MPCP+ GATE processing

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Outline & Supporters

- Outline
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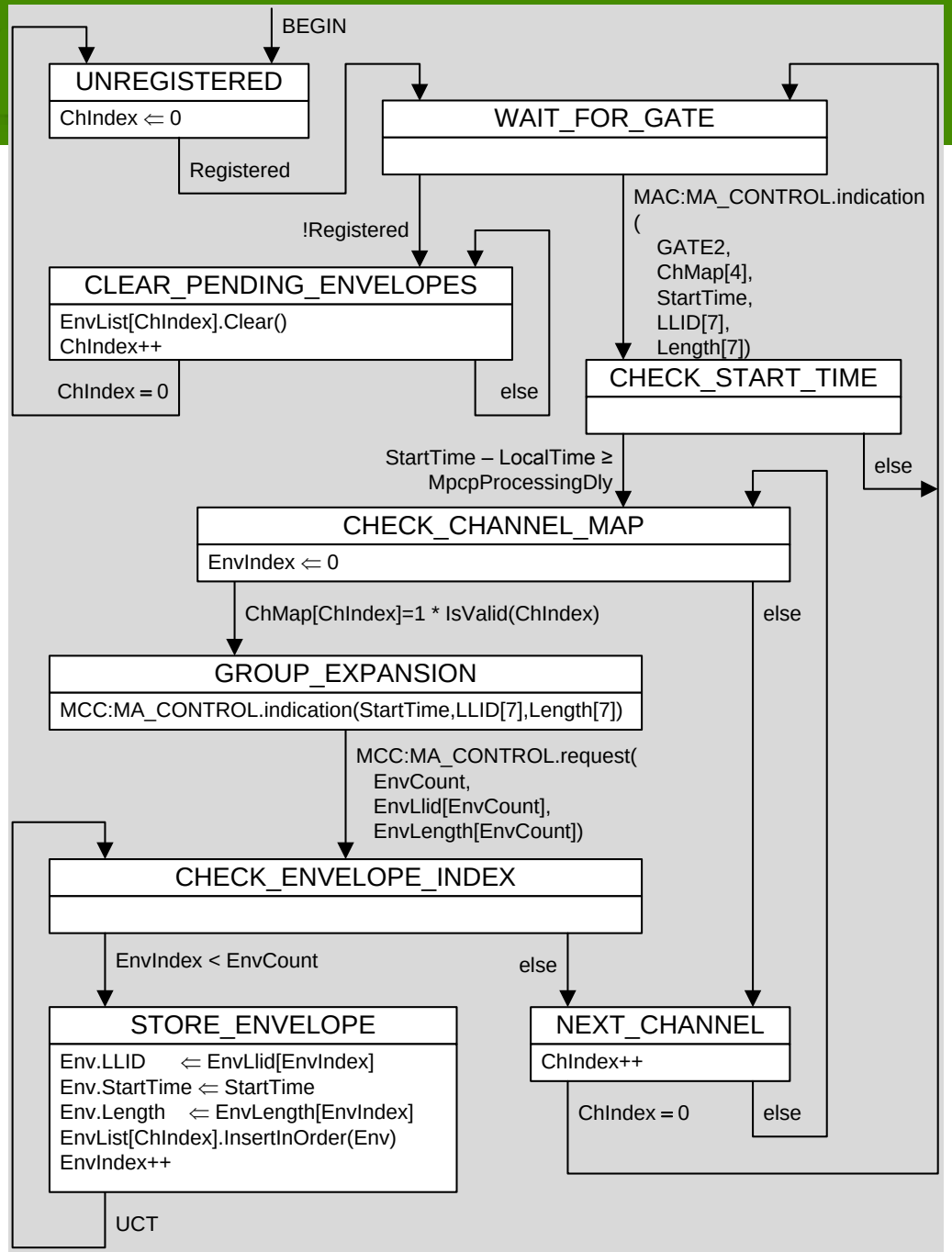
  - Proposed Solution
  - GATE Reception Process SD & parameter descriptions
  - Envelope Commitment Process SD & parameter descriptions
- Supporters

  Gaobo - Huawei

Motivation

- MAC Control should have the ability to look at multiple GATE messages when making scheduling (Envelope) decisions
- Not possible with current SD
  - GATEs are passed to upper layers one at a time and processed completely before another GATE can be presented to the scheduler



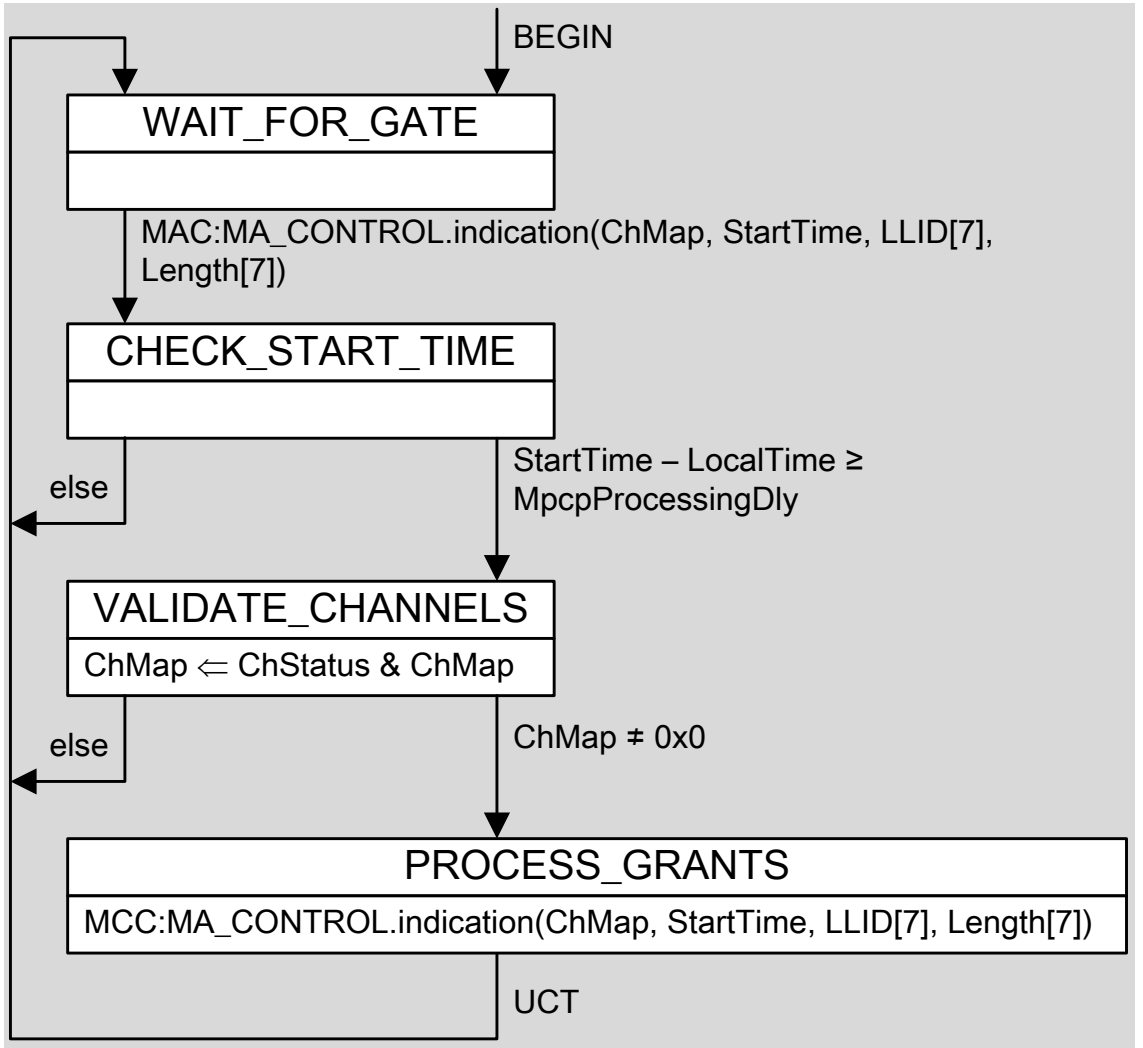
Proposed solution

Split the current SD into two parts

- GATE Reception Process
  - Receives GATE MPCPDUs and passes them to the MAC Control Client (higher layer) via the MA_CONTROL.indication() primitive
- Envelope Commitment Process
  - Receives Envelope Descriptors from MAC Control Client via the MA_CONTROL.request() primitive and queues them by channel and start time

GATE Reception Process

- Verifies GATE is valid
  - Sufficient processing time
  - Includes at least one enabled channel
- Passes validated GATE parameters to MAC Control layer



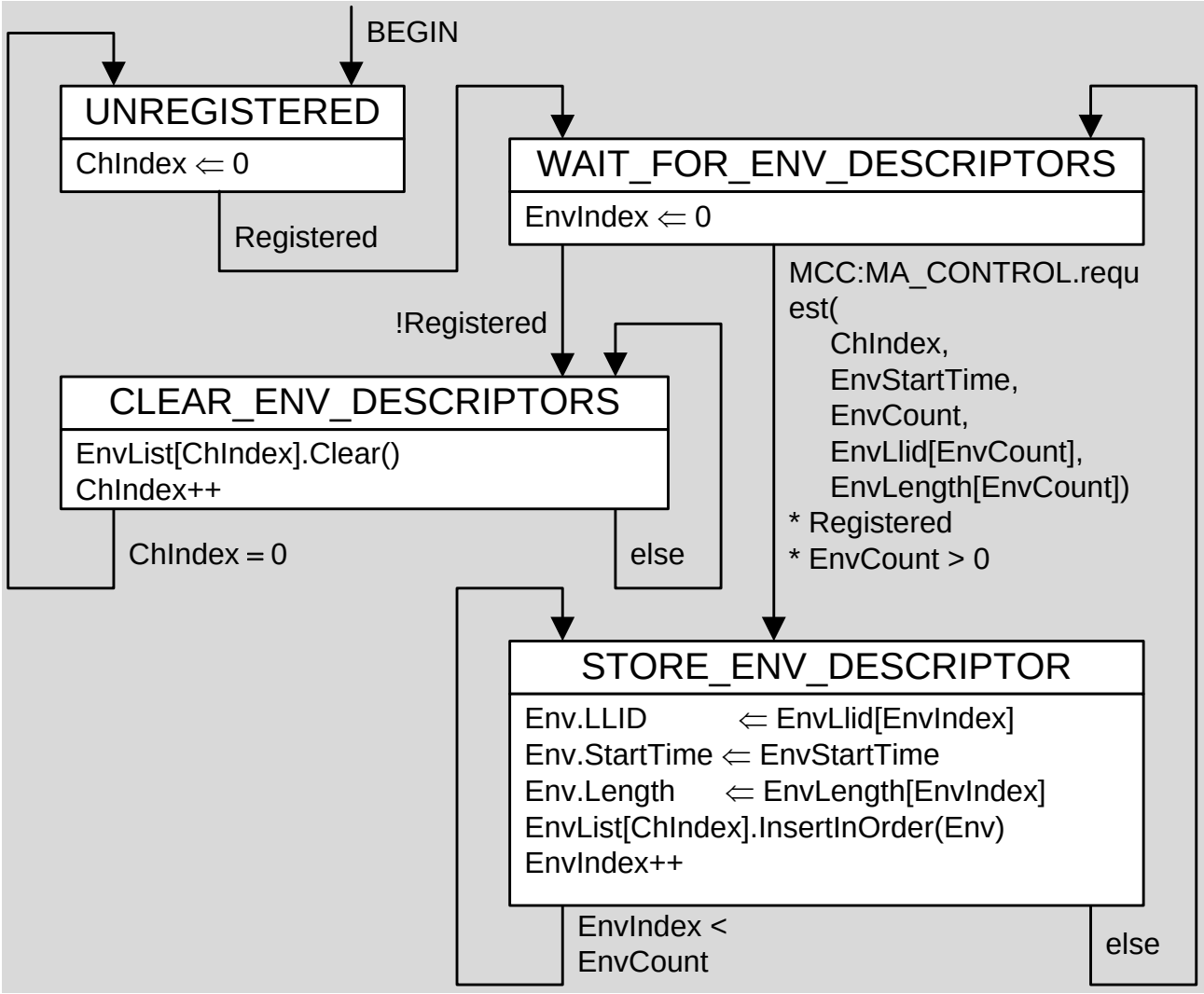
Note: & = bitwise AND operation

GATE Rx parameters

- MAC_CONTROL.indication
  - **ChMap**: 4-bit binary channel map from GATE
  - **StartTime**: 32-bit start time from GATE
  - **LLID[]**: Granted LLID (1-7) from GATE
  - **Length[]**: Granted EQs for each LLID (1-7)
- Other variables
  - **ChStatus**: a 4-bit binary reflecting the current channel status for the device
    - 1 = Channel is enabled
    - 0 = Channel is disabled
  - **MpcpProcessingDly**: the maximum time allowed for the ONU to process the GATE message
    (16 µs, similar to min_processing_time in .3ah/.3av)

Envelope Commitment Process

- Queues Envelope Descriptors in EnvList[] FIFO in order of their start times



Envelope Commit parameters (1 of 2)

- MA_CONTROL.request parameters
  - **ChIndex**: a 2-bit integer number indicating the channel the Envelope Descriptor is intended for
  - **EnvStartTime**: the 32-bit start time of the Envelope Descriptors in the primitive
  - **EnvCount**: the integer number of Envelope Descriptors in the primitive
  - **EnvLlid[]**: 16-bit value indicating the PLID/ULID of the Envelope
  - **EnvLength[]**: 22-bit value indicating the length, in EQs, of the Envelope

Envelope Commit parameters (2 of 2)

- Other parameters
  - **Registered**: inherited from 10G-EPON
  - **EnvList[ch]**: an ordered list of Envelope Descriptors for channel ch
  - **EnvIndex**: an index to an Envelope Descriptor identifying a unique LLID/Length tuple
- Function
  - **InsertInOrder**: same as in 802.3av

Thank You

Motion

Split the ONU GATE Reception Process state diagram into two SDs, GATE Reception Process and Envelope Commitment Process as illustrated in remein_3ca_2_0717.pdf slides 5 through 9.

Moved: Duane Remein

Second:

For: _____

Against: _____

Abstain: _____

Motion Technical ≥ 75%

Motion: Passed/Failed

Fig 144-2

- Envelope Activation Process state diagram