Abstraction

- Only 3 messages
- No SPM -messages: consider fixed topology
- No real-time (clocks)
- No modulo in sequence numbers of ODATA-messages
- No non-PGM network elements
- NAK-messages are not sent between receivers
- NCF-messages always come from upstreams
- Different transport sessions (TSI ignored)
- No designated local repair (DLR)

What is covered:

Basic functionality of ODATA, NAK, NCF and RDATA sending

- Detection of loss by receiver (but only for one message)
- Iterative sending of NAK and NCF $\Rightarrow$ repair mechanism
- Window increment $\Rightarrow$ unrecoverable loss

- Reachable states:

```
State-vector 440 byte, depth reached 462390, errors: 0
1.01924e+07 states, stored
3.94796e+07 states, matched
4.96719e+07 transitions (= stored+matched)
9.92368e+07 atomic steps
hash conflicts: 4.04247e+07 (resolved)
(max size 2^24 states)
```

  (All statements are reached.)

- Assumption: No NAK loss

  $G(receiver[0]@rxw\_trail\_geq1 \Rightarrow F(!list\_missing\_0??[1]))$

```
State-vector 448 byte, depth reached 578693, errors: 0
1.01924e+07 states, stored
3.94814e+07 states, matched
4.96738e+07 transitions (= stored+matched)
1.00296e+08 atomic steps
hash conflicts: 3.78006e+07 (resolved)
(max size 2^24 states)
```

- Assumption: No RDATA and no NAK loss

  $G(source[0]@send\_rdata \Rightarrow F(receiver[0]@receive\_rdata))$

```
State-vector 448 byte, depth reached 88170, errors: 0
6.55579e+06 states, stored
2.36099e+07 states, matched
3.01657e+07 transitions (= stored+matched)
6.2167e+07 atomic steps
hash conflicts: 1.56507e+07 (resolved)
(max size 2^24 states)
```