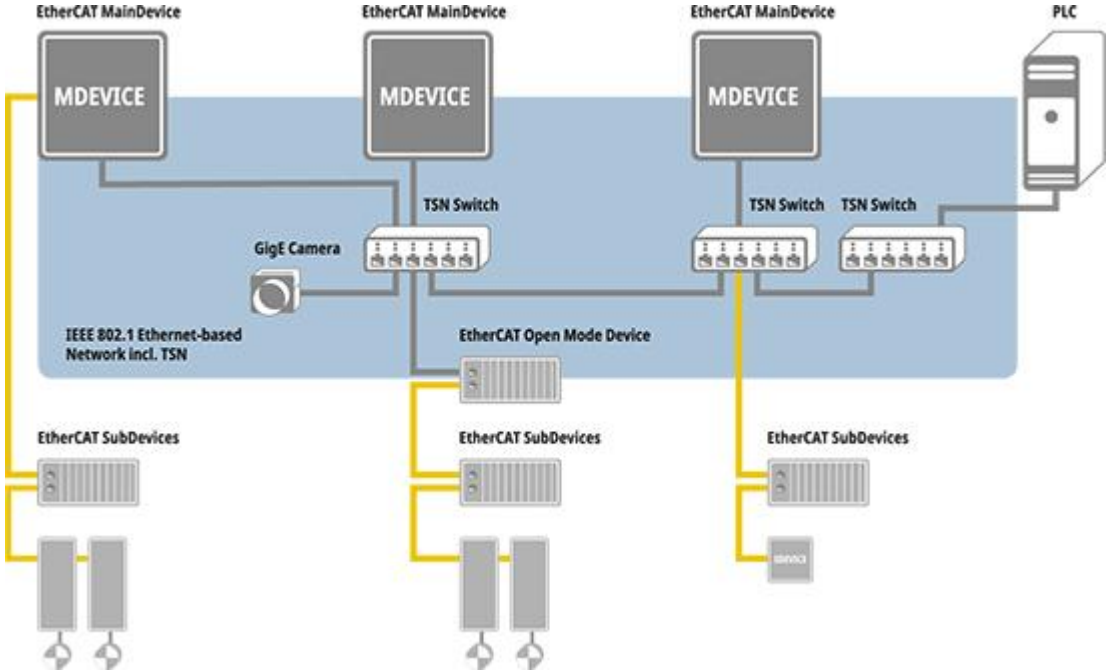
MAC Data Security for Industrial Automation

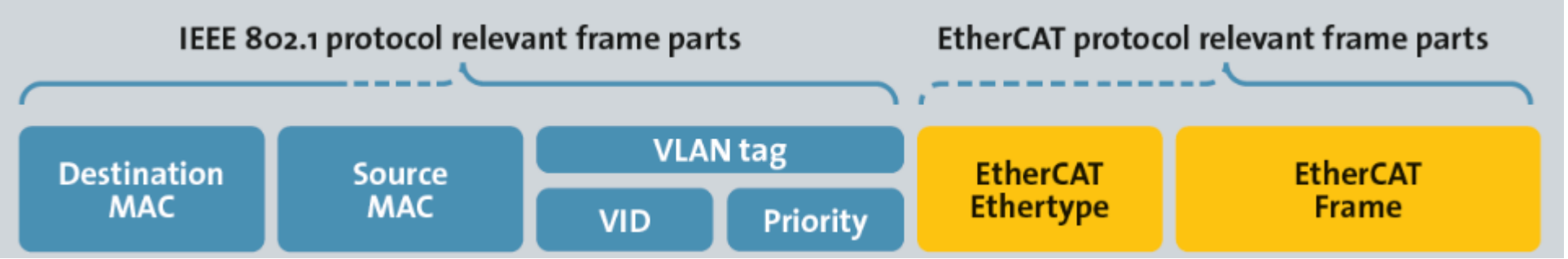
Potential use-case for MAC Data Security in Industrial Automation networks

From physical to logical isolation

- Today: Direct data exchange between PLC (MainDevice) and EtherCAT Segments (SubDevices)
- Future: Network in between with logical isolation
  e.g. 802.1 (TSN) networks, VLAN, VxLAN, MPLS, IP, …



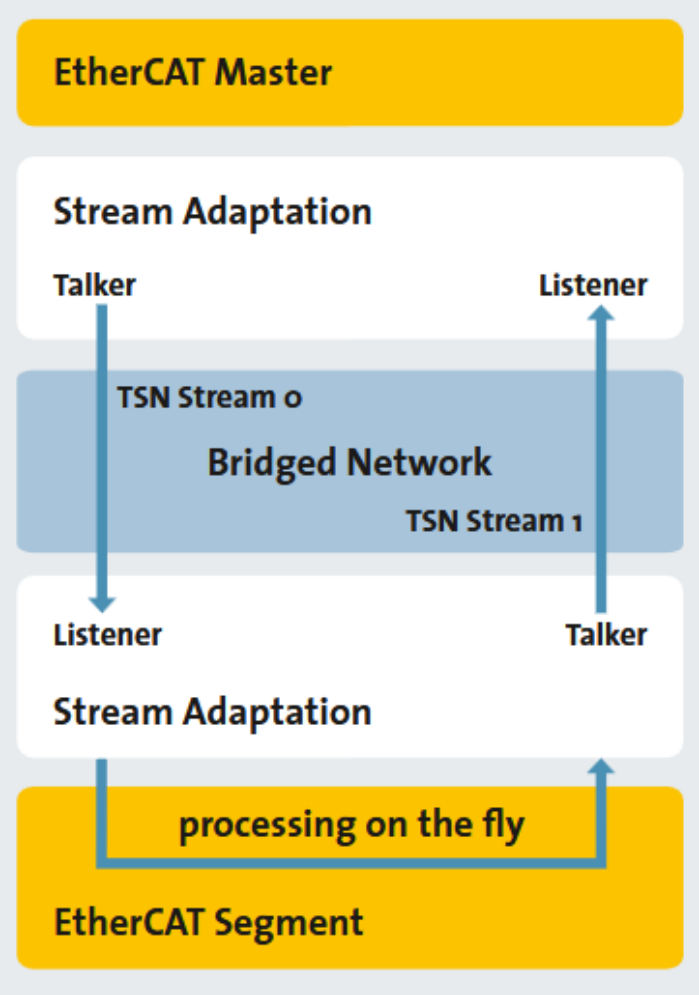
Current frame format



Direct data exchange between PLC (MainDevice) and EtherCAT Segments (SubDevices) without Interpretation of Ethernet Header in EtherCAT Segments

- Future: More transportation information added / removed during the frame transport. Encryption of the transported information between MainDevice and EtherCAT segment

Encryption in the network



- Encryption during the transport in the Bridged (routed) Network

Communication:

- Cyclic with 125 µs up to x ms
- 1 to n Frames per Cycle
- Frames between min up to max