

# 802.1AS-rev: YANG Roadmap Proposal

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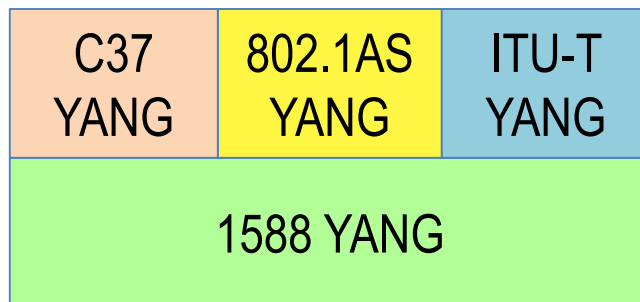
# History: MIBs for 1588-2008 Profiles

- 1588-2008 did not specify a clear information model for management
  - "data sets" were focused on protocol operation
- Many 1588 profiles created their own MIB
  - Analogy: Assume that 802.1Q had no clause 12 (managed objects), and 4-5 non-802 standard orgs specified a MIB
- Result was messy
  - Inconsistent interpretation of 1588-2008
  - Difficult for 1588 to specify foundation MIB/YANG in future
  - Difficult for a product to support multiple profiles
    - E.g. 802.1BA and 802.1CM in same bridge

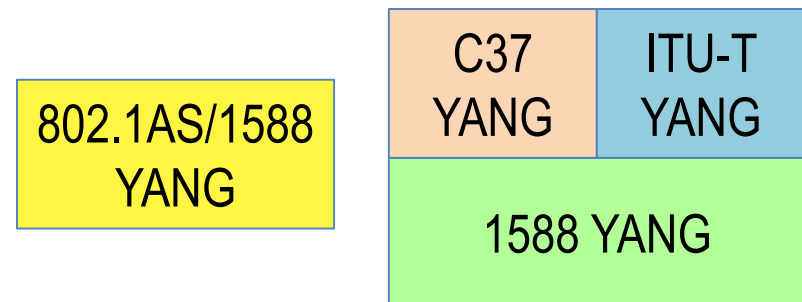
# Getting It Right with YANG

- YANG augment: Clean way to specify management for a standard that builds on another standard
  - "derived class" (augment) from a "base class" (foundation)
  - E.g. 802.1Qbv YANG augments 802.1Qcp YANG
- Examples of right and wrong for 802.1AS YANG

Right-way: Augment



Wrong-way: Standalone



# Current Work Toward Goals

- 1588-rev
  - Re-design data sets to clarify usage for management
    - Formally specified information model, aka managed objects
  - Data sets changing in major ways
    - E.g. Configuration of >1 domain (PTP Instance)
- 802.1AS-rev
  - Comments to align 1588 data set members with 1588-rev
    - Name, type, etc
- IETF TICTOC WG: YANG module for 1588-2008
  - Will serve as first revision of 1588 YANG foundation
  - IETF/IEEE agreement to transfer work to 1588 WG in future

# Future Work Toward Goals

- 1588 WG: Amendment PAR for YANG module
  - Second revision of 1588 YANG foundation
    - Compatible enhancements to 1588-2008 module
  - Adds features from 1588-rev data sets
  - Likely start ~1st quarter of 2018
    - Tentative (not approved PAR)

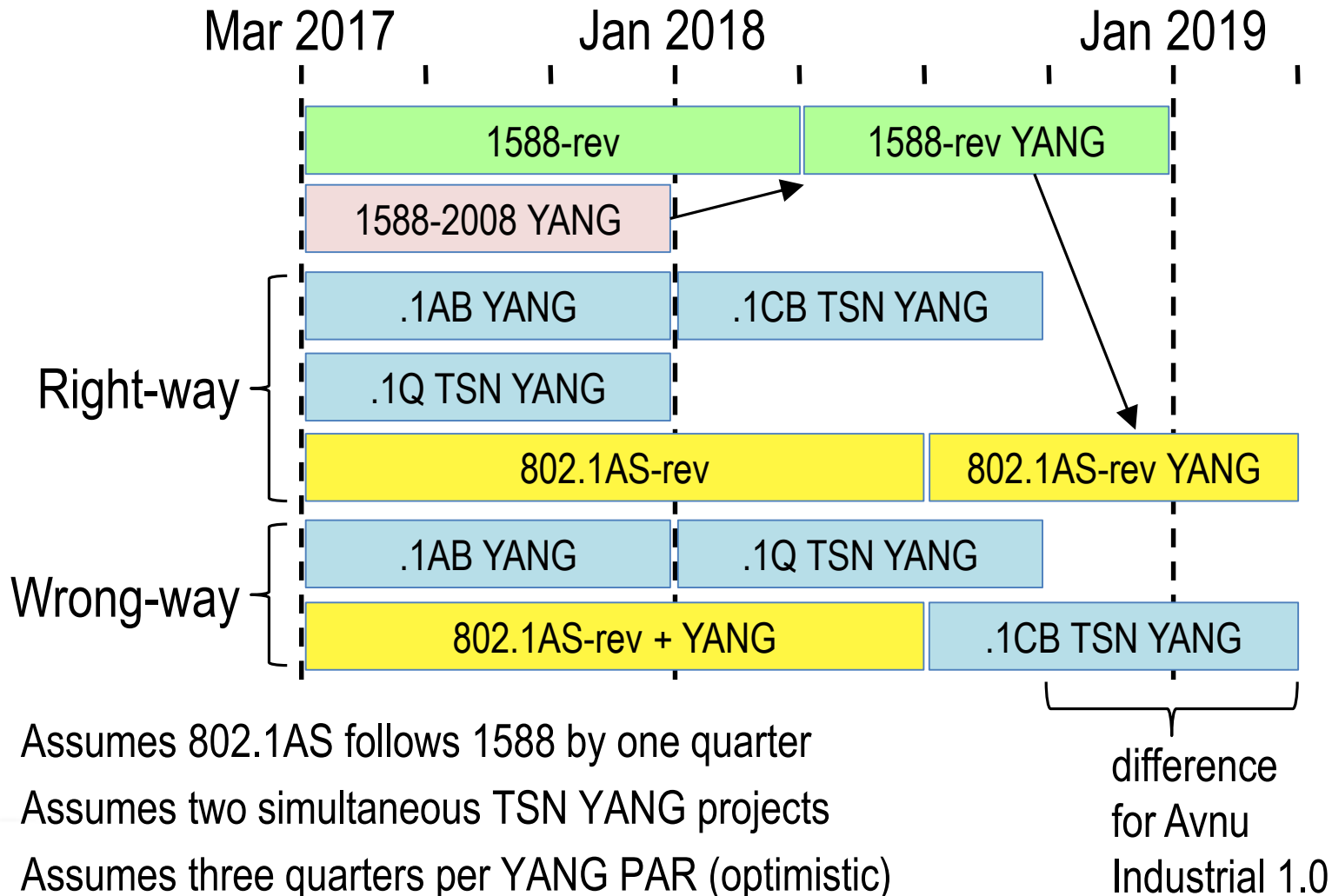
# YANG for TSN Managed Objects

- TSN features in managed objects of .1Q
  - Qav, Qat, Qbu, Qbv, Qcc, Qci, 12.12 (MST configuration)
- .1AB (LLDP)
  - Essential for a TSN CNC to discover stations
- .1AS-rev
- .1CB (FRER)

# FYI: Avnu Industrial 1.0

- Avnu Industrial Marketing Requirements Document 1.0
  - Lists YANG for .1Qbv, .1Qcc (incl 12.12), .1AB, .1AS-rev
  - <http://www.ieee802.org/1/files/public/docs2016/liaison-woods-AVnuResponse-0716-v00.pdf>
- Near-term goal: Develop certification tests
  - Can use [experimental modules on YANG GitHub](#)
    - Clearly specified as non-shippable, but useful for prototyping
    - .1Qbv and .1AB done
    - .1Qcc and .1AS-rev coming after managed objects are stable
- YANG standards are required for actual certification

# Thoughts on TSN YANG Timelines





# Proposed Order of TSN YANG PARs

- 802.1AB, then 802.1Q TSN, then 802.1AS-rev
  - All three are essential for a TSN CNC
- Avoid doing 802.1AS-rev the wrong-way
- if we complete .1AB and .1Q TSN quickly,  
and we decide to do .1AS-rev the wrong-way,  
then explore methods to transition to the right-way

# Thank You