Finite state machine YANG model augmentation for Transponder Reconfiguration

draft-sambo-ccamp-yang-fsm-transponder-reconf-00

N. Sambo[1], P. Castoldi[1], A. Sgambelluri[1], G. Fioccola[2], F. Cugini[3], D. Ceccarelli[4], H. Song[5], T. Zhou[5]

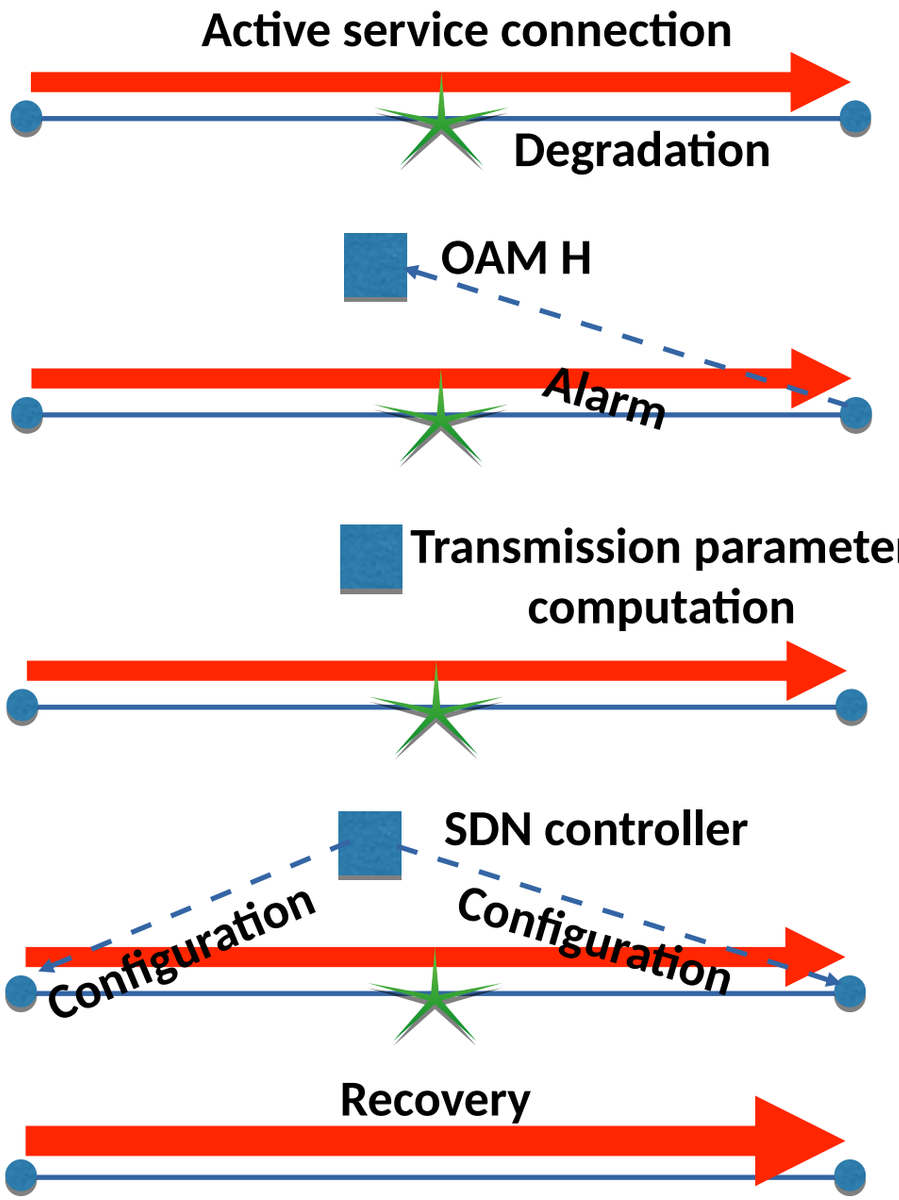
1: Scuola Superiore Sant'Anna, Italy
2: Telecom Italia, Italy
3: CNIT, Italy
4: Ericsson, Sweden
5: Huawei, China

IETF Meeting 101, London, March 2018

Proposal

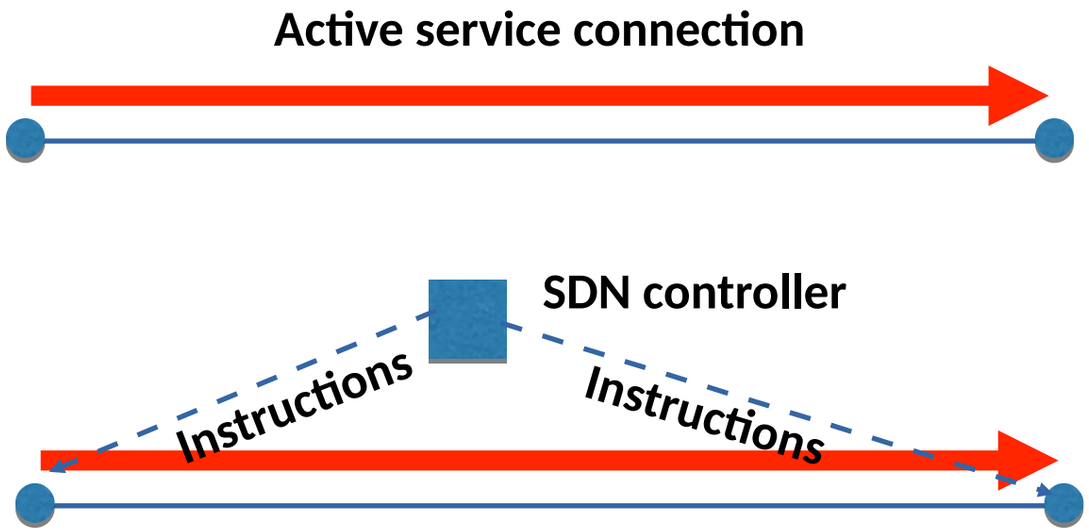
- YANG models for finite state machine to program recovery actions in flexible transponders
- Augmentation of the model in draft-sambo-netmod-yang-fsm-02
- Use case:
  - Flexible transponders in elastic optical networks: multiple rates, multiple modulation formats, multiple FECs
  - Format and FEC can be set based on optical physical layer (e.g., PM-QPSK more robust than PM-16QAM)
  - If physical conditions change (e.g., soft failure: BER increase), format or FEC can be adapted to get more robust transmission

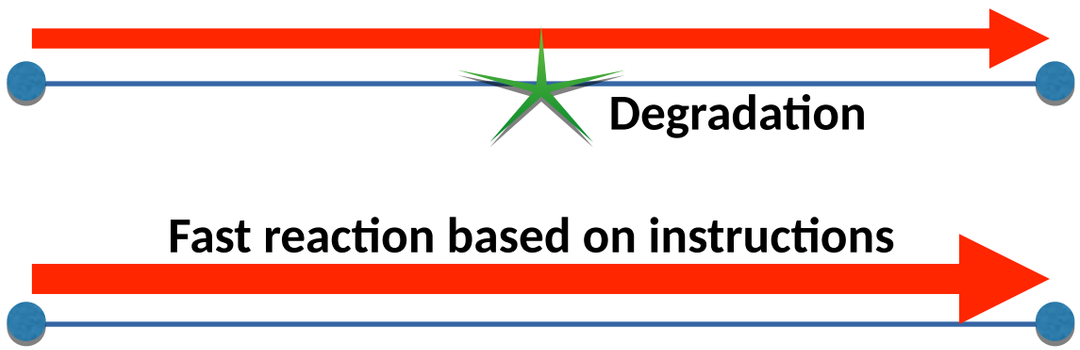
State of the art



Time consuming

Use case of application for FSM YANG model





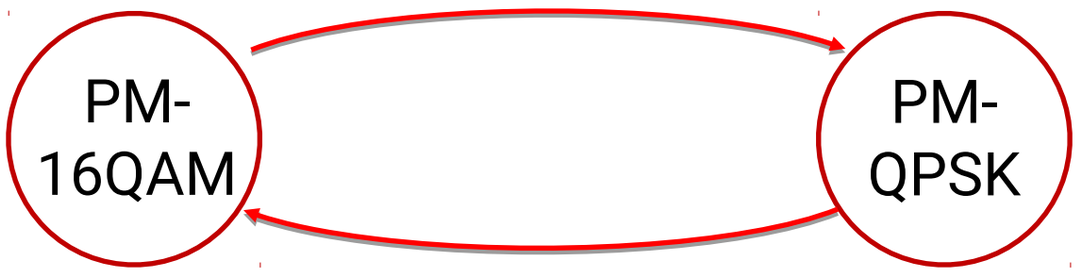
Faster

YANG model

```
module: ietf-treconf
   +--rw current-state?   leafref
   +--rw states
      +--rw state [id]
         +--rw id                  state-id-type
         +--rw description?        string
         +--rw transitions
            +--rw transition [name]
               +--rw name                        string
               +--rw description?                string
               +--rw threshold-parameter?        decimal64
               +--rw threshold-operator?         string
               +--rw transition-action
                  +--rw action [id]
                     +--rw id          transition-id-type
                     +--rw type        enumeration
                     +--rw simple
                        +--rw execute
                        +--rw next-action?   transition-id-type
                        +--rw next-state?    Leafref
```

Implementation

- Event: BER>BER_{th}
- Reaction: e.g., format adaptation



- Event: BER<BER_{th}
- Reaction: format adaptation

email: nicola.sambo@sssup.it