Success Factors Beyond Technology

IEEE 802.3dm

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Motivation

- Everyone putting effort in this project would like it to be a success.
- However, there seem to be underlying differences beyond the technical choices that make progress difficult.
- This presentation identifies possible differences, as the author believe that awareness and discussion might help to move the group forward.

Agenda

- Successful standards
- Decision making
- Non-technical status
- Summary and conclusion

Is there a common understanding what a successful standard needs?

To initiate a project, IEEE 802 uses the five criteria to also assess factors beyond technology. This means that it is important to not only consider technology in the decision making process.

❶ Broad market potential

❷ Compatibility

❸ Distinct identity

❹ Technical feasibility

❺ Economic feasibility

Is there a common understanding what a successful standard means?

From the author's perspective:

- Completed specification.
- Interoperable product offers from multiple vendors.
- Adoption by multiple customers.
- Establishment of an eco-system
  - Tools
  - Test specifications
  - Test houses.

Do these technologies represent successful standards? (1)

IEEE 802.3ch

- CFI presentation Nov. 2016.
- Publication date June 2020.
- First samples in 2021 (e.g. link).
- Interopplugfests @ OPEN with 4 vendors in 2023 and 5 in 2024.
- Test specifications @ OPEN.
- Start of Production (SOP) 2025.

ASA-ML

- Founding of ASA in May 2019.
- Publication date V1.01 Dec. 2020.
- First publicly shown samples Nov. 2022 @ Techday, Yokohama.
- Interopplugfest @ ASA with 5-6 vendors planned for Q3 2025.
- Test specifications @ ASA.
- SOP 2026.

Do these technologies represent successful standards? (2)

GMSL 2/3

- Start of dev. ?
- Completion of dev.?
- First samples in ?
- Proprietary until now, no interop
- No (public) test specifications
- SOP 2018/2021

IEEE 802.3cy

- CFI presentation March 2019.
- Publication date June 2023.
- First samples ?
- Interopplugfests ?
- Test specifications @ OPEN Alliance?
- SOP ?

What is so different in the car industry when selecting the communication technology to use? (1)

In traditional enterprise/data centers

- It is relatively easy to replace/introduce new communication technologies, if there are issues or new features.
- The lead times are comparably short.
- Thus there is openness and willingness to consider replacing existing technologies.
- Changes to new technologies might be induced by small differences.

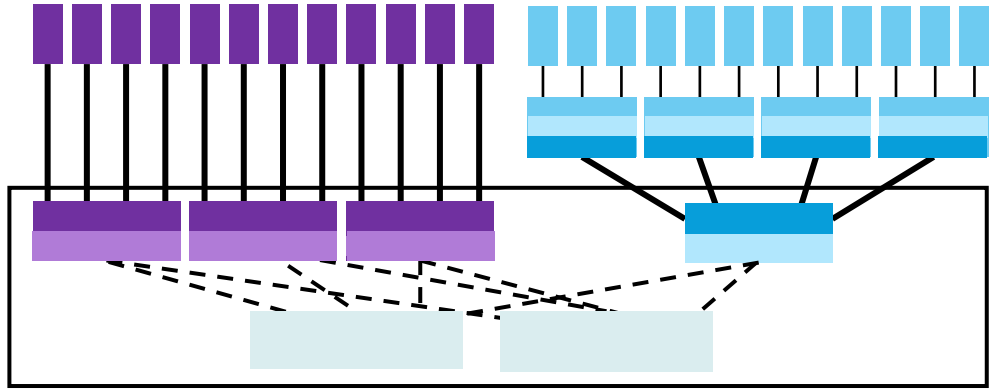
What is so different in the car industry when selecting the communication technology to use? (2)

The car industry

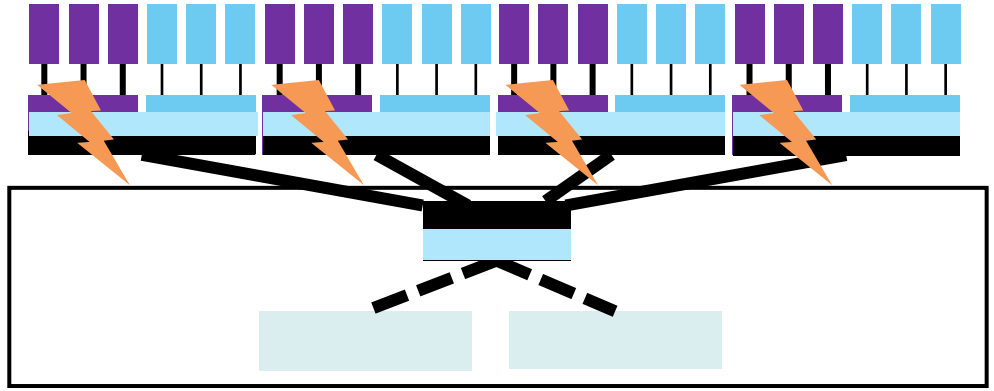
- Sees only minimal oversizing.
- Has very long lead times
  - Decisions are taken in avg. min three years before SOP.
  - Sufficient technical and economical validations (including all supporting products such as cables, connectors, inductors, …) need to have been completed before the decision.
- Has legacy
  - Ethernet is not everything.
  - The decision makers are responsible for a function beyond networking.
  - Video communication has mainly seen hardware-optimized SerDes products.
- Has very long service times
  - Parts need to be available 10 years after end of production.
- Changes to new technologies require substantial differences.

Example: From SerDes to Ethernet?

P2P video and low speed Ethernet zones:



Zonalized:



	P2P+small zones	Zonalized
PHYs*) 10/100BASE-T1(S)	24	24
PHYs*) 1000BASE-T1	8	0
PHYs*) 1-6Gbps	24	24
PHYs*) ~10Gbps	0	8
Deserializer/aggregation logic	3 quad ?	0
Switch logic	5 quad	1 power quad, 4 sept
Cables (10/100Mbps)	12 short	12 short
Cables (1-6Gbps)	12 long, 4 medium	12 short
Cables (10Gbps)	0	4 medium
Extra PCB or other EMC measures	0	4

It is not obvious to justify the zonalization of video streams as their data rates dominate the changed architecture.

Market chances in case of dm selection?

ACT = new

- Competes with SerDes as such.
- Competes with GSML and FPD-Link.
- Competes with MIPI A-PHY, HSMT, ...
- Competes with ASA-ML(E).
- Validation required before selection.
- Equal base for multi-vendor.

TDD = ASA-ML based

- Complements SerDes.
- Competes with GMSL and FPD-Link.
- Competes with MIPI A-PHY, HSMT, …
- Leverages from ASA-ML.
- May be selected as ASA-ML today.
- Equal base for multi-vendor.

GMSLE

- Complements SerDes.
- Competes with FPD-Link.
- Competes with MIPI A-PHY, HSMT, …
- Competes with ASA-ML(E)
- May be selected as GMSL today.
- Large existing base might impede entry of new vendors.

Summary and conclusion.

- A successful standard requires more than a completed specification.

In the author's opinion,

- There are no compelling technical reasons to move to a new solution (ACT).
- An IEEE 802.3dm solution that complements an existing SerDes technology has better chances for success than a new technology that competes with it (because of how technology decisions are taken in the car industry).
- An ASA-ML-based TDD solution thereby has an eco-system and provides equal chances as it already supports a multi-vendor market.
- An GMSL-based FDD solution might rely on a large existing base. However, exactly this base might impede entry of new vendors in case a GMSL-based solution is selected countering the goal of a multi-vendor supply market.

Thank You!