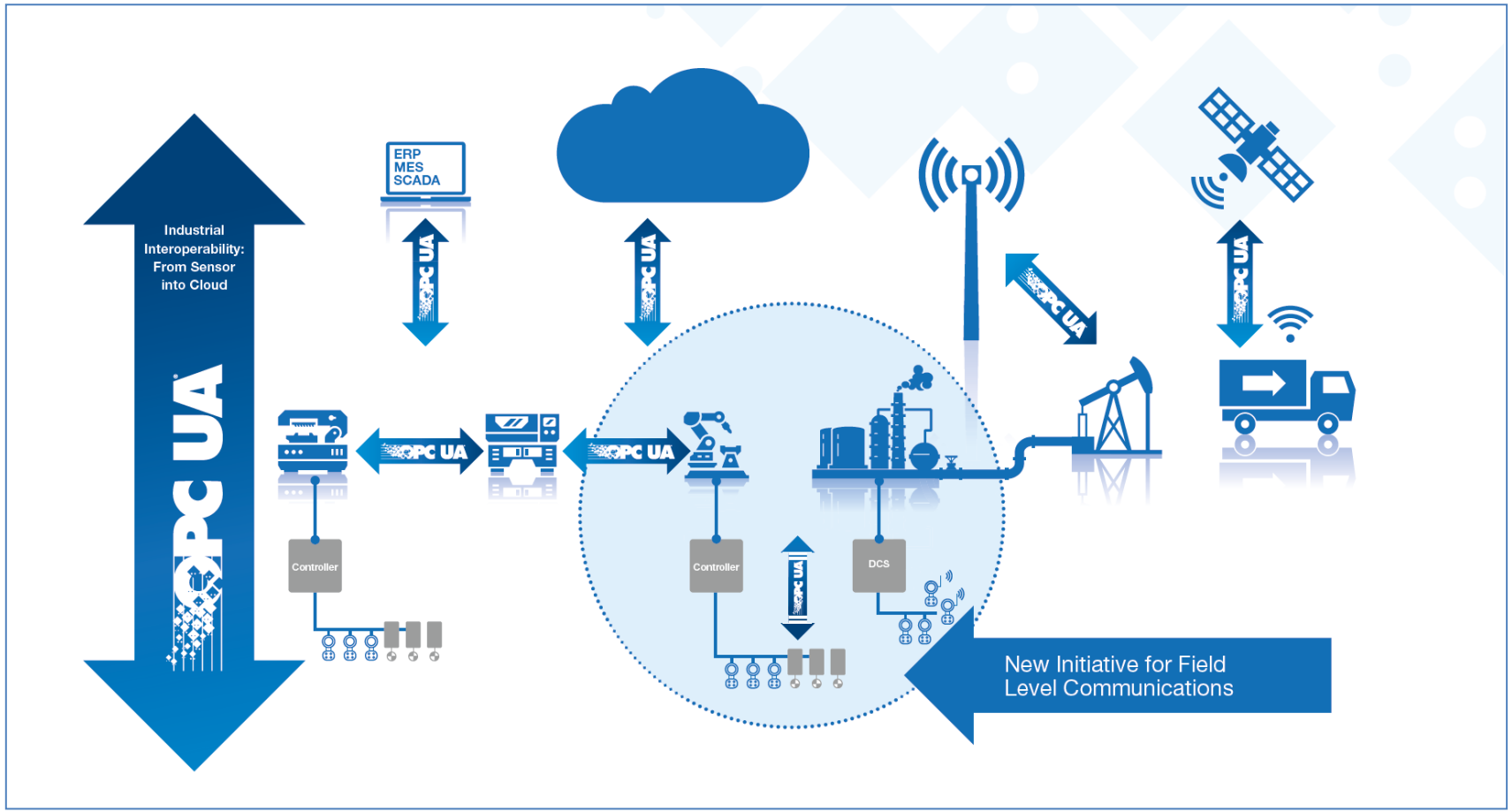
OPC FLC preparing textual contribution

IEC/IEEE 60802 Meeting

March 1, 2021

OPC-F “Field Level Communications Initiative”
Extending OPC UA down to field level - including Determinism, Safety & Motion



OPC-F Press Conference SPS 2018

OPCF Field Level Communications Initiative
Supporting Industry Players

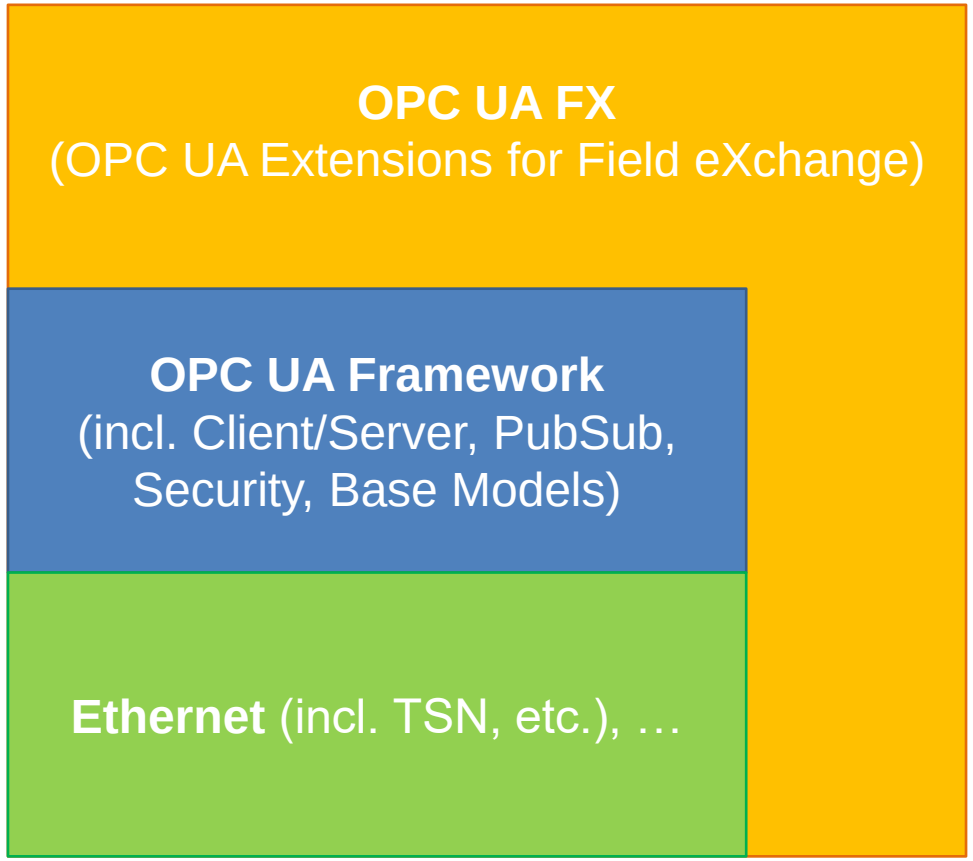
- 27 companies are represented in the Steering Committee of the Field Level Communications Initiative

- Overall, more than 300 technical experts from more than 60 member companies of the OPC Foundation are active in the different Technical Working Groups.

OPC FOUNDATION

OPC FLC Initiative defines OPC UA FX technology

- **OPC UA FX / UAFX** (FX for Field eXchange) including Motion, Safety & Determinsm
- Includes the mapping to IEEE 802.1, IEEE 802.3 and IEC/IEEE 60802

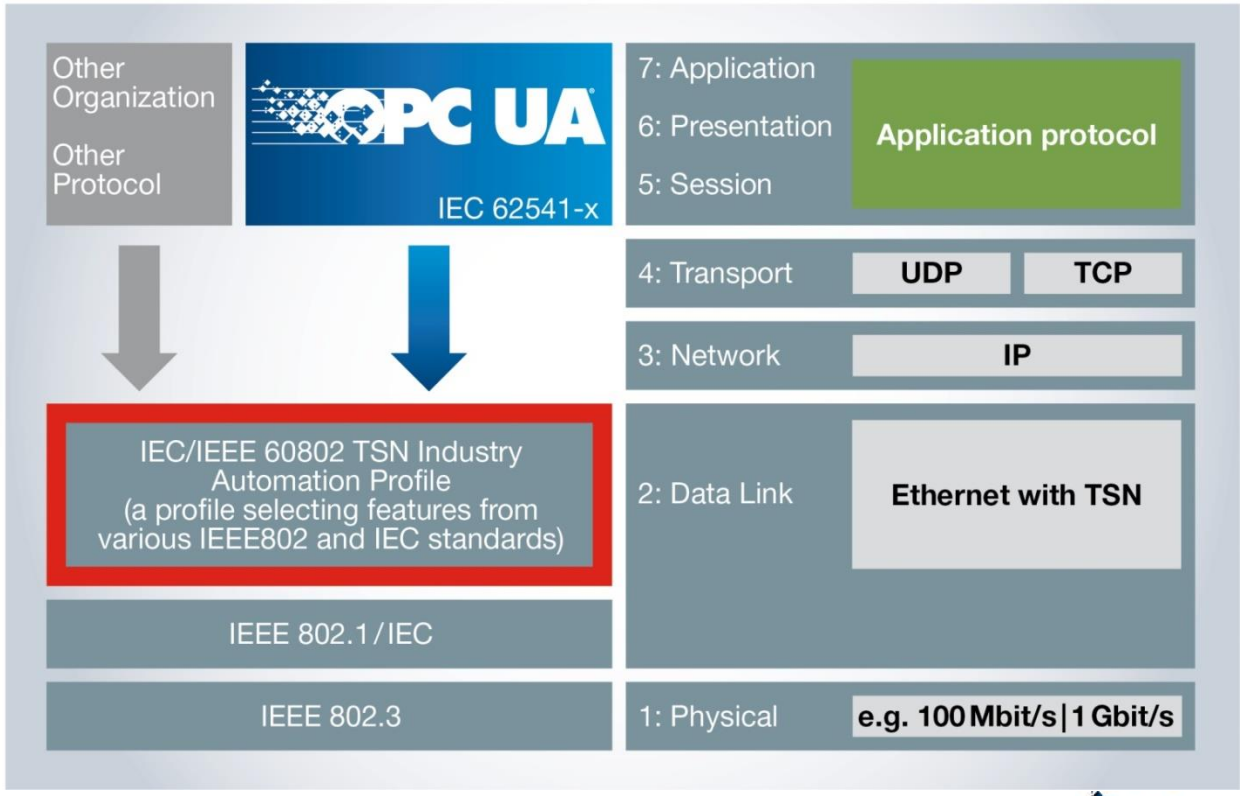


Ethernet Time-Sensitive Networking (TSN)

The working groups will closely **align with the TSN Profile for Industrial Automation (TSN-IA-Profile)** which will be standardized by the IEC/IEEE 60802 standardization group. This will help ensure that a **single, converged TSN network approach** is maintained so that OPC UA can share one common multi-vendor TSN network infrastructure together with other applications.

Goal of IEC/IEEE 60802

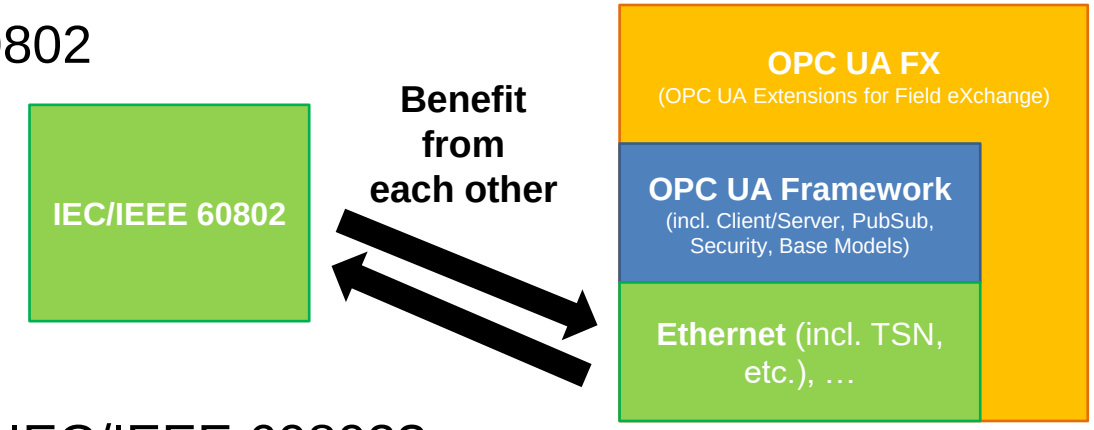
- Converged TSN network: different protocols can share the same TSN network infrastructure
- Use of common HW components



Cooperation between OPCF FLC and IEC/IEEE 60802

- OPC FLC aims for quick adoption of IEC/IEEE 60802 once published
  - Goal is to identify and close potential gaps in OPC UA specifications as soon as possible
  - Requires meaningful assumptions and consensus about lower layers (e.g. IEEE mechanism usage)
  - In many cases leads to creation of documents that directly relate to on-going IEC/IEEE 60802 work

- FLC is willing to contribute such work to IEC/IEEE 60802
  - … to prevent double work,
  - … to accelerate (if possible),
  - … to get additional expert scrutiny, and
  - … to achieve maximum alignment!

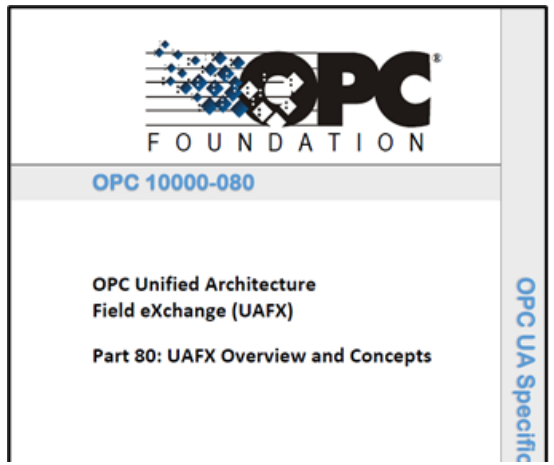


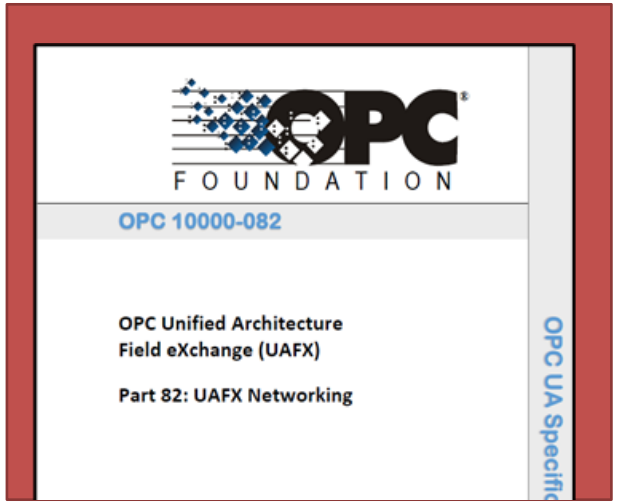
- What expectations does FLC have on feedback from IEC/IEEE 60802?
  - We understand expert discussions may lead to modifications of textual contributions
  - We kindly ask for timely notification about updated material

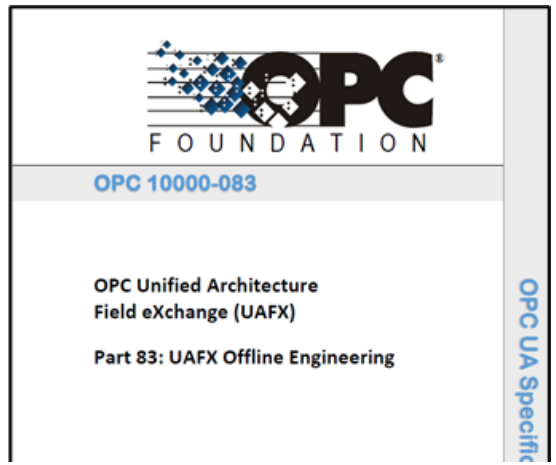
Initial Release Candidate (RC1) Specification completed

- Initial Release Candidate (RC1) with the focus on Controller-to completed and consists of 4 Parts (OPC 10000-080, 10000-81
- RC1 Specifications are used for Prototyping and to create Test the OPC UA Certification Tool (CTT)
- RC1 Specifications also lay the foundation for specification e ancements to cover the Controller-to-Device (C2D) and Device-to-Device (D2D) u cases in the next step

We intend to contribute textual specifications from OPC 10000-082 (OPC UA FX Networking)



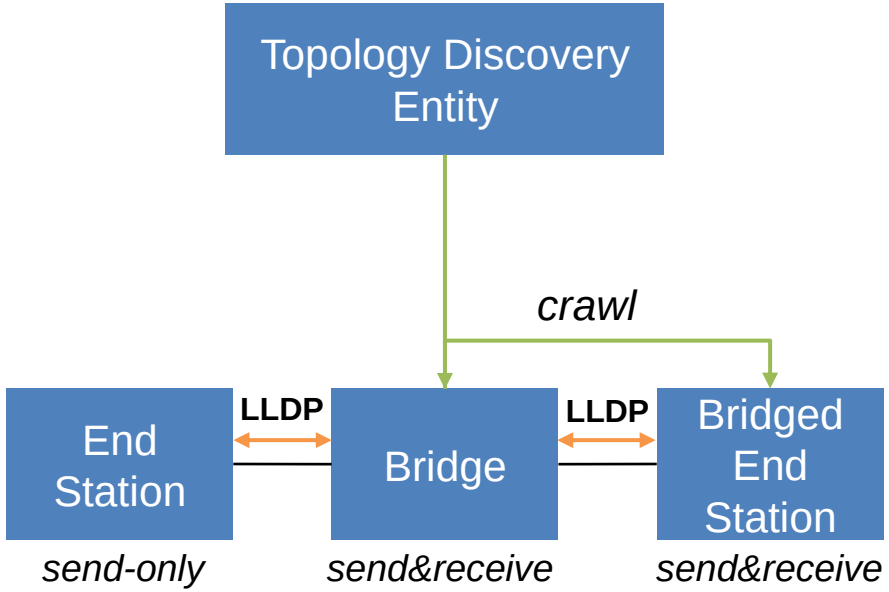




LLDP & gPTP usage
Future: e.g. end station model

Overview of LLDP Usage Contribution (IEEE Std 802.1AB)

- In-Scope
  - Physical topology discovery
- Out-of-scope (for now)
  - Handling of offline planning / online comparison
  - Handling of device replacement
- Design goals
  - Defined default behavior to enable crawling of topology
  - Strong reliance on IEEE 802.1AB defaults
  - Be adaptable / user-configurable / extensible



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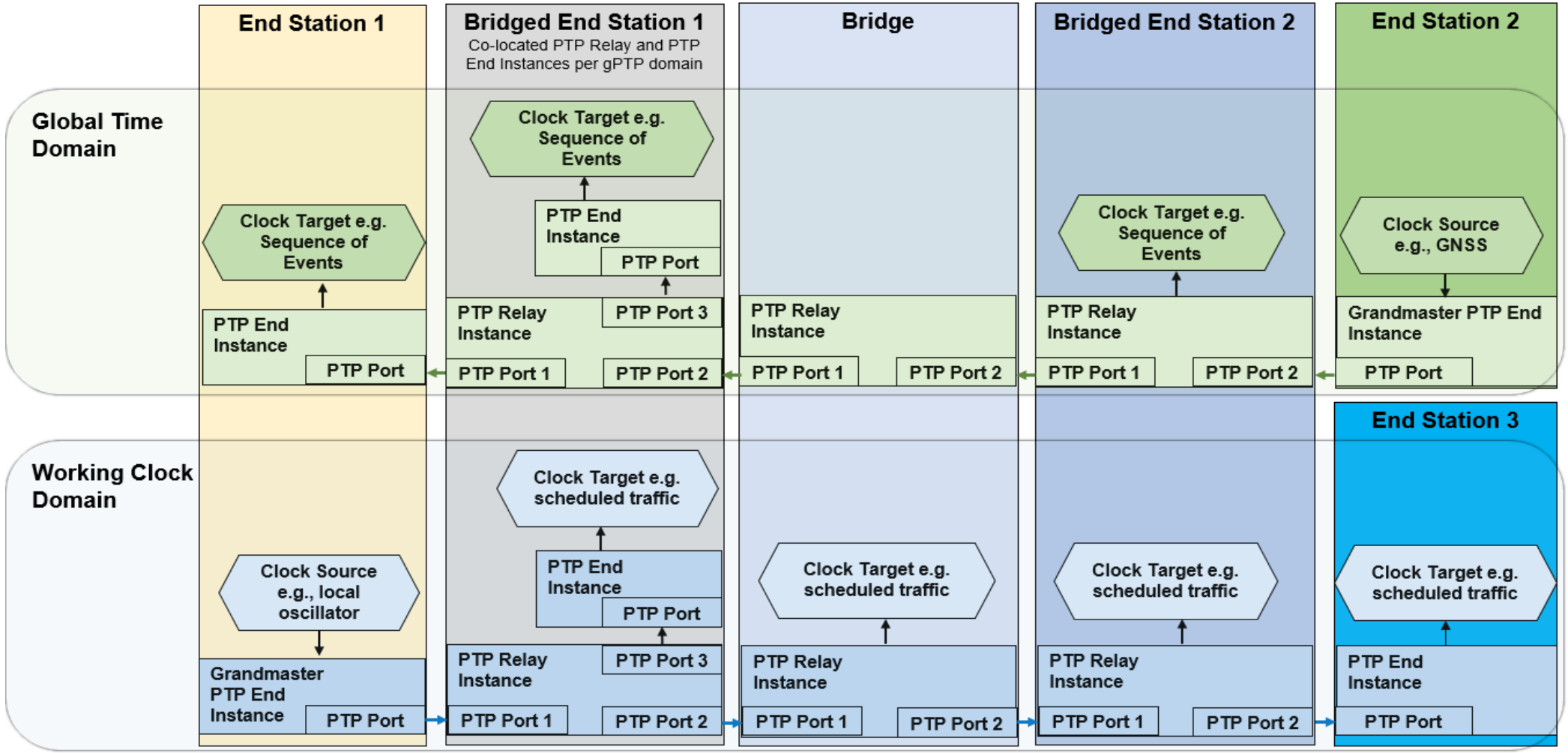
Overview of gPTP Usage Contribution IEEE Std 802.1AS-2020

- In-Scope
  - Support of gPTP as defined in IEEE Std 802.1AS-2020
  - Support of a single gPTP domain for Working Clock
  - Support of a single gPTP domain for Global Time
- Out-of-scope (for now)
  - Grandmaster redundancy and clock path redundancy
  - Monitoring & Diagnostics
  - Security
- Design goals
  - Default behavior and parameters aligned with IEC/IEEE 60802
  - Presently, default behavior and parameters are either taken from IEEE Std 802.1AS-2020 or IEC/IEEE 60802 D1.2 with some exceptions, e.g., syncLocked, instanceEnable, desiredState
  - Clarification and some details on, e.g.:
    - Engineered Sync Tree
    - Functional views of Bridged End Station as a single PTP Relay Instance
  - Usage of Application interface, e.g., clock target or clock source

Table of contents (snapshot)

Example of Global Time and Working Clock domains in UAFX



Questions?