



Automotive Industry

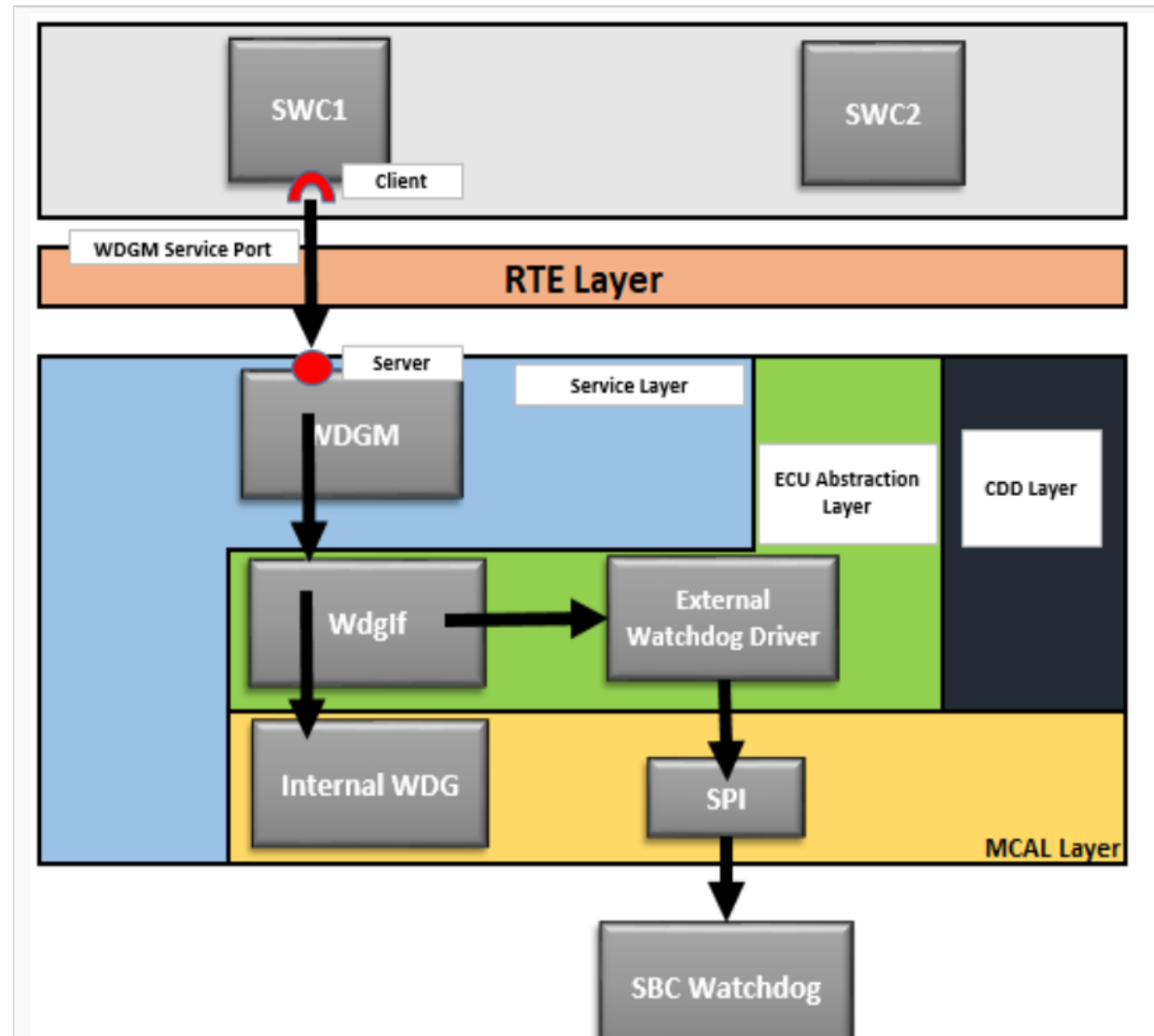
AUTOSAR Watchdog stack & Mode management

## Agenda

- **Watchdog stack**
- **Network & Mode management**

## Watchdog stack

- Watchdog stack architecture (Internal & external WDG)



## Watchdog stack

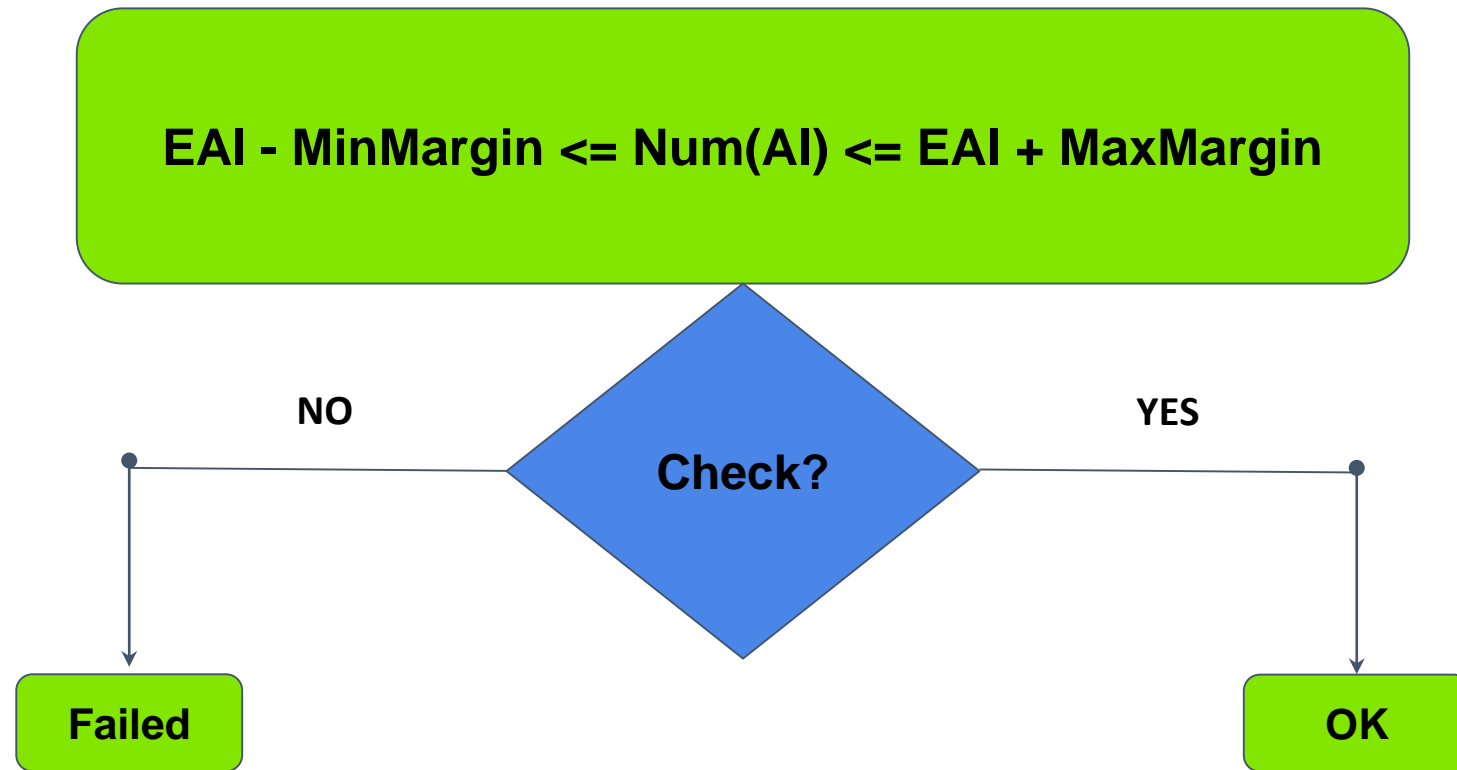
- WdgM supervision mechanisms
  - Alive supervision :
    - Periodic entities
    - Timing focused
  - Deadline supervision :
    - Sporadic entities
    - Timing focused
  - Logical supervision :
    - Program flow monitoring
    - Sequence focused

## Watchdog stack

- Alive supervision
  - Supervised Entity (SE)
    - A software entity which is included in the supervision of the Watchdog manager. Each supervised entity has exactly one identifier
  - Supervision cycle (SC)
    - Period of WdgM main function
  - Supervision Reference cycle (SRC)
    - The main function instance when the supervision formula is checked
  - Alive indication
    - Calls to WdgM by the supervised entity (SE) through WdgM\_CheckPointReached
  - Expected alive indications (EAI)
    - Number of expected alive indications

## Watchdog stack

- Alive supervision



## Watchdog stack

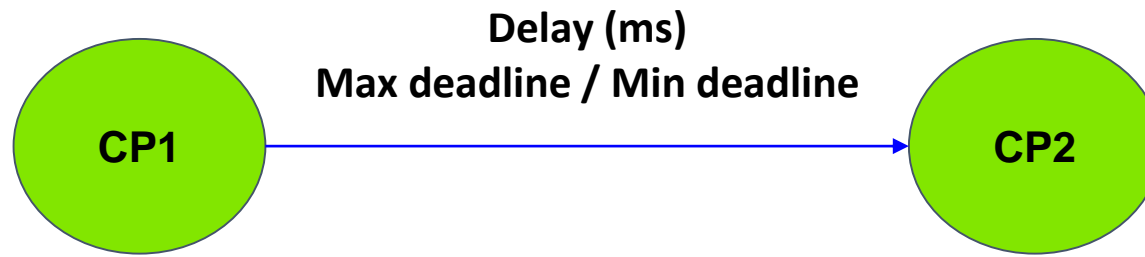
- Alive supervision parameters calculation

Check points (Supervised entity)	Periodicity ( in ms)
CP_1 (SE_1)	5
CP_2 (SE_2)	20
CP_3 (SE_3)	50



## Watchdog stack

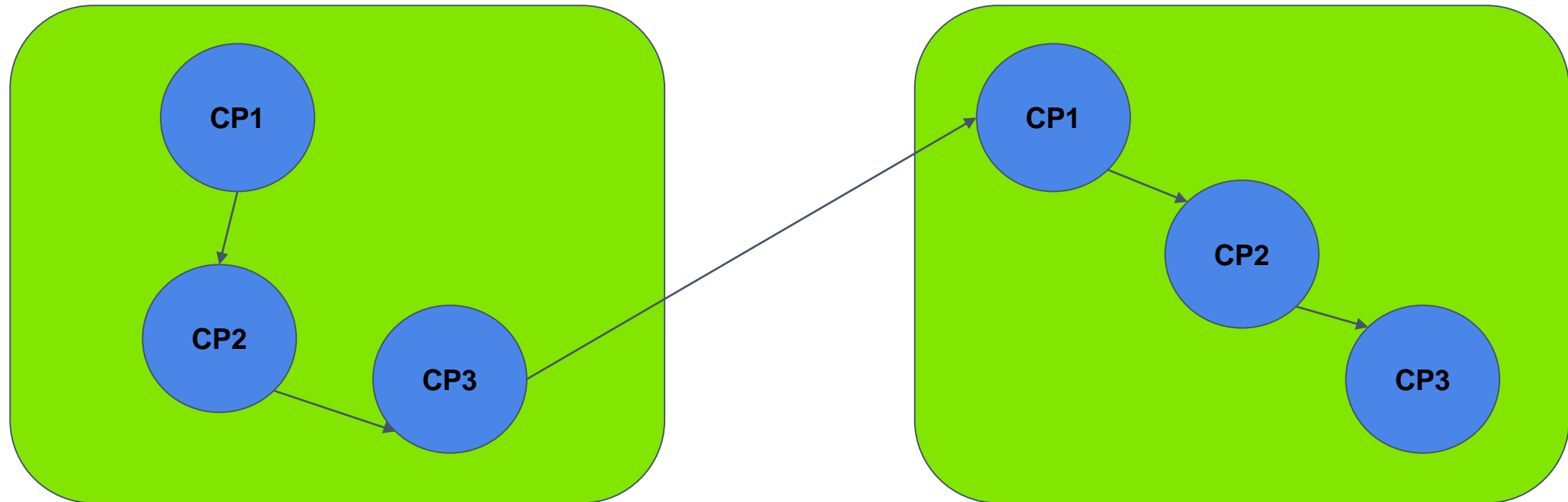
- Deadline supervision : WdgM will trigger a reset if the delay between two checkpoints is less than Min deadline or more than Max deadline durations





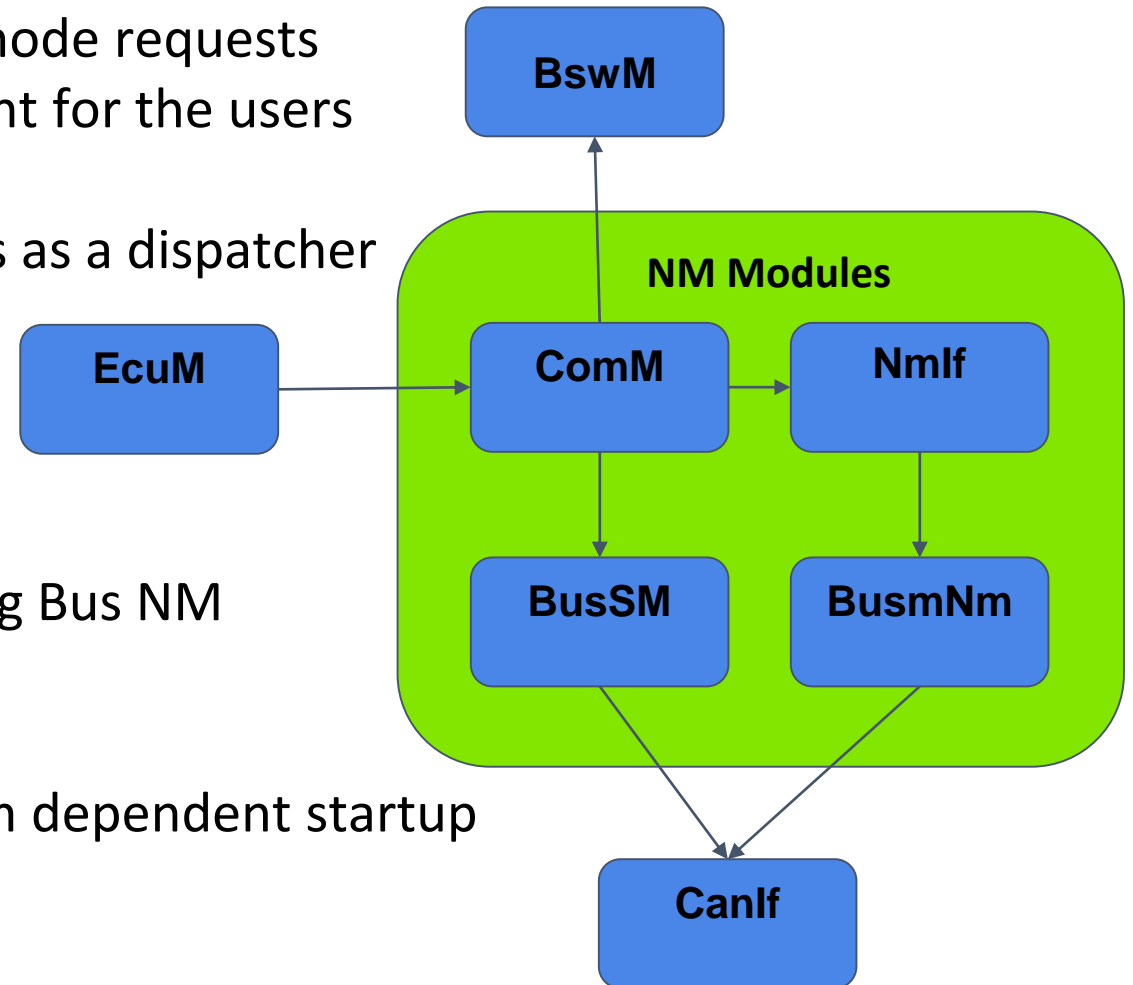
## Watchdog stack

- Logical supervision : WdgM will trigger a reset if a specific sequence of calling checkpoints is not achieved



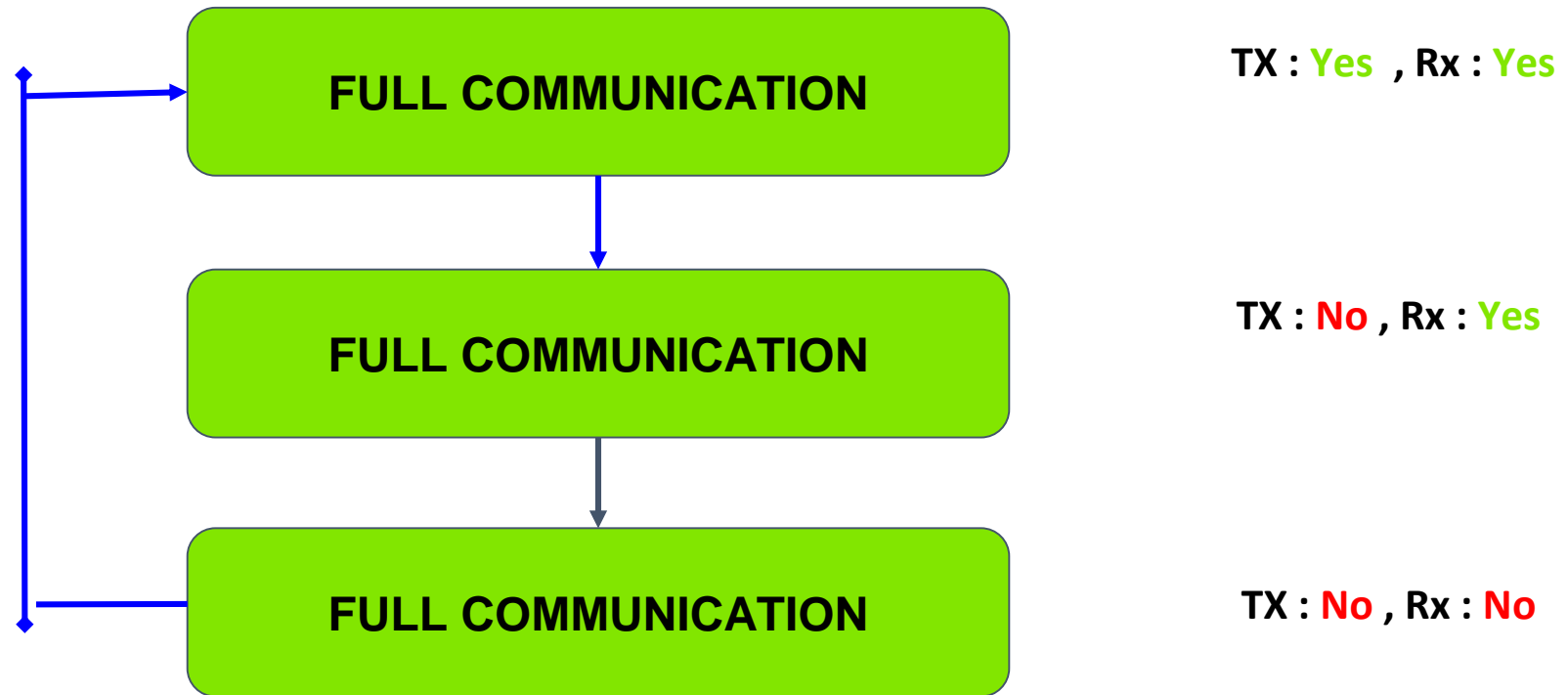
## Network & Mode management

- ComM
  - ComM handles the user communication mode requests
  - ComM simplifies the resource management for the users
- NmIf
  - Nm is just the generic interface that works as a dispatcher between ComM and BusNm
- BusNM
  - BusNM coordinates the different NM state and the transition between them
  - BusNm is responsible for sending/receiving Bus NM messages
- BusSM
  - BusSM handles the communication system dependent startup and shutdown features



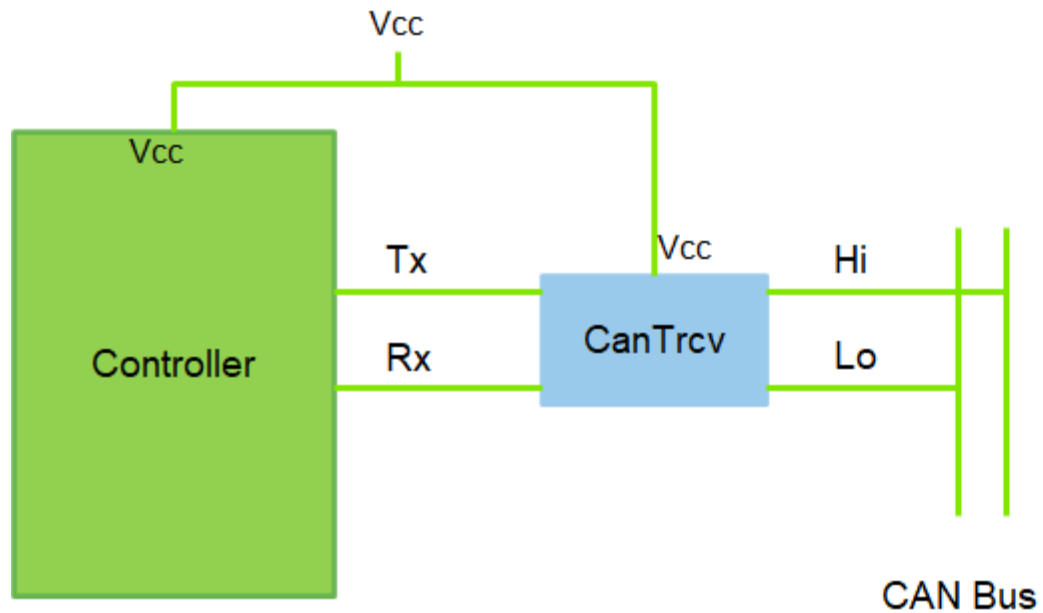
## Network & Mode management

- Network management states & transitions



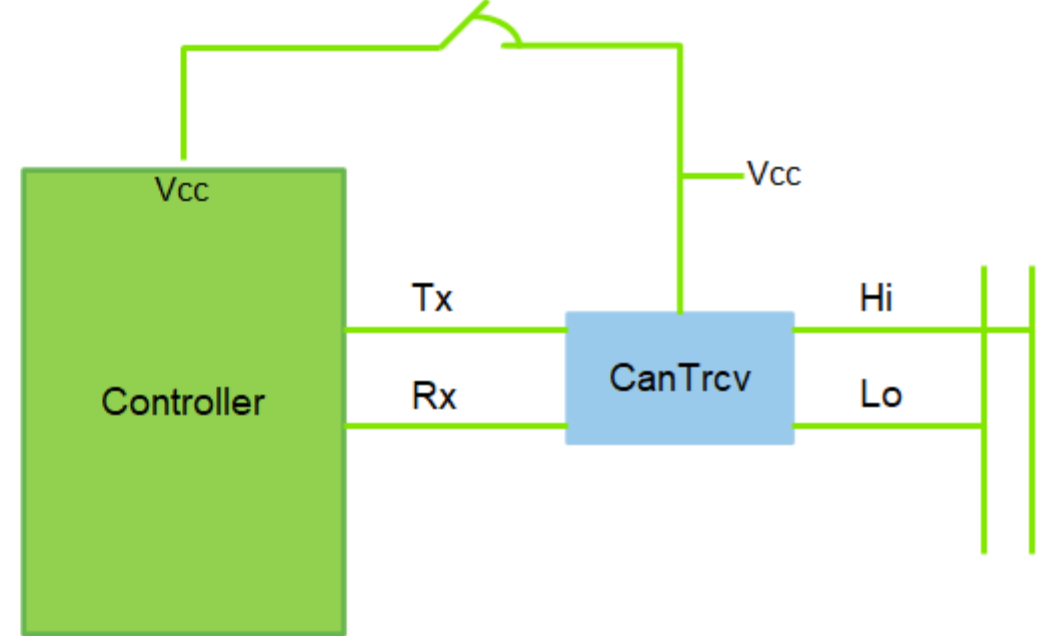
## Network & Mode management

Startup by power on



Normal Transceiver

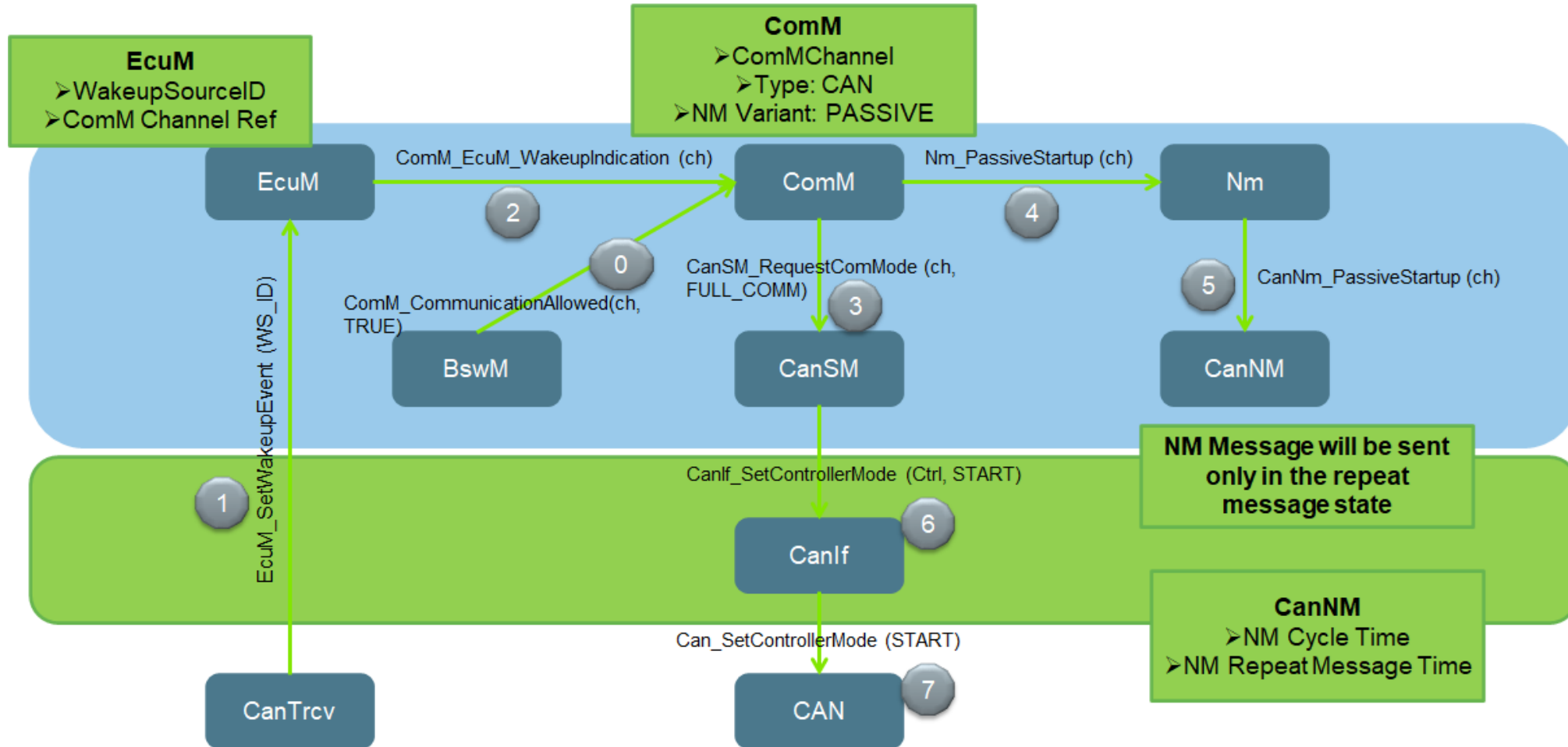
Startup by bus



Transceiver with integrated  
power circuit

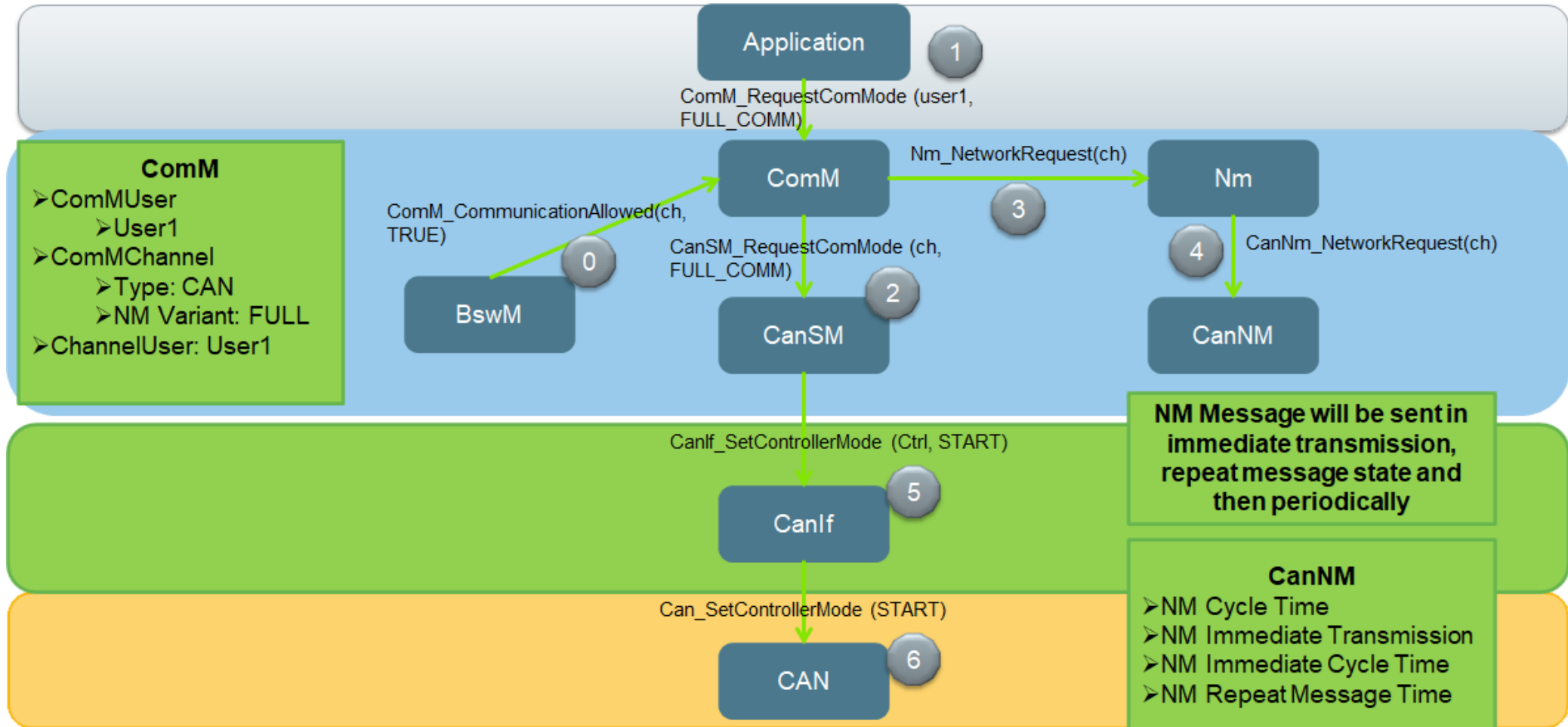
# Network & Mode management

- Passive wakeup



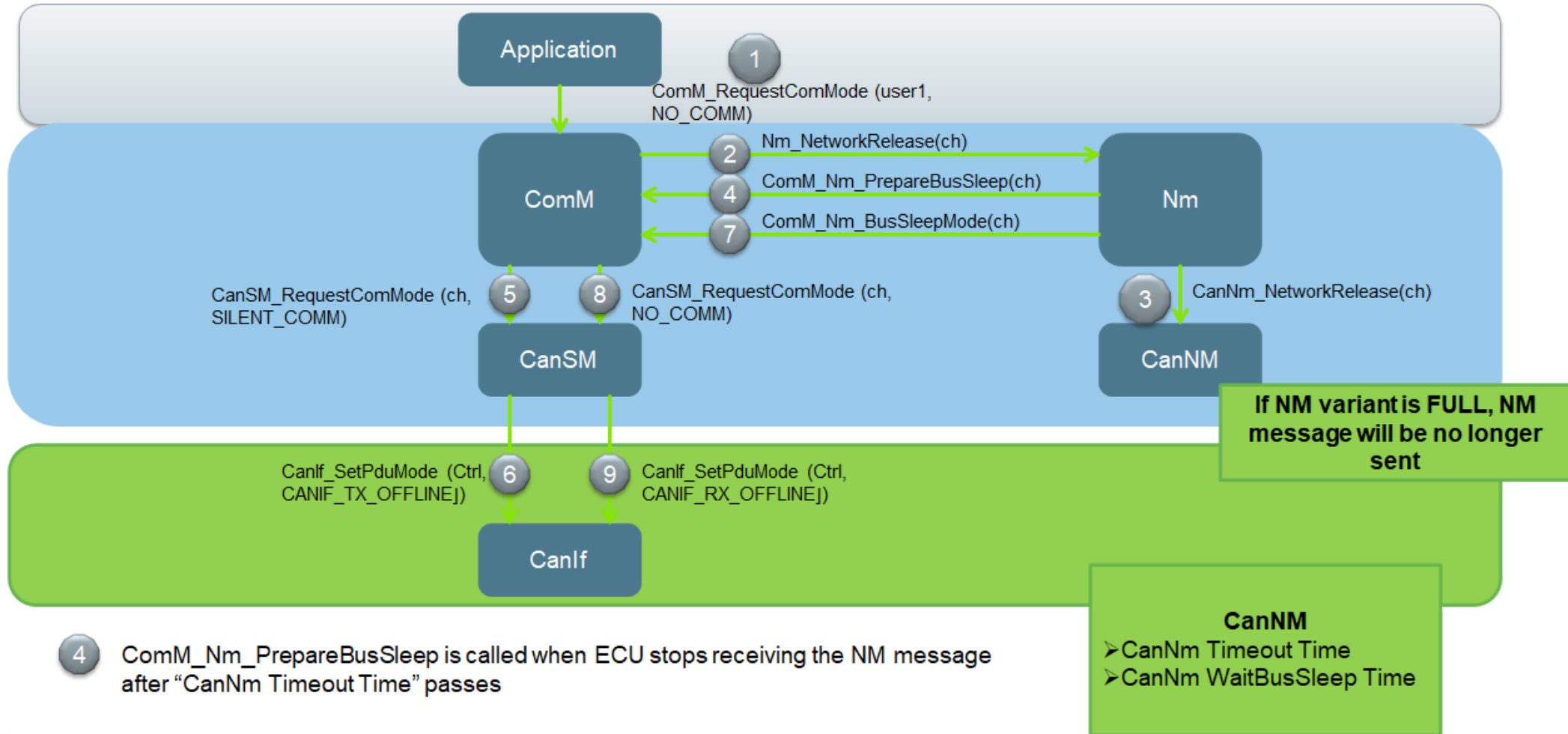
# Network & Mode management

- Active wakeup



# Network & Mode management

- Network shutdown



The End ...







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