Mark & Hold

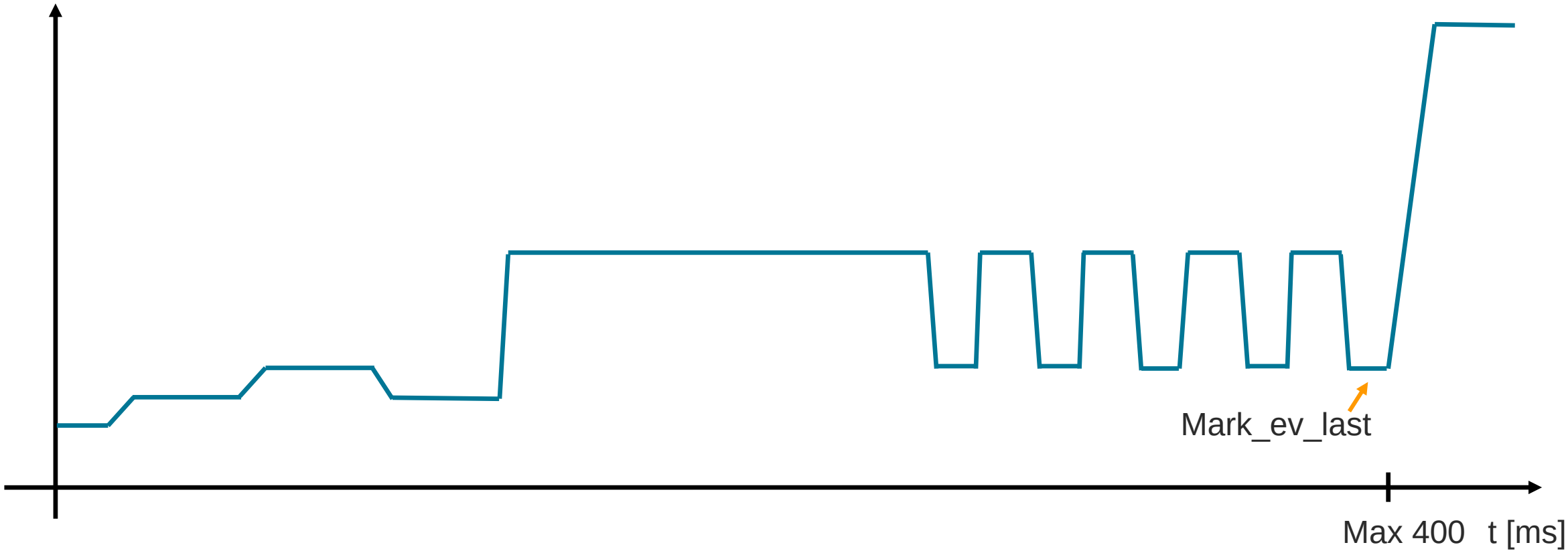
Miklos Lukacs, April 2017

Adding a technical feature now !?

- We are about to go to Sponsor Ballot, the time to add new features has passed.
- BUT…
- Mark & Hold is an easy to implement feature that offers wide benefits
- Only requires changes on the PSE side – NO modifications to PD section
- Plan:
  - Discuss the concept – May
  - Create baseline for review in July
  - Final decision to adopt it - September

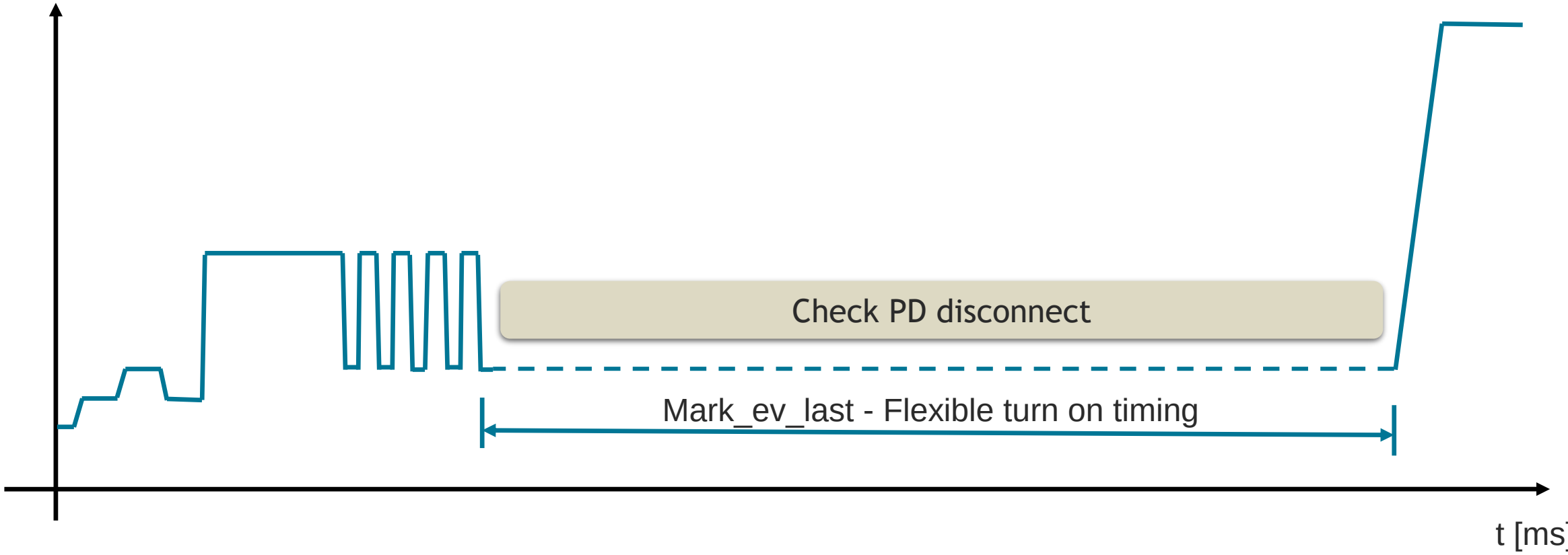
What is Mark & Hold – Tpon today

- PSE must turn on the PD, max Tpon (400ms) after the end of detection.
- This restriction exists to prevent a PD from being swapped with another device (similar to TMPDO).



What is Mark & Hold

- Mark & Hold allows a PSE to delay POWER_ON
- The PSE can extend MARK_EV_LAST and choose the POWER_ON moment
- PSEs will check the mark current to detect PD disconnects



Benefits

- Get all PDs turned on faster in multi-port PSEs
- Simultaneous turn on of both pairsets of a dual signature PD
- Deep sleep mode is possible for PDs and PSEs, with fast turn-on
- Synchronized multi-port turn-on

Benefits in detail – not to present this slide

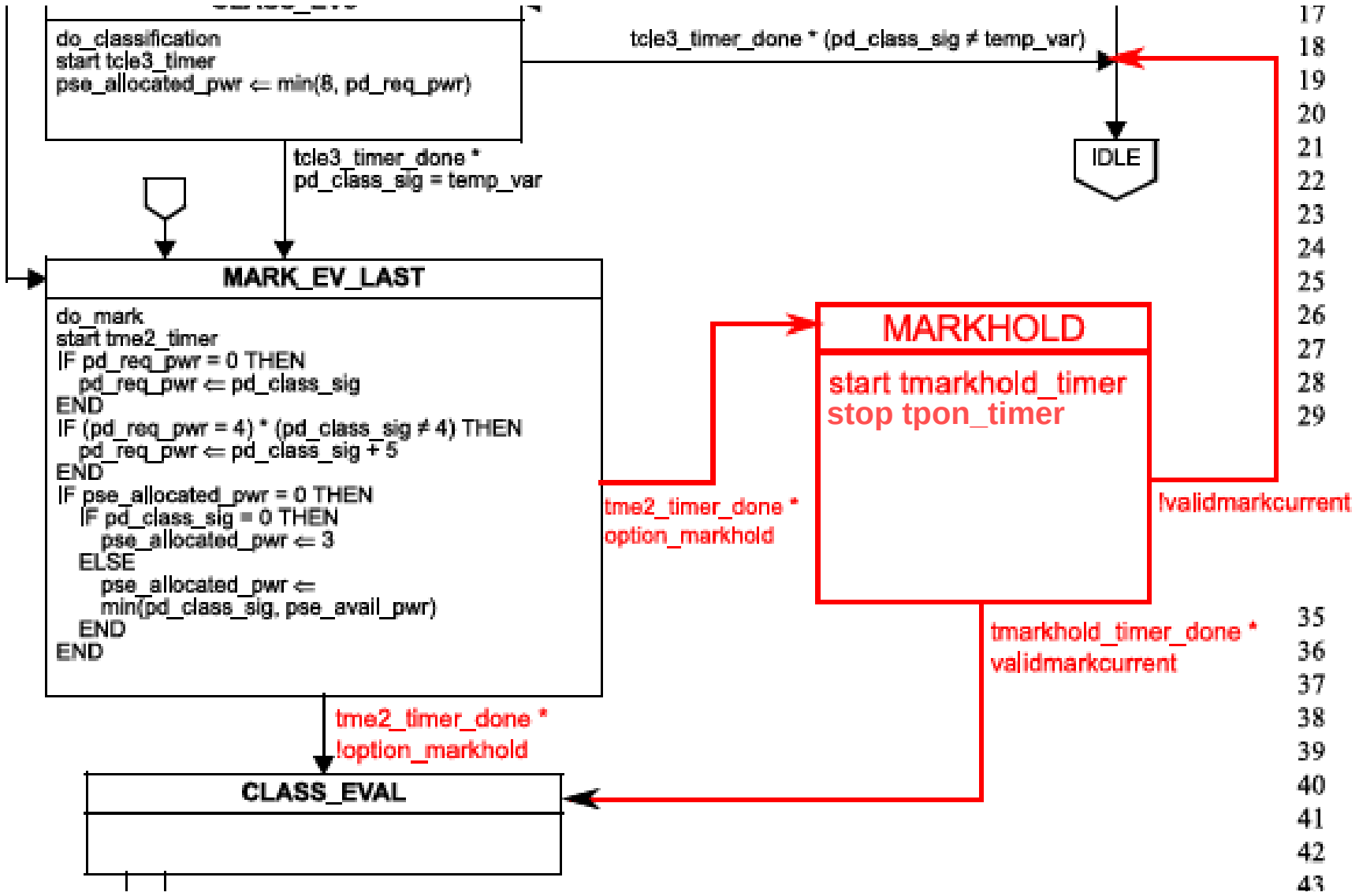
- Multi port PSEs can get all of the connected PDs turned on faster
- PSE can wait in the Mark & Hold state until it gets permission from the host controller to turn on the port, and doesn't need to wait until the next window
- Also saves power (no repeated cc-det-class like today in semi-auto mode)
- Allows simultaneous turn on of both pairset of a dual signature PD with PSEs having shared resources
- Holding the PD in mark consumes very little power, but allows to turn on instantaniously – creates a deep sleep mode option for the PDs
- Synchronized turn on useful for PoE lighting – helps to avoid the visually unpleasant turning on in a semi-random fashion

What do we need to change ?

- PSE Changes:
  - Add a “waiting” state to the PSE classification state diagram – „MARKHOLD”
  - Change normative text that restricts turn on to within Tpon of detection
  - Set rules for disconnect detection during MARKHOLD state
  - Stop Tpon timer when entering to MARKHOLD.

- PD Changes
  - None

PSE State Machine change



Check PD Disconnect – in MARKHOLD state

- Tpon prevents a device to be powered if the device is swapped right after detection
- Same level of protection needs to stay in effect
- Tpon to apply either to powering the PD, or to reaching the MARKHOLD state
- In the MARKHOLD state, PSE checks for PD disconnect by looking for MARK current or detection current
- Details on how to check if PD has disconnected
  - 100ms ≤ cycle time ≤ 300ms
  - Current always has to be >250uA