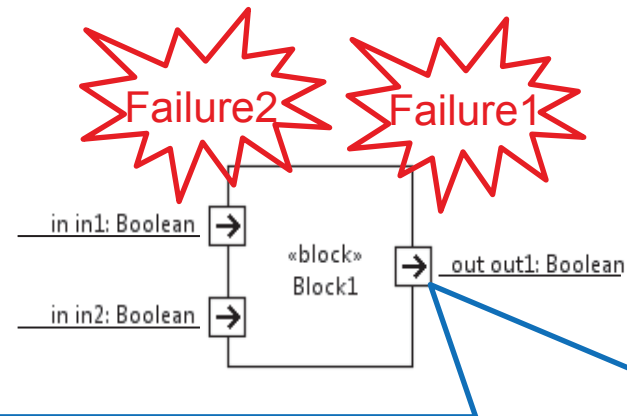2) How to express dysfunctional behaviour?

APPROACHES TO EXPRESS FAILURE BEHAVIOR
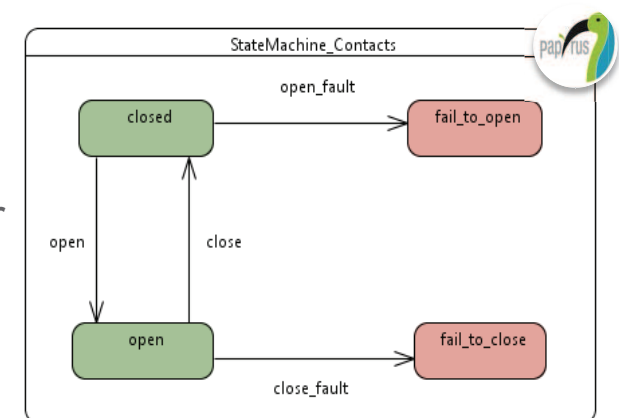
ANALYTICAL EXPRESSIONS

- ✓ Fast annotation

- ✓ Easy to analyse

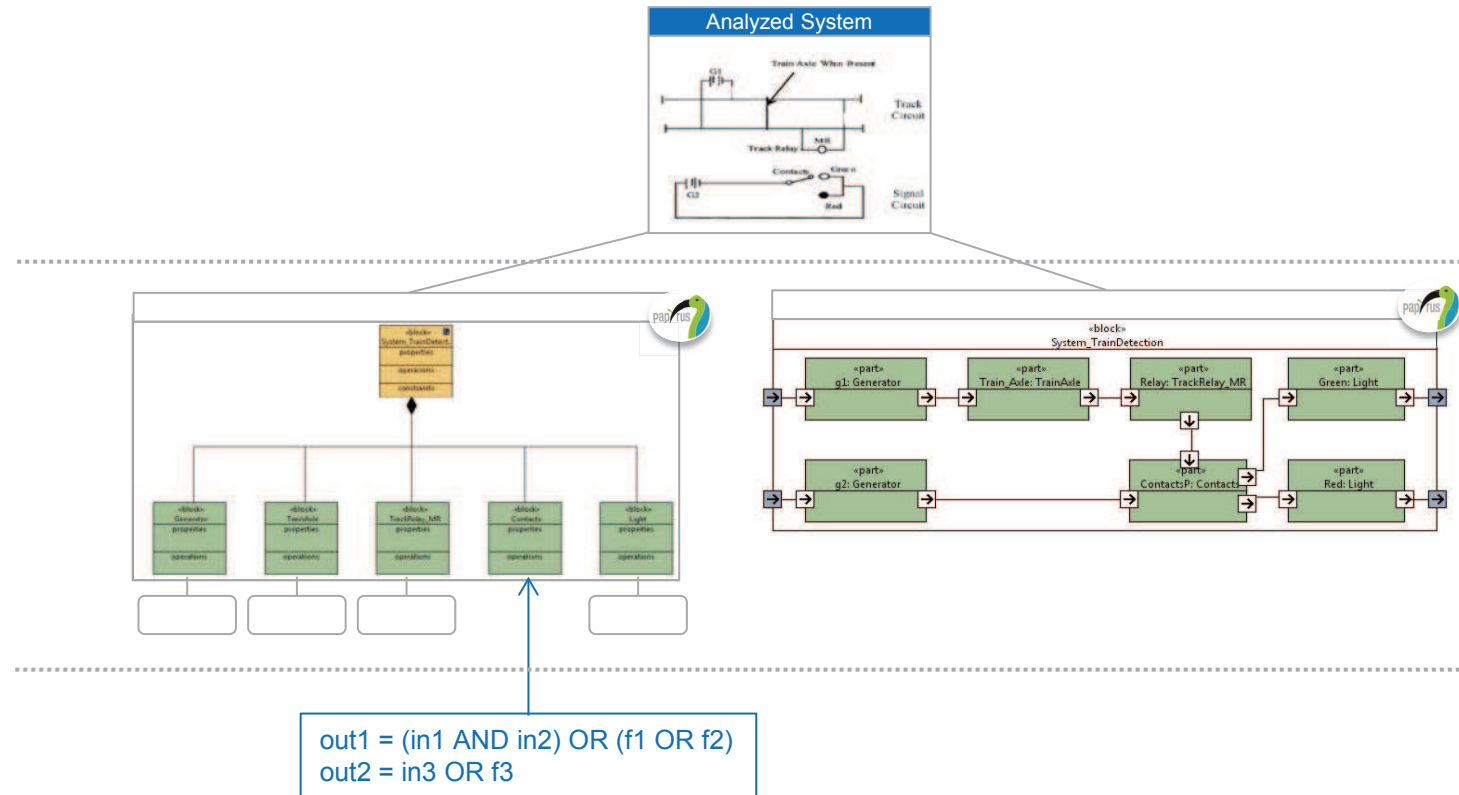Failure2 Failure1

in in1: Boolean →

«block»
Block1

→ out out1: Boolean

in in2: Boolean →

out1 = (in1 AND in2) AND NOT (Failure1 OR Failure2)

STATE MACHINES

- ✓ Separate functional and dysfunctional behavior

- ✓ Conform to formal languages: AltaRica, etc.

StateMachine_Contacts

closed — open_fault → fail_to_open

open   close

open — close_fault → fail_to_close

ANALYTICAL EXPRESSIONS

Modeling

Safety Analysis

out1 = (in1 AND in2) OR (f1 OR f2)
out2 = in3 OR f3
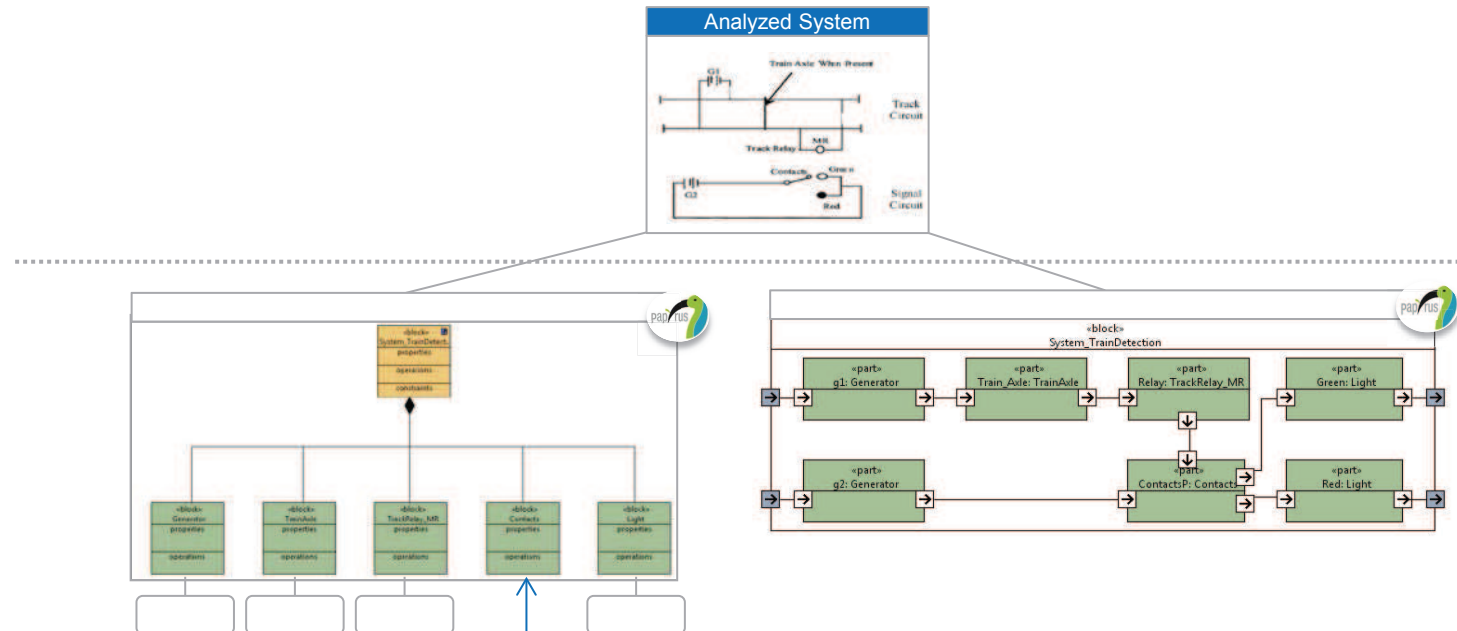
For the compatibility of dysfunctional behavior on different levels only Blocks of the finest hierarchical level have an associated set of analytical expressions through dedicated profile

STATE MACHINES

Functional Behavior   Dysfunctional Behavior

Blocks of the finest hierarchical level have an associated State Machine