Nendica Study Item (Forwarding of Fieldbus CPF 12 on 802.1 Bridges) Termination

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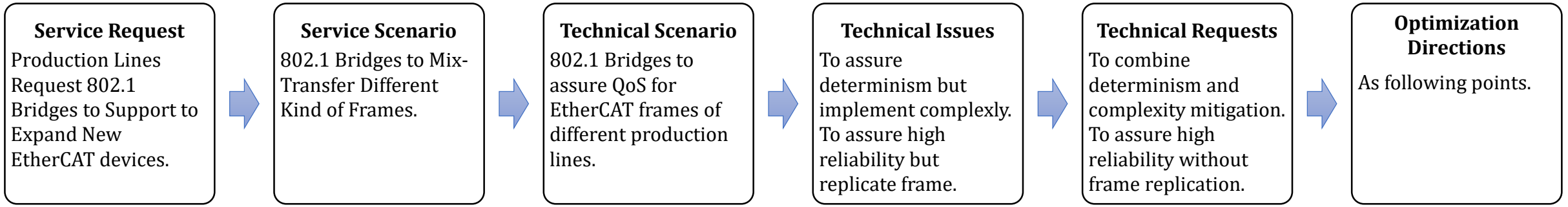
Progress Recap

- The Nendica Study Item (Forwarding of Fieldbus CPF 12 on 802.1 Bridges) initiated on July last year.
  - Study Item Initiation (2022-6-23): Proposal for Nendica Study Item: Forwarding of Fieldbus CPF 12 on 802.1 Bridges (802.1-22-0032)
  - Contributions / Documents of the Study Item
    - ✓ EtherCAT Relay Function (follow-up discussion) (802.1-22-0043)
    - ✓ EtherCAT Relay Function (802.1-22-0041) – Karl Weber, Marcel Kiessling
    - ✓ draft-liaison-to-ETG-about-CPF12-report (802.1-22-0047)
    - ✓ Initial solution for Nendica Study Item (Forwarding of Fieldbus CPF 12 on 802.1 Bridges) (802.1-22-0039)
  - Report of the Study Item
    - ✓ Nendica Study Item Report (Forwarding of Fieldbus CPF 12 on 802.1 Bridges) (802.1-22-0046)
    - ✓ Brief Introduction of Nendica Study Item Report (Forwarding of Fieldbus CPF 12 on 802.1 Bridges) (802.1-22-0052)

Termination of Study Item

- Currently, the items (to be studied) and deliverable are finished according to the initiation proposal of this Study Item.
- In this Study Item report slides, the industrial service (production line expansion) and network technical aspects are analyzed as the following steps, and getting the optimization directions finally.



- **Mix-transfer latency / jitter:** as analyzed, the 802.1Qbv could satisfy the low latency / jitter, but it's complicated to implement. The 802.1Qch could mitigate the complexity but it will increase the latency. In order to combine the complexity mitigation and low latency / jitter, the following optimization directions could be considered to assure the determinism of EtherCAT frames based on 802.1Qch.
  - ✓ To use fixed small period to minimize the wait duration for departure time of EtherCAT frame in each Bridge.
  - ✓ To build the explicit & tight period mapping relationship between all of the adjacent Bridges.
- **High reliability:** As analyzed, the following optimization directions could be considered to achieve the high reliability without frame replication.
  - ✓ To build the high reliability on lower layer of Ethernet network (of ring topology) to quickly detect link down and activate the backup link.
  - ✓ To avoid influence to end devices, keep compatible to device and minimize the bandwidth usage of detection frame (no more than 1%).

- **Currently, there is no additional request to continue studies, it's appropriate to terminate this Study Item.**

Thank you.