SEFTs

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VIERforES

State/Event FTs

- Decomposition structure just like CFTs.
- They are able to express some scenarios that cannot be expressed in Traditional FTs: sequencing and timing
- Have notion of states and events.

States and Events

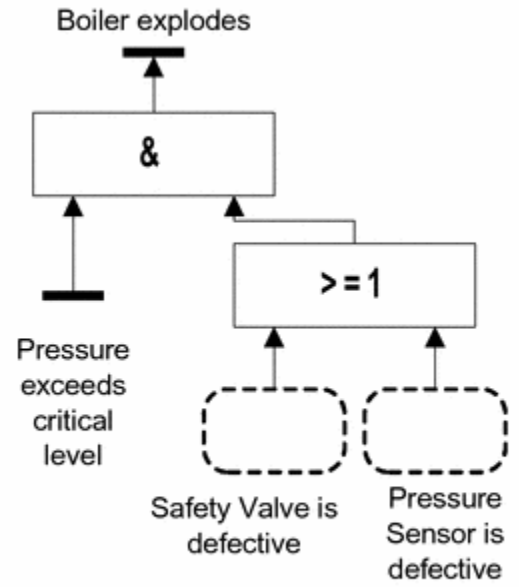
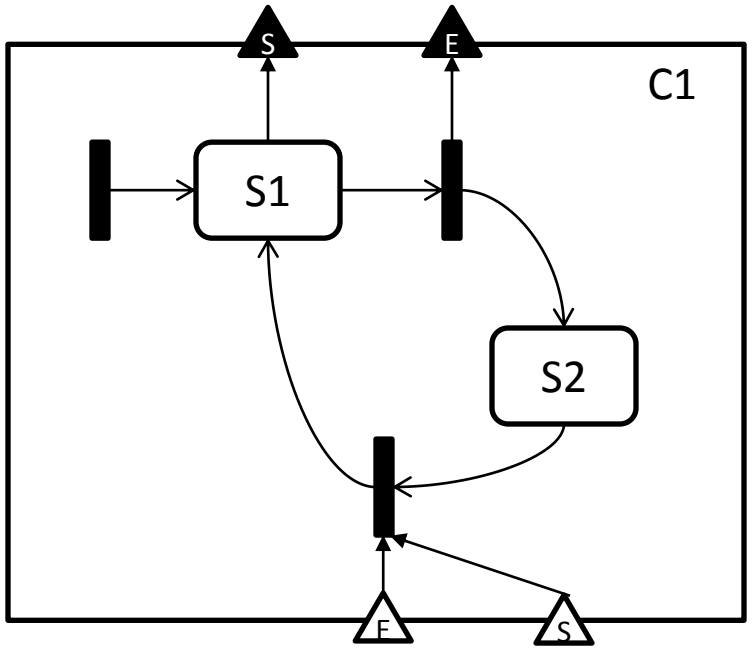


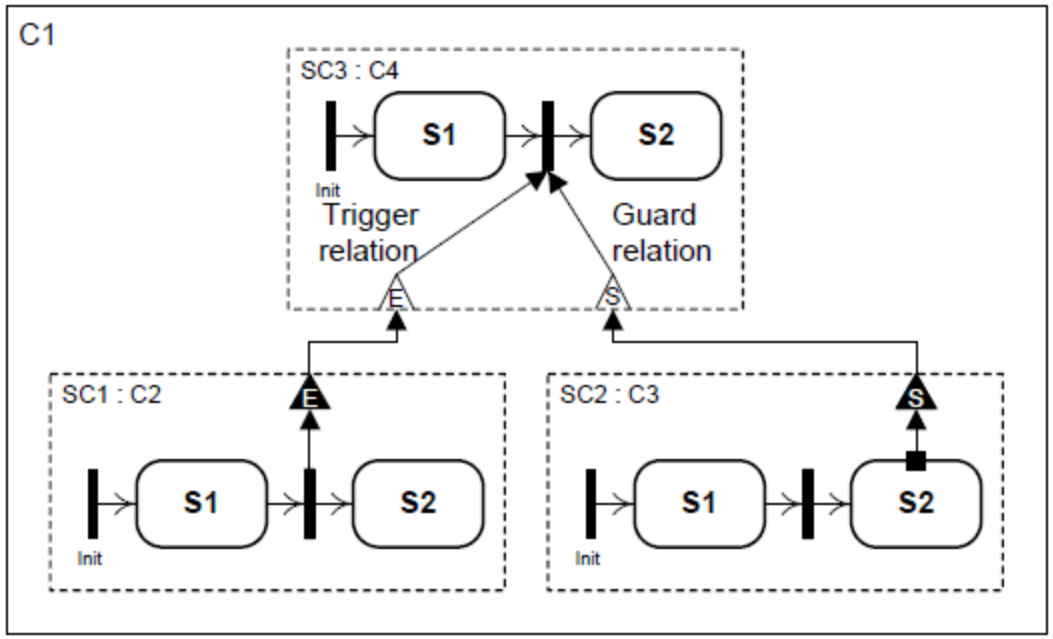
Fig. 2. SEFT Fragment

Modeling elements in SEFT



- Event
- State
- Temporal Edge
- State Outport
- Causal Edge
- Event Outport
- State Inport
- Event Inport

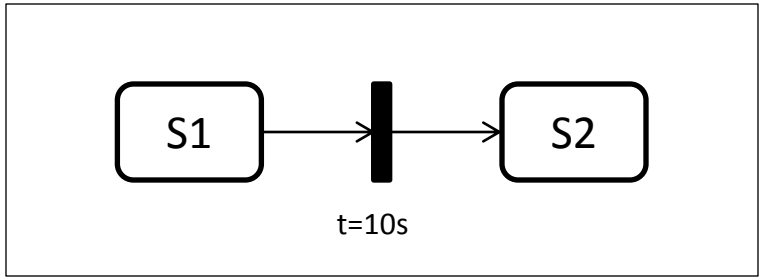
Guard Edge



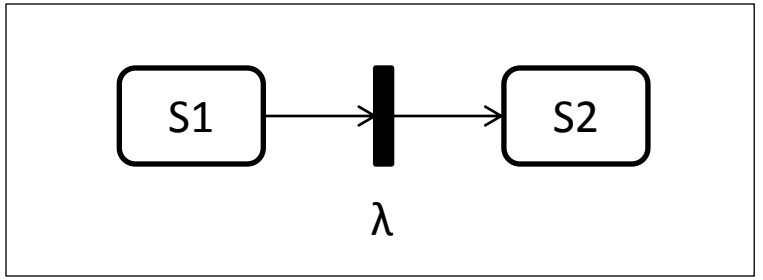
Causal Edges as Trigger (left) and Guard (right) Relations

Triggering of Transitions

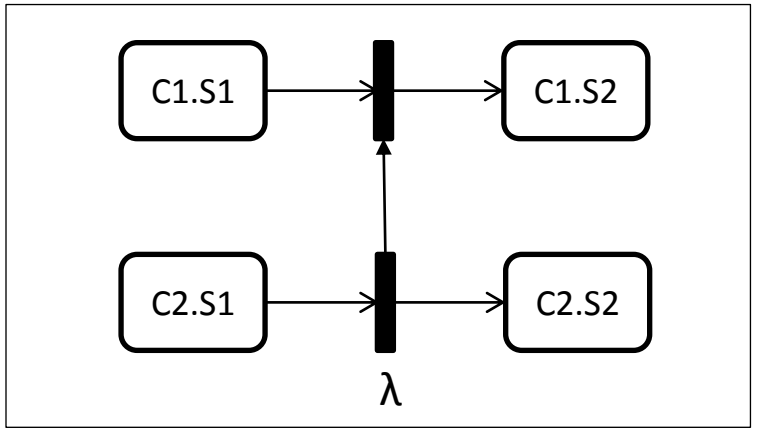
Deterministic Event



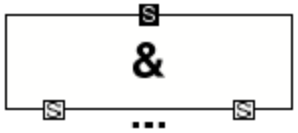
Probabilistic Event



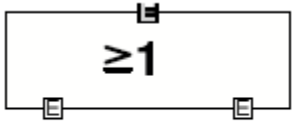
Triggered Event



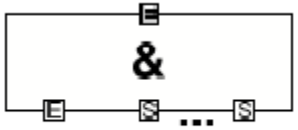
Gates



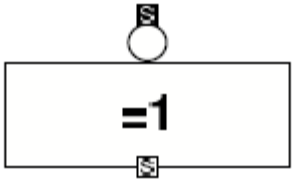
AND Gate with n State Inputs



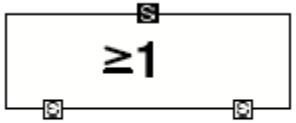
OR gate with n Event Inputs



AND Gate with one Event (Trigger) and n State Inputs



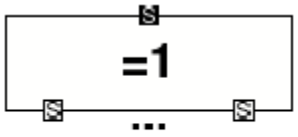
NOT Gate with One State Input



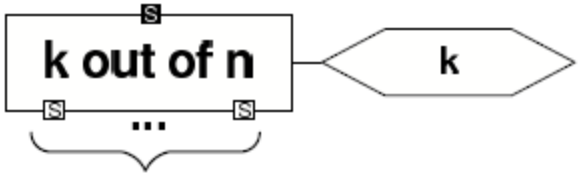
OR Gate with n State Inputs

The Inhibit Gate

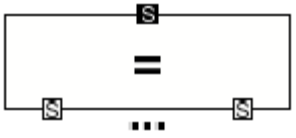
Gates(continued..)



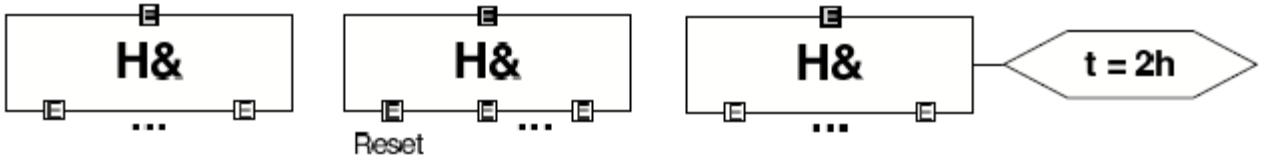
The Exclusive OR (XOR) Gate



The Voter Gate

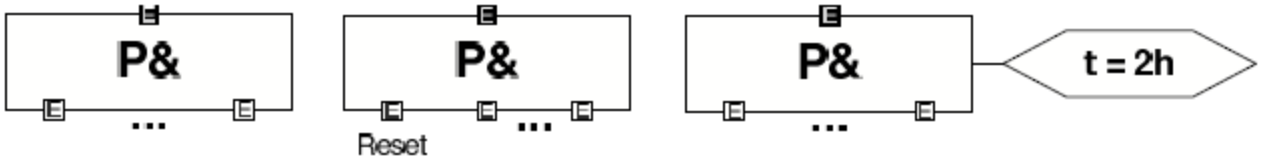


The Equal Gate

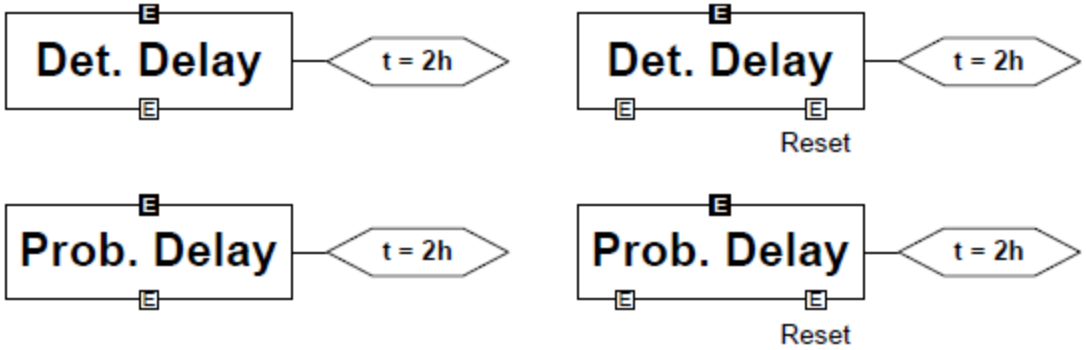


The History-AND Gate: Standard, Variant with Reset Input, Variant with Time Parameter

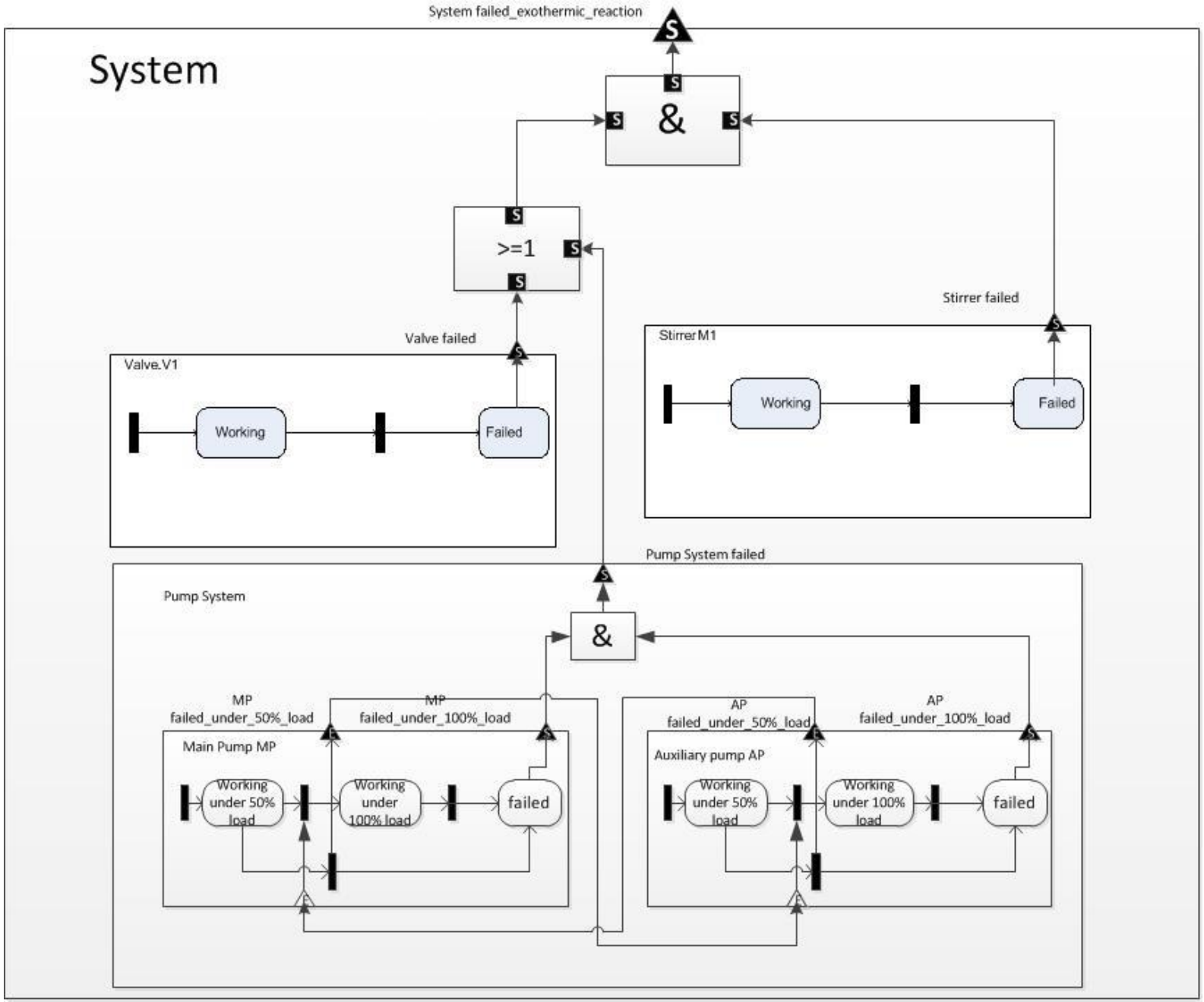
Gates(continued..)



The Priority-AND Gate: Standard, Variant with Reset Input, Variant with Time Parameter



The Deterministic and Probabilistic (Exponentially Distributed) Delay Gates, with and without Reset Input


System failed_exothermic_reaction
System
&
>=1
Valve failed
Valve.V1
Working
Failed
Stirrer failed
StirrerM1
Working
Failed
Pump System failed
Pump System
&
MP
failed_under_50%_load
MP
failed_under_100%_load
Main Pump MP
Working under 50% load
Working under 100% load
failed
AP
failed_under_50%_load
AP
failed_under_100%_load
Auxiliary pump AP
Working under 50% load
Working under 100% load
failed

References

1) Phd Thesis: “State/Event fault tress”, Bernhard Kaiser.