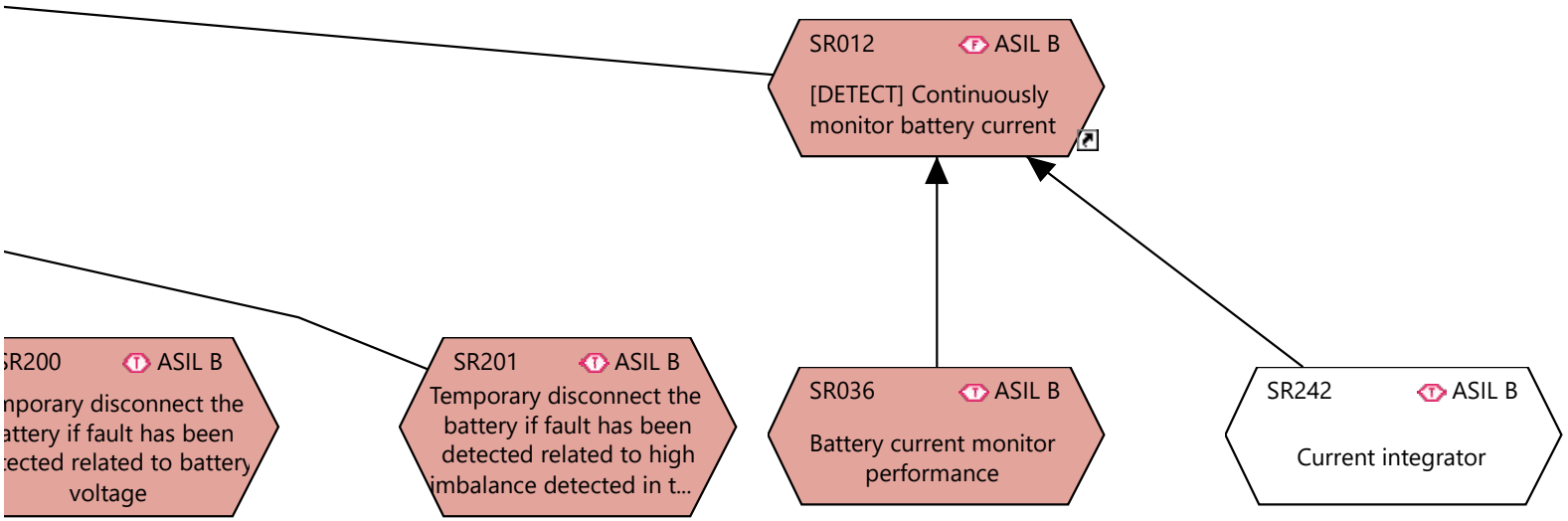


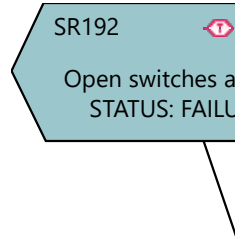

ASIL B
range cell
urements
SR059
ASIL B
Detect out-of-range battery voltage measurements
This should be a co
Should this be a TSR rather than FSR?
Seperate
ASIL B
R | SS] Disconnect
y if over-current
been detected
SR007
ASIL B
[DEGR | TR | SS] Temporarily disconnect the battery if fault has been detected
ASIL B
ng
SR238
ASIL B
Temporary disconnect the battery if fault has been detected related to battery short circuit
SR202
ASIL B
Temporary disconnect the battery if fault has been detected related to battery current
SR198
ASIL B
Temporary disconnect the battery if fault has been detected related to temperature
SR199
ASIL B
Temporary disconnect the battery if fault has been detected related to cell voltages

ommon requirement for all faults and even other states

TSRs for individual faults of voltages and temperatures

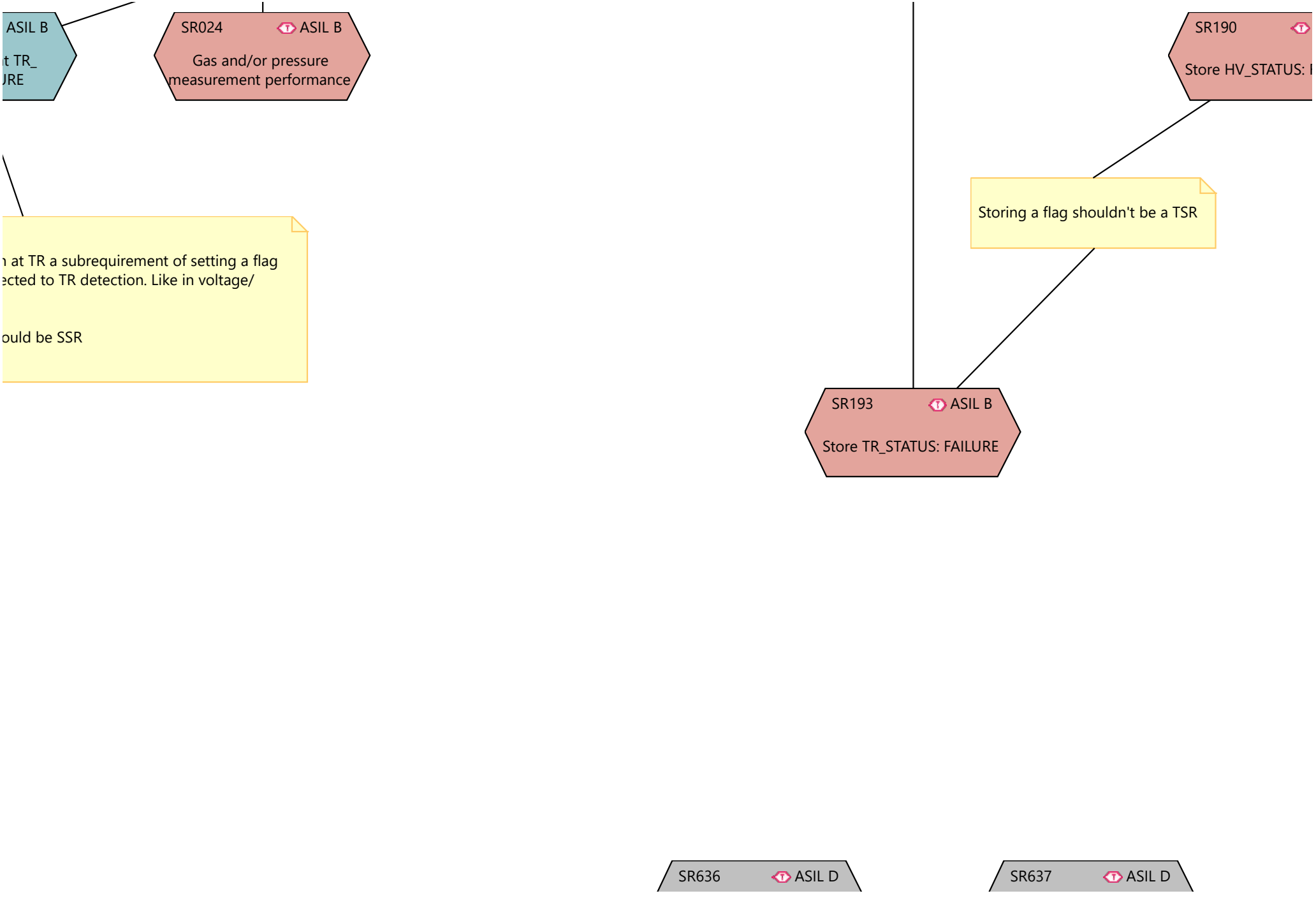
Why are there seperate TSR for each current fault ?
Why not compile those with voltage/temp related disconnects or why not have seperate TSR for each voltage/temp fault

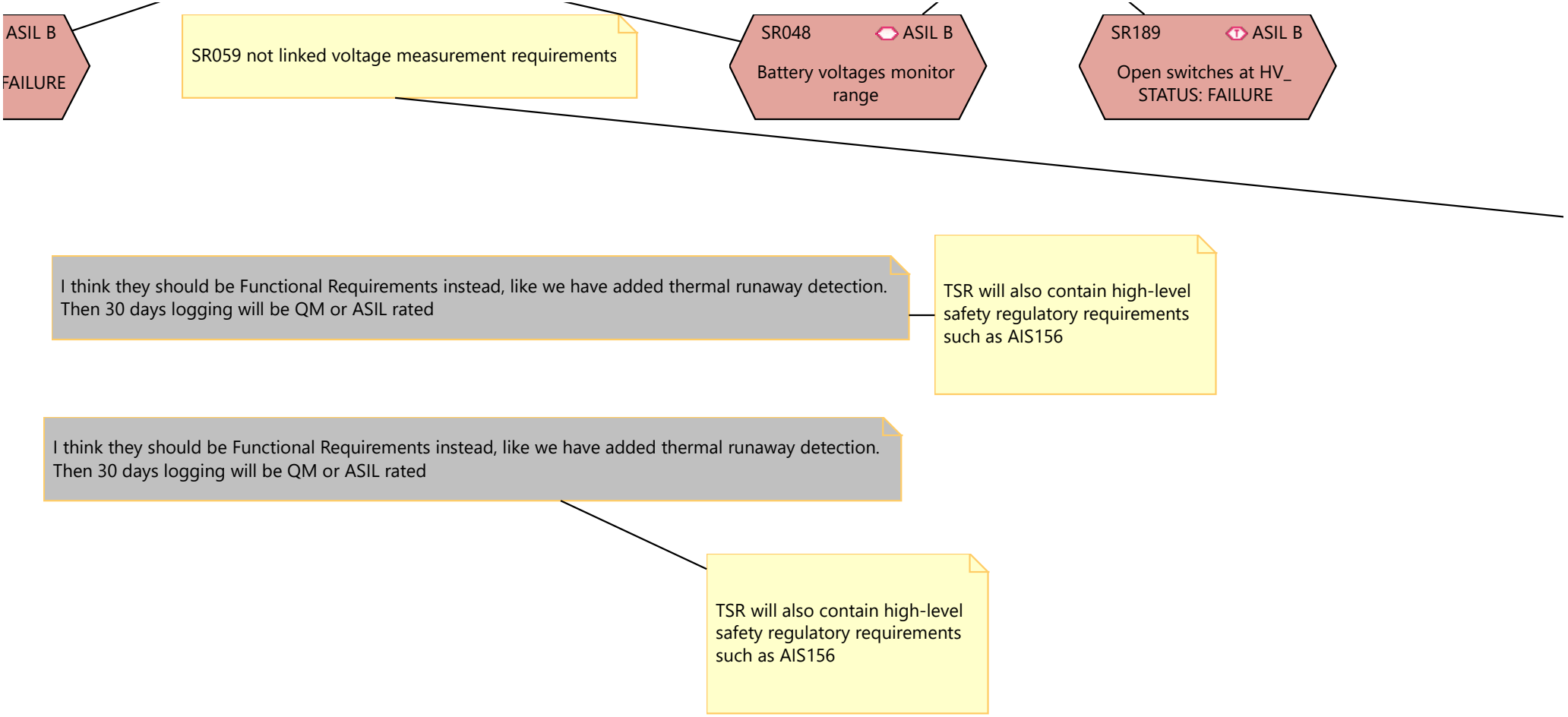


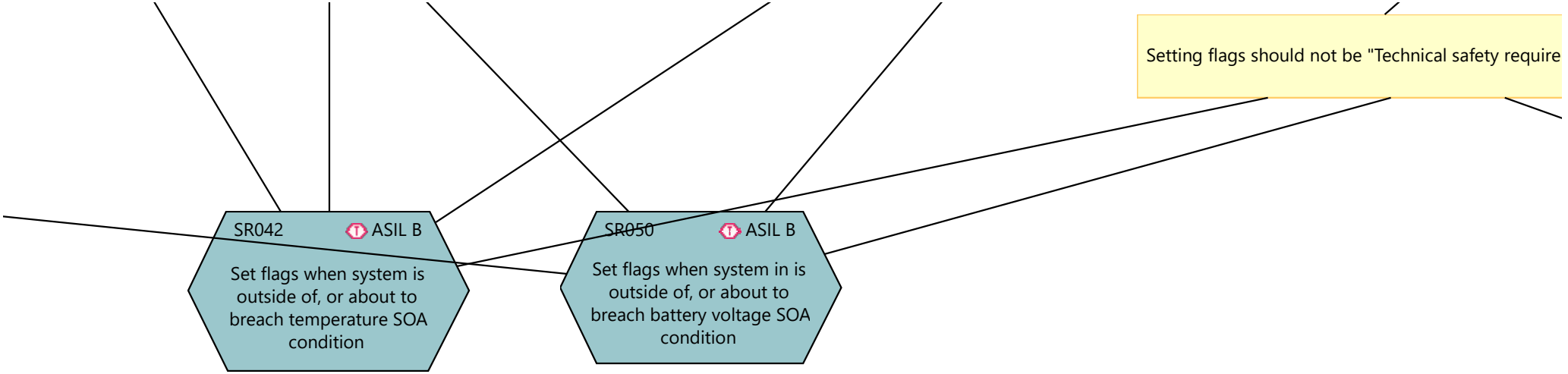


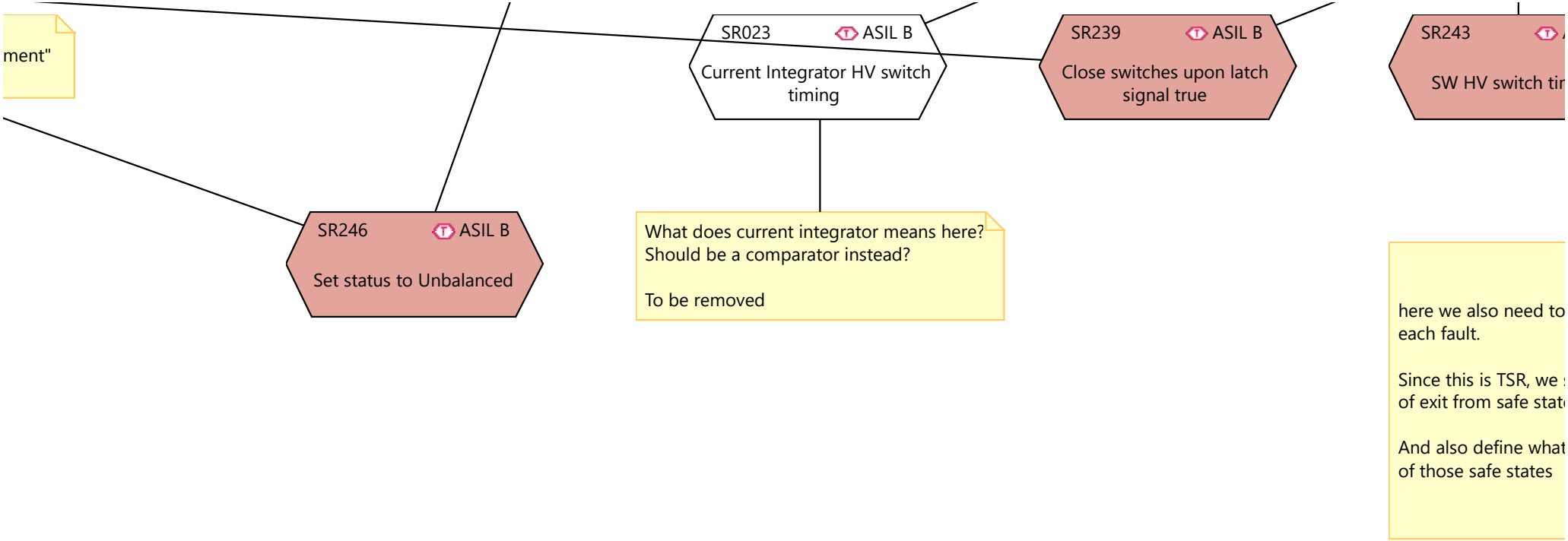

Why is opening switch
and not directly conne
temp cases

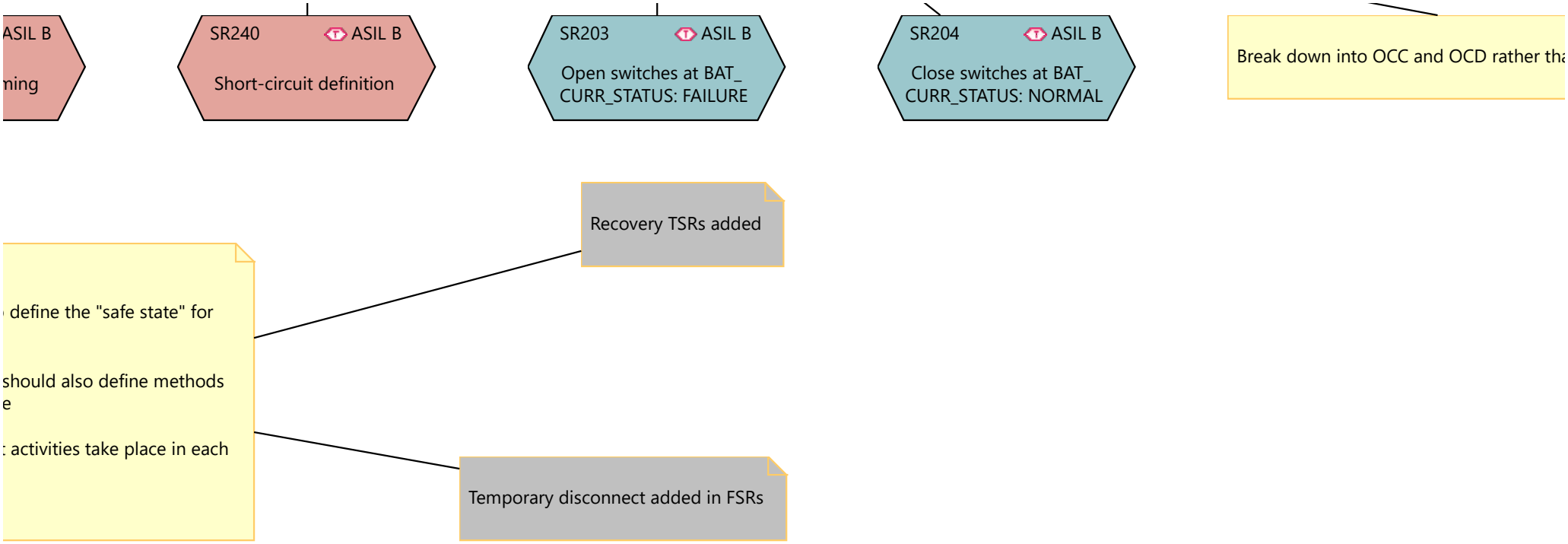
REMOVE THIS, this sh


ASIL B
t TR_
URE
SR024
ASIL B
Gas and/or pressure measurement performance
n at TR a subrequirement of setting a flag
ected to TR detection. Like in voltage/
ould be SSR
SR190
Store HV_STATUS:
Storing a flag shouldn't be a TSR
SR193
ASIL B
Store TR_STATUS: FAILURE
SR636
ASIL D
SR637
ASIL D

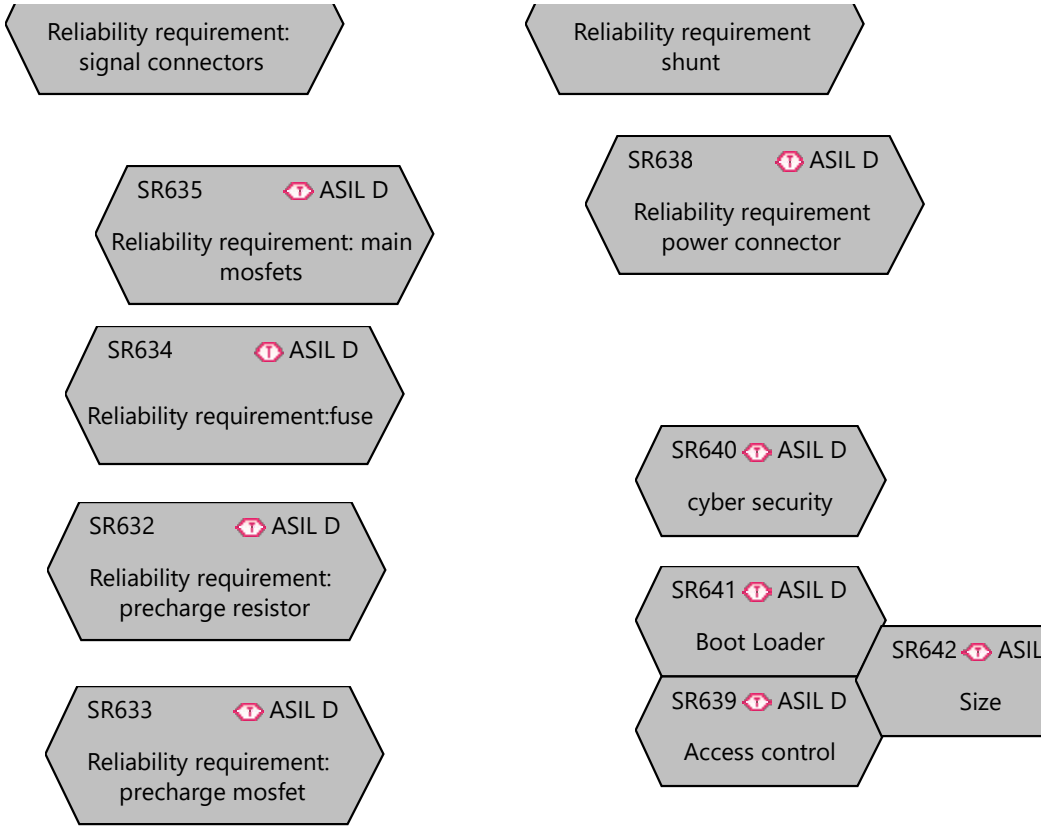

ASIL B
FAILURE
SR059 not linked voltage measurement requirements
SR048
ASIL B
Battery voltages monitor range
SR189
ASIL B
Open switches at HV_
STATUS: FAILURE
I think they should be Functional Requirements instead, like we have added thermal runaway detection. Then 30 days logging will be QM or ASIL rated
TSR will also contain high-level safety regulatory requirements such as AIS156
I think they should be Functional Requirements instead, like we have added thermal runaway detection. Then 30 days logging will be QM or ASIL rated
TSR will also contain high-level safety regulatory requirements such as AIS156

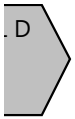

Setting flags should not be "Technical safety require
SR042
ASIL B
Set flags when system is outside of, or about to breach temperature SOA condition
SR050
ASIL B
Set flags when system in is outside of, or about to breach battery voltage SOA condition

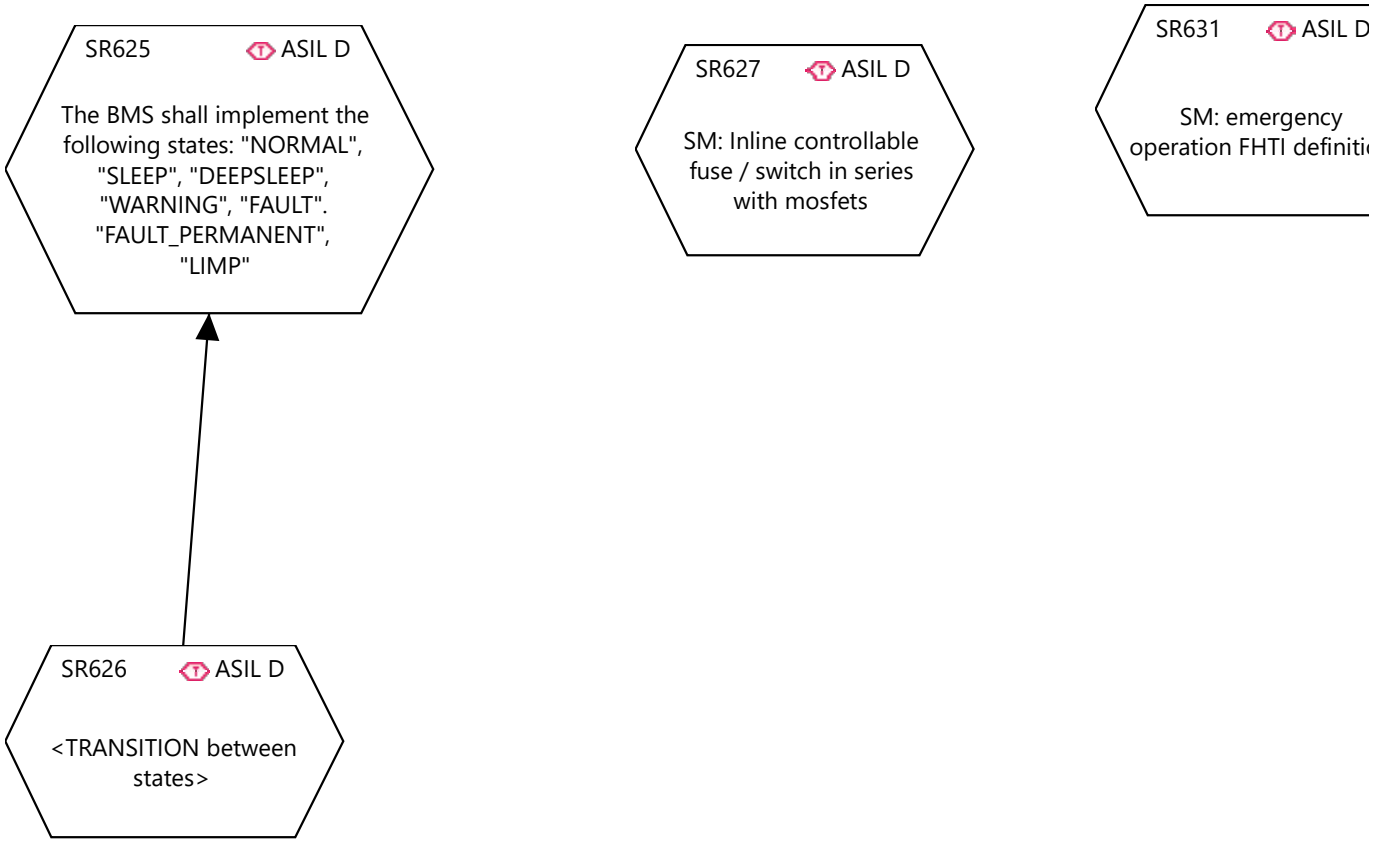

ment"
SR023
ASIL B
Current Integrator HV switch timing
SR239
ASIL B
Close switches upon latch signal true
SR243
SW HV switch tir
SR246
ASIL B
Set status to Unbalanced
What does current integrator means here?
Should be a comparator instead?
To be removed
here we also need to
each fault.
Since this is TSR, we
of exit from safe stat
And also define what
of those safe states

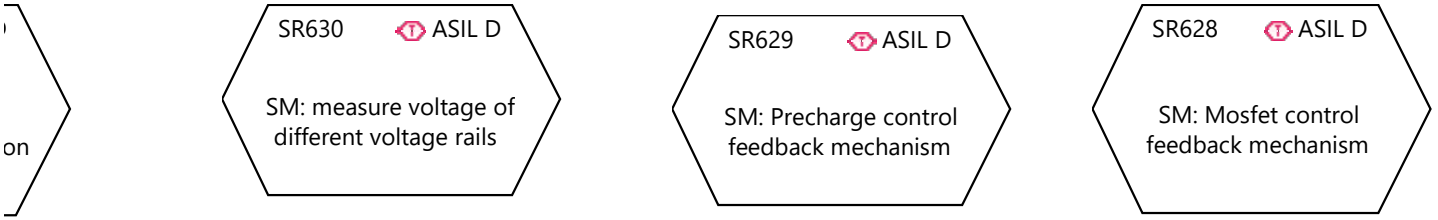

ASIL B
ming
SR240
ASIL B
Short-circuit definition
SR203
ASIL B
Open switches at BAT_
CURR_STATUS: FAILURE
SR204
ASIL B
Close switches at BAT_
CURR_STATUS: NORMAL
Break down into OCC and OCD rather tha
Recovery TSRs added
define the "safe state" for
should also define methods
e
activities take place in each
Temporary disconnect added in FSRs

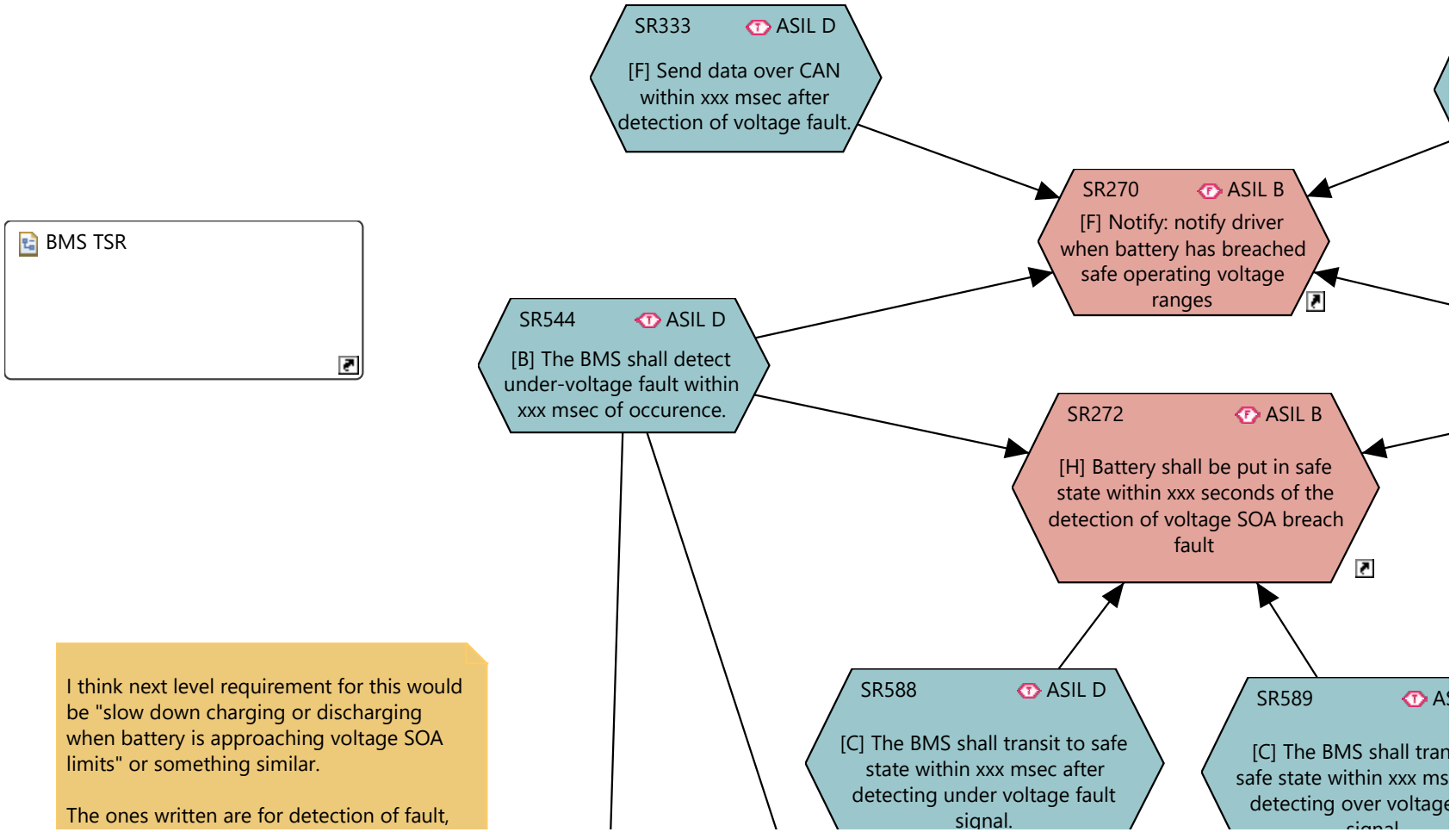
an flags

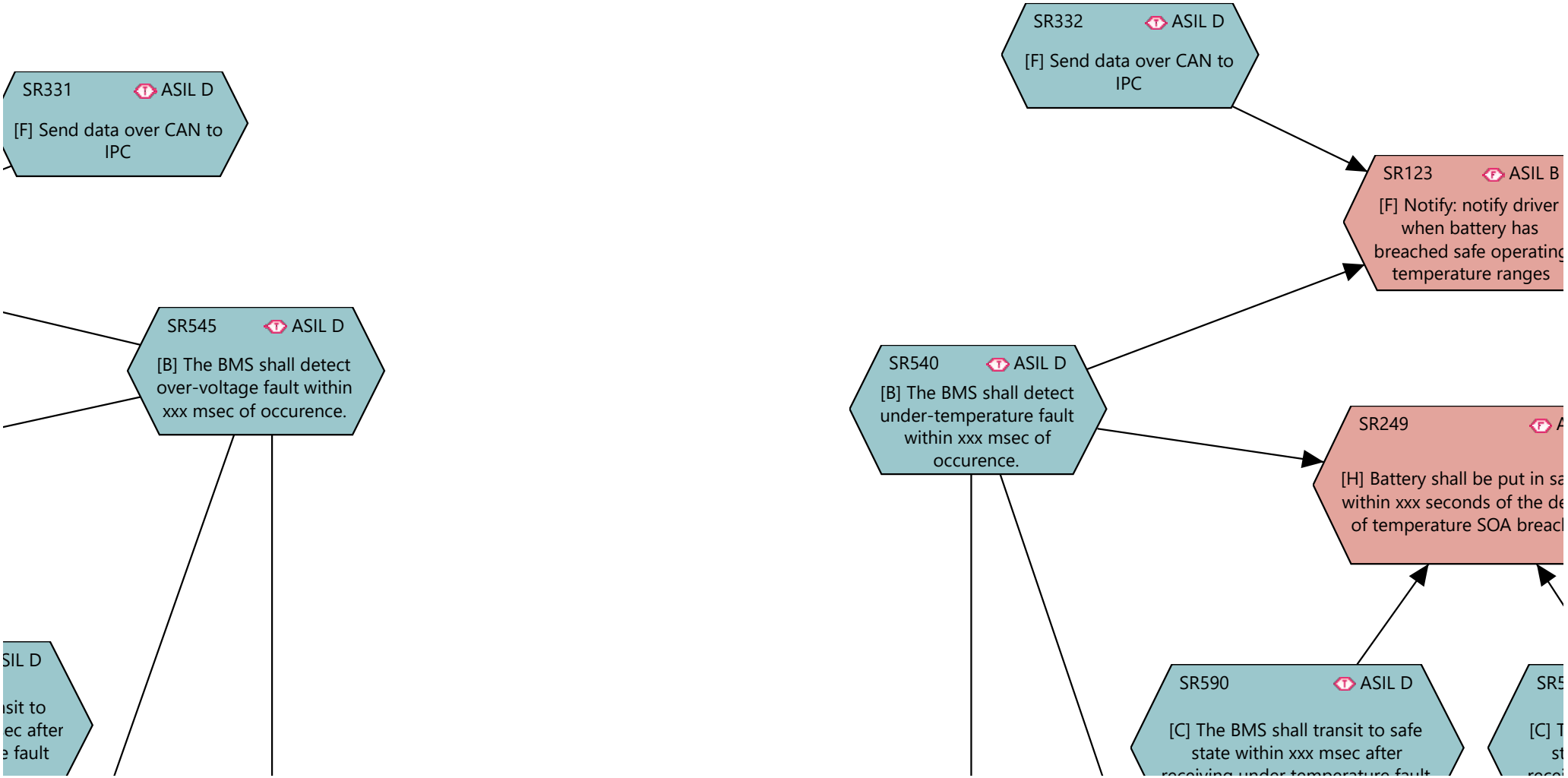

Reliability requirement: signal connectors
Reliability requirement shunt
SR638 ASIL D
Reliability requirement power connector
SR635 ASIL D
Reliability requirement: main mosfets
SR634 ASIL D
Reliability requirement:fuse
SR640 ASIL D
cyber security
SR632 ASIL D
Reliability requirement: precharge resistor
SR641 ASIL D
Boot Loader
SR642 ASIL
Size
SR639 ASIL D
Access control
SR633 ASIL D
Reliability requirement: precharge mosfet

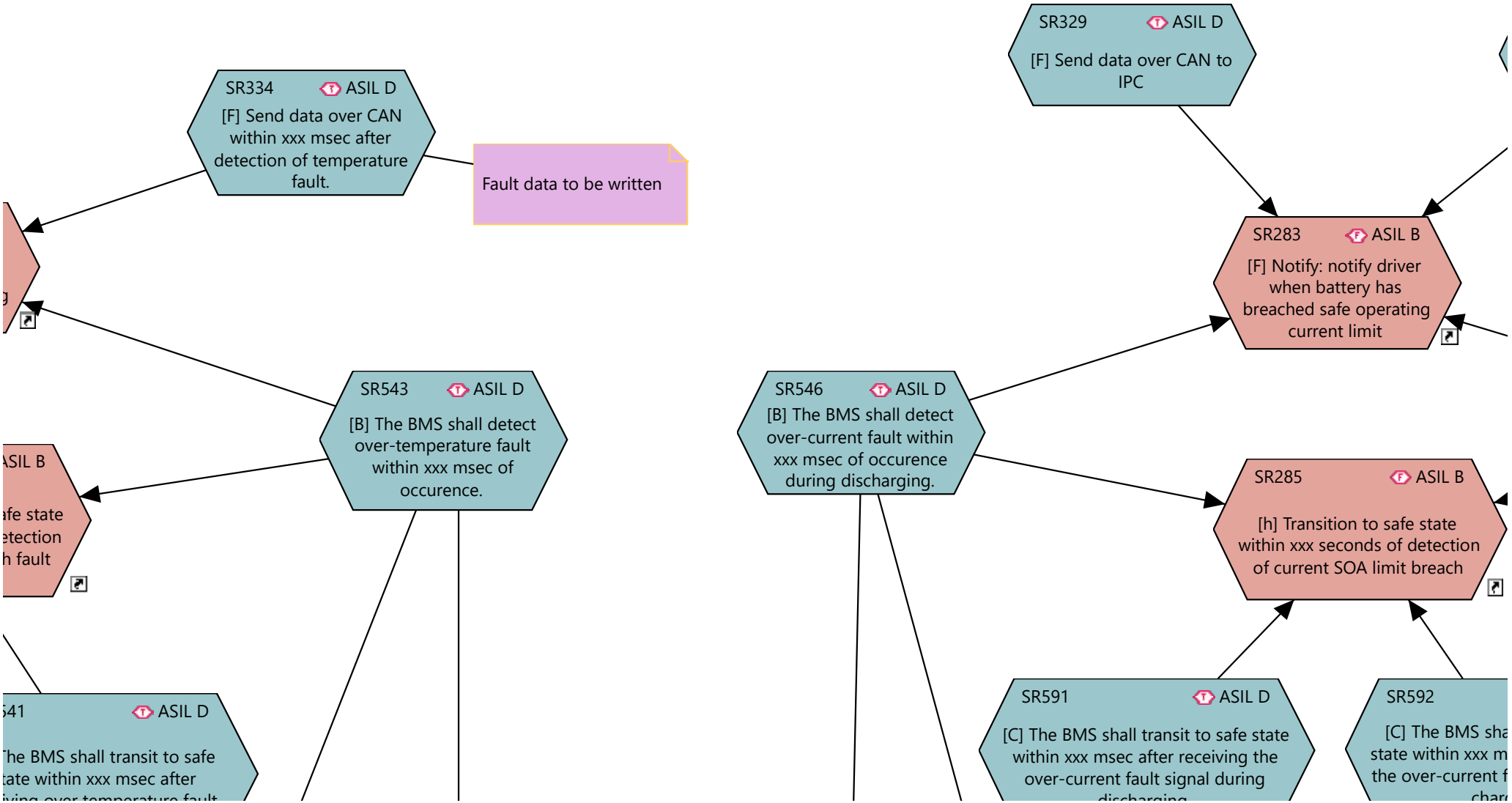

D

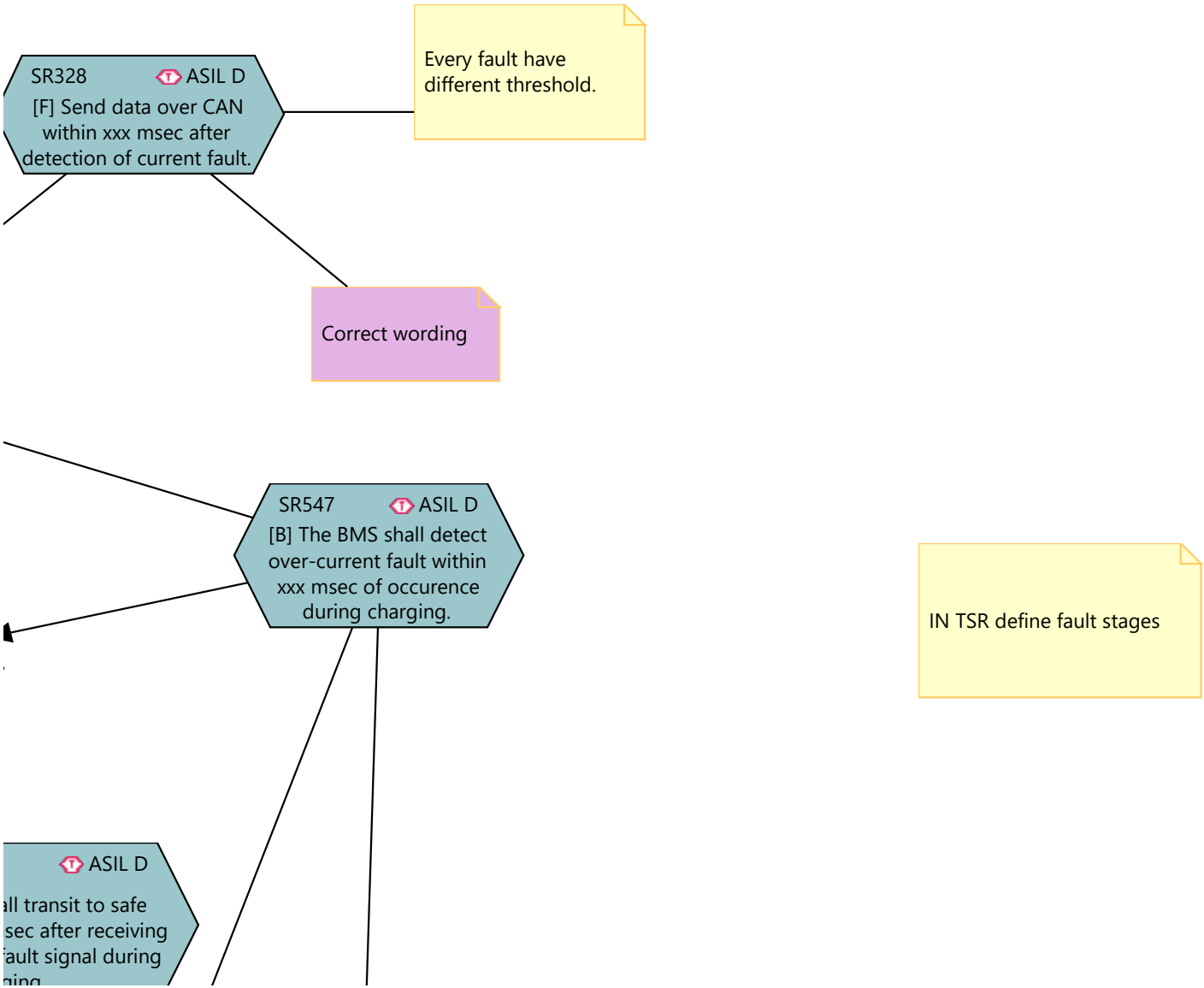

SR625
ASIL D
The BMS shall implement the following states: "NORMAL", "SLEEP", "DEEPSLEEP", "WARNING", "FAULT". "FAULT_PERMANENT", "LIMP"
SR627
ASIL D
SM: Inline controllable fuse / switch in series with mosfets
SR631
ASIL D
SM: emergency operation FHTI definiti
SR626
ASIL D
<TRANSITION between states>

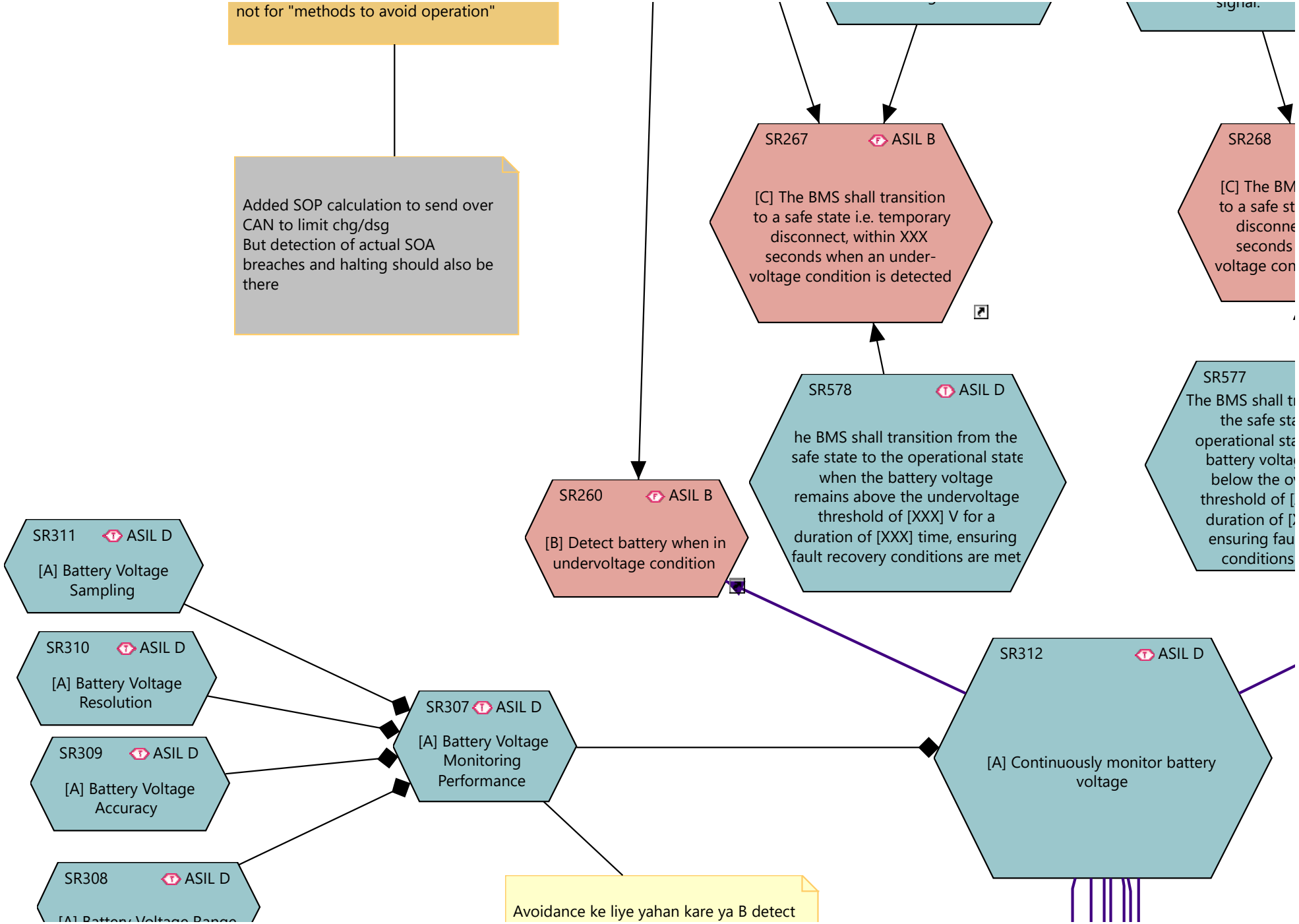

on
SR630
ASIL D
SM: measure voltage of different voltage rails
SR629
ASIL D
SM: Precharge control feedback mechanism
SR628
ASIL D
SM: Mosfet control feedback mechanism

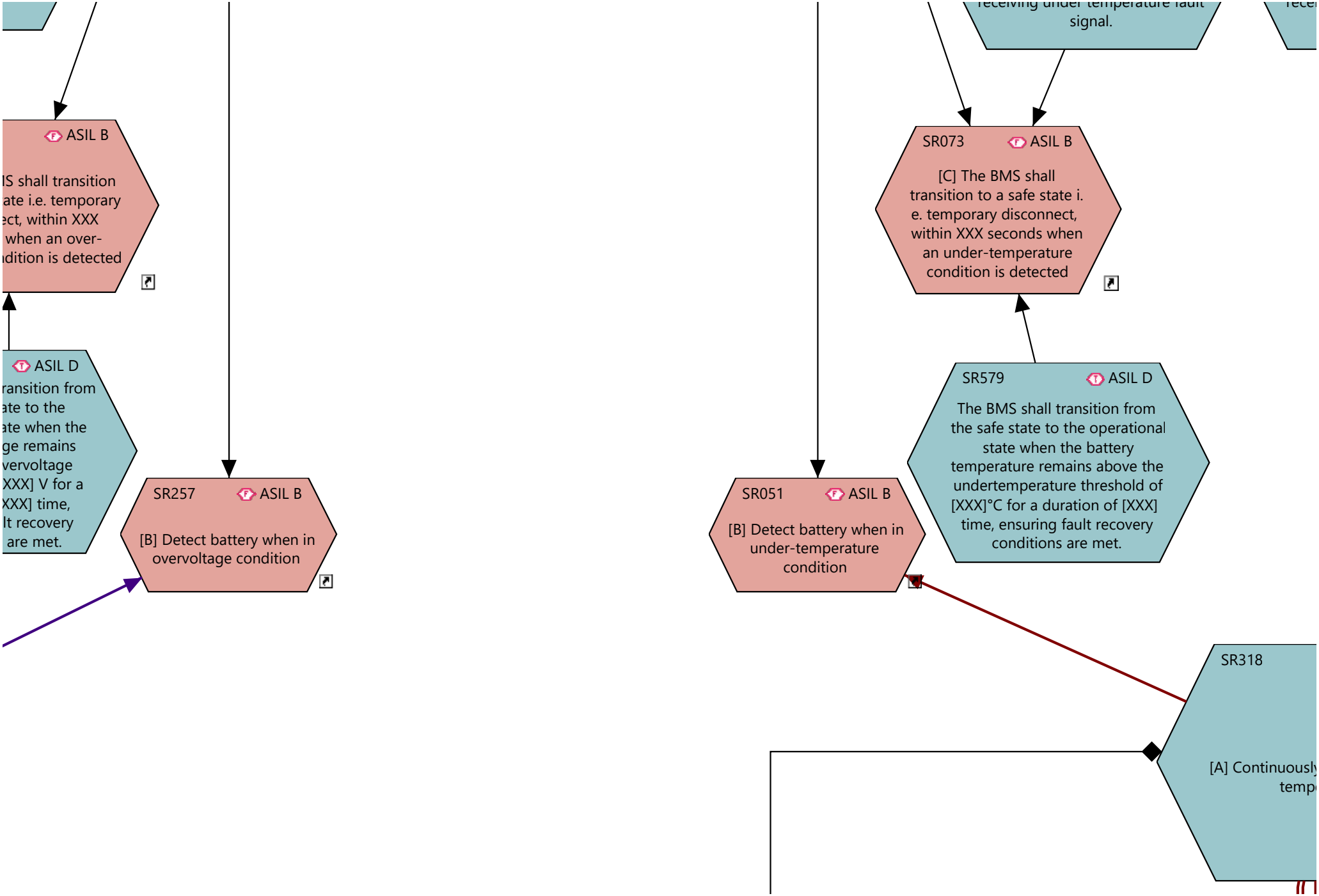

BMS TSR
SR333
ASIL D
[F] Send data over CAN within xxx msec after detection of voltage fault.
SR270
ASIL B
[F] Notify: notify driver when battery has breached safe operating voltage ranges
SR544
ASIL D
[B] The BMS shall detect under-voltage fault within xxx msec of occurence.
SR272
ASIL B
[H] Battery shall be put in safe state within xxx seconds of the detection of voltage SOA breach fault
SR588
ASIL D
[C] The BMS shall transit to safe state within xxx msec after detecting under voltage fault signal.
SR589
I think next level requirement for this would be "slow down charging or discharging when battery is approaching voltage SOA limits" or something similar.
The ones written are for detection of fault,

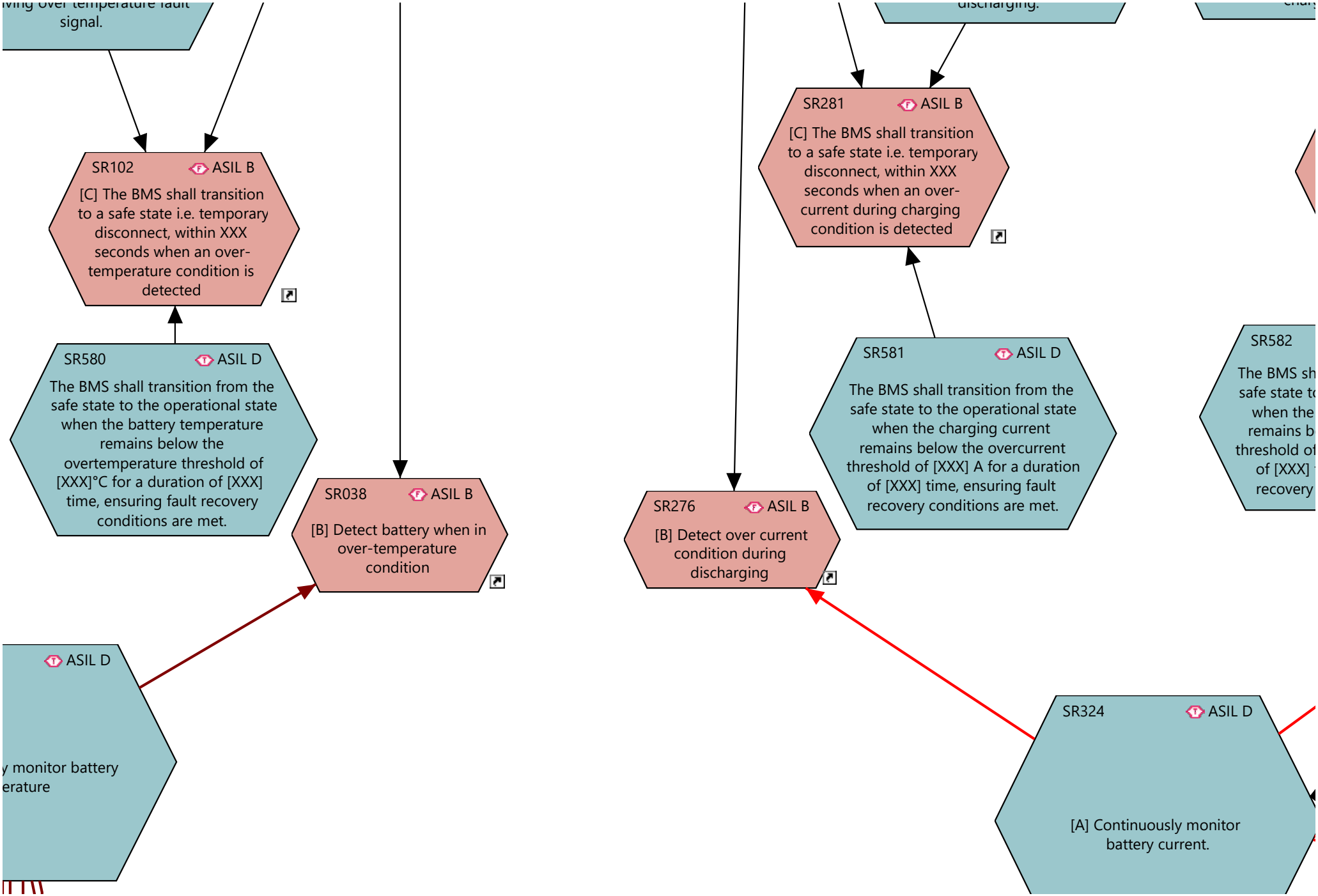

SR331
ASIL D
[F] Send data over CAN to IPC
SR545
ASIL D
[B] The BMS shall detect over-voltage fault within xxx msec of occurence.
SR332
ASIL D
[F] Send data over CAN to IPC
SR123
ASIL B
[F] Notify: notify driver when battery has breached safe operating temperature ranges
SR540
ASIL D
[B] The BMS shall detect under-temperature fault within xxx msec of occurence.
SR249
[H] Battery shall be put in sa within xxx seconds of the de of temperature SOA breac
SR590
ASIL D
[C] The BMS shall transit to safe state within xxx msec after

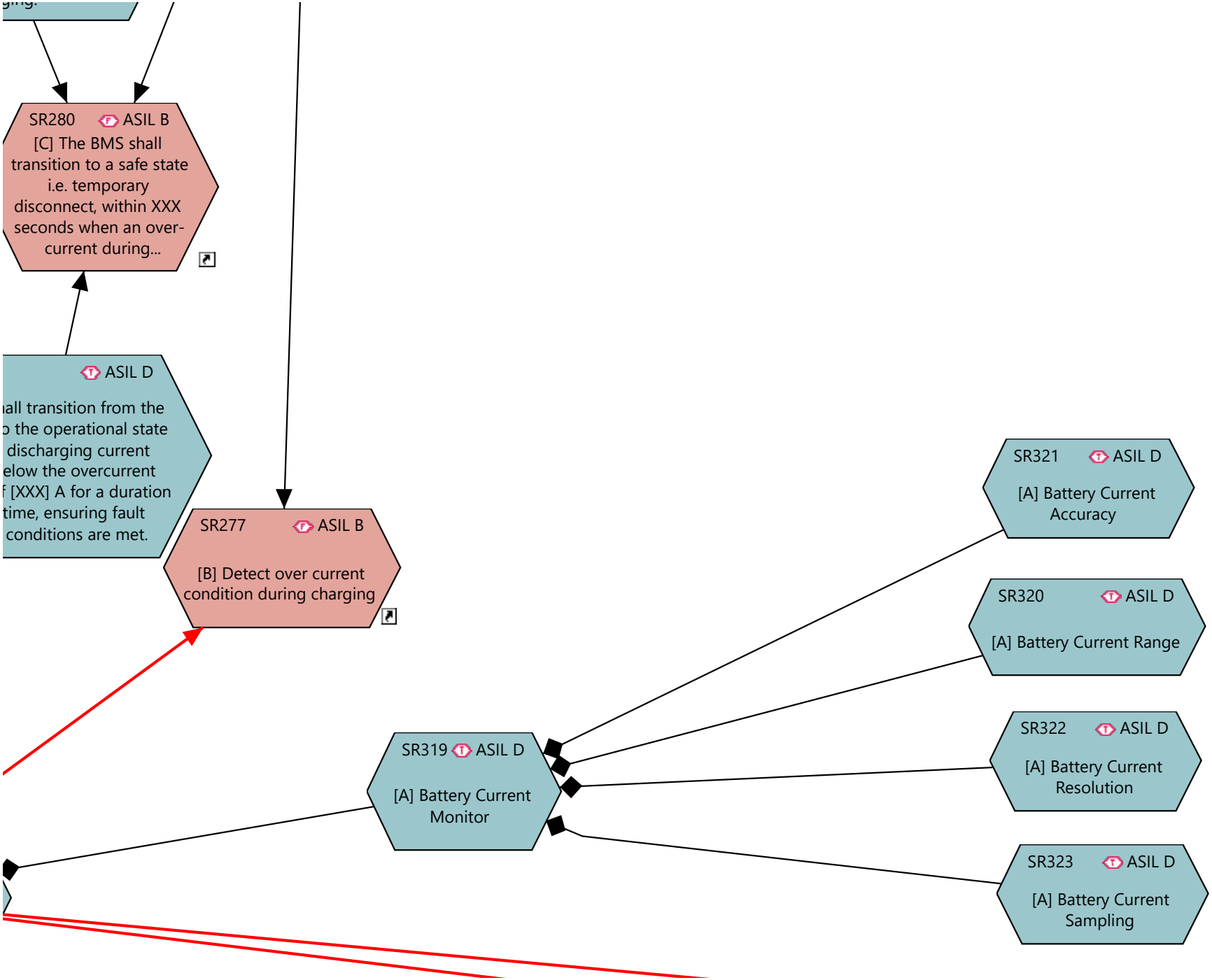

SR334 ASIL D
[F] Send data over CAN within xxx msec after detection of temperature fault.
Fault data to be written
SR543 ASIL D
[B] The BMS shall detect over-temperature fault within xxx msec of occurence.
SR329 ASIL D
[F] Send data over CAN to IPC
SR283 ASIL B
[F] Notify: notify driver when battery has breached safe operating current limit
SR546 ASIL D
[B] The BMS shall detect over-current fault within xxx msec of occurence during discharging.
SR285 ASIL B
[h] Transition to safe state within xxx seconds of detection of current SOA limit breach
SR591 ASIL D
[C] The BMS shall transit to safe state within xxx msec after receiving the over-current fault signal during
SR592


SR328
ASIL D
[F] Send data over CAN within xxx msec after detection of current fault.
Every fault have different threshold.
Correct wording
SR547
ASIL D
[B] The BMS shall detect over-current fault within xxx msec of occurence during charging.
ASIL D
ll transit to safe
sec after receiving
ault signal during
IN TSR define fault stages


not for "methods to avoid operation"
Added SOP calculation to send over CAN to limit chg/dsg
But detection of actual SOA breaches and halting should also be there
SR267 ASIL B
[C] The BMS shall transition to a safe state i.e. temporary disconnect, within XXX seconds when an under-voltage condition is detected
SR268
[C] The BM
to a safe st
disconne
seconds
voltage con
SR578 ASIL D
he BMS shall transition from the safe state to the operational state when the battery voltage remains above the undervoltage threshold of [XXX] V for a duration of [XXX] time, ensuring fault recovery conditions are met
SR577
The BMS shall t
the safe sta
operational sta
battery volta
below the o
threshold of [
duration of [
ensuring fau
conditions
SR260 ASIL B
[B] Detect battery when in undervoltage condition
SR311 ASIL D
[A] Battery Voltage Sampling
SR310 ASIL D
[A] Battery Voltage Resolution
SR309 ASIL D
[A] Battery Voltage Accuracy
SR308 ASIL D
SR307 ASIL D
[A] Battery Voltage Monitoring Performance
SR312 ASIL D
[A] Continuously monitor battery voltage
Avoidance ke liye yahan kare ya B detect


ASIL B
IS shall transition
ate i.e. temporary
ect, within XXX
when an over-
dition is detected
ASIL D
ransition from
ate to the
ate when the
ge remains
vervoltage
XXX] V for a
XXX] time,
lt recovery
are met.
SR257
ASIL B
[B] Detect battery when in overvoltage condition
signal.
SR073
ASIL B
[C] The BMS shall transition to a safe state i. e. temporary disconnect, within XXX seconds when an under-temperature condition is detected
SR579
ASIL D
The BMS shall transition from the safe state to the operational state when the battery temperature remains above the undertemperature threshold of [XXX]°C for a duration of [XXX] time, ensuring fault recovery conditions are met.
SR051
ASIL B
[B] Detect battery when in under-temperature condition
SR318
[A] Continuously
temp


signal.
SR102
ASIL B
[C] The BMS shall transition to a safe state i.e. temporary disconnect, within XXX seconds when an over-temperature condition is detected
SR580
ASIL D
The BMS shall transition from the safe state to the operational state when the battery temperature remains below the overtemperature threshold of [XXX]°C for a duration of [XXX] time, ensuring fault recovery conditions are met.
SR038
ASIL B
[B] Detect battery when in over-temperature condition
ASIL D
y monitor battery
erature
SR281
ASIL B
[C] The BMS shall transition to a safe state i.e. temporary disconnect, within XXX seconds when an over-current during charging condition is detected
SR581
ASIL D
The BMS shall transition from the safe state to the operational state when the charging current remains below the overcurrent threshold of [XXX] A for a duration of [XXX] time, ensuring fault recovery conditions are met.
SR276
ASIL B
[B] Detect over current condition during discharging
SR582
The BMS sh
safe state t
when the
remains b
threshold o
of [XXX]
recovery
SR324
ASIL D
[A] Continuously monitor battery current.


SR280 ASIL B
[C] The BMS shall transition to a safe state i.e. temporary disconnect, within XXX seconds when an over-current during...
ASIL D
all transition from the o the operational state discharging current elow the overcurrent [XXX] A for a duration time, ensuring fault conditions are met.
SR277 ASIL B
[B] Detect over current condition during charging
SR319 ASIL D
[A] Battery Current Monitor
SR321 ASIL D
[A] Battery Current Accuracy
SR320 ASIL D
[A] Battery Current Range
SR322 ASIL D
[A] Battery Current Resolution
SR323 ASIL D
[A] Battery Current Sampling