15 YEARS OF SOME/IP

The Protocol that Scaled the Car – and Where It's Taking Us Next?

*#ONE**STEP**AHEAD*

15 YEARS OF SOME/IP

AGENDA

#1 | 15 YEARS IN TWO SLIDES

#2 | TRENDS TODAY

#3 | MAKING SOME/IP READY FOR PHASE 2

#4 | CONCLUSION


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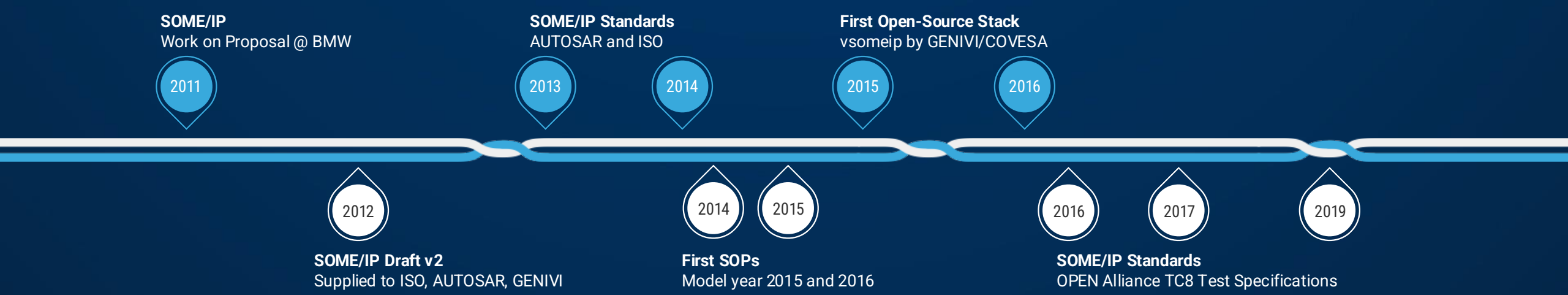
#1
15 YEARS OF SOME/IP
15 YEARS IN TWO SLIDES.

SOME/IP
HISTORY



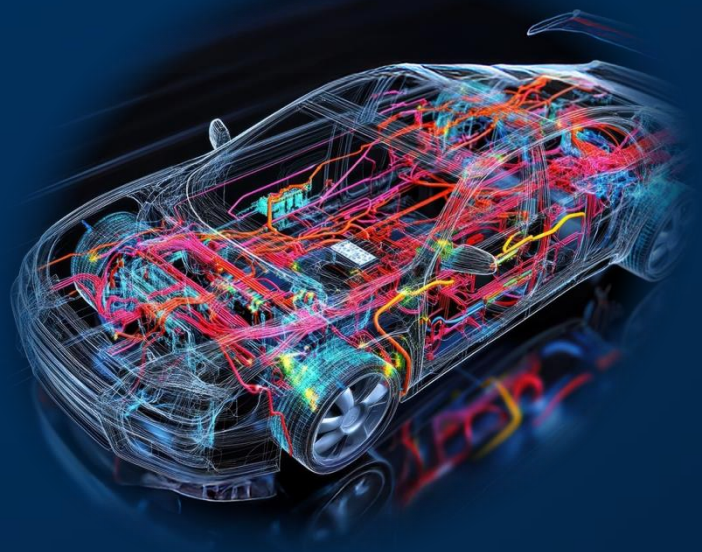
- First SOP in 2014 and many since.
- More than 40 million vehicles with SOME/IP produced.

For more details see Völker, Villanueva, Schäferling: “Is SOME/IP the right solution for the next 10 years of vehicles?”, AEC 2024

SOME/IP

PHASE 1 FOCUS: AUTOSAR

- SOME/IP was not created in AUTOSAR but given to AUTOSAR.
  - IP was and is mainly developed and maintained by BMW and Technica.
  - AUTOSAR stacks were and are widely used.
- Challenge “Keeping SOME/IP one standard”
  - How to keep SOME/IP in AUTOSAR compatible to SOME/IP in general?
  - A mainly manual job by DocOwners in AUTOSAR (currently Technica).
  - But: OEMs added proprietary (AUTOSAR only) features to SOME/IP.
- Problem: IP usage rules are asymmetric:
  - IP from ASAM, ISO, OPEN, and others can be used in AUTOSAR.
  - IP from AUTOSAR is limited to AUTOSAR.
- This is especially difficult for communication protocols!



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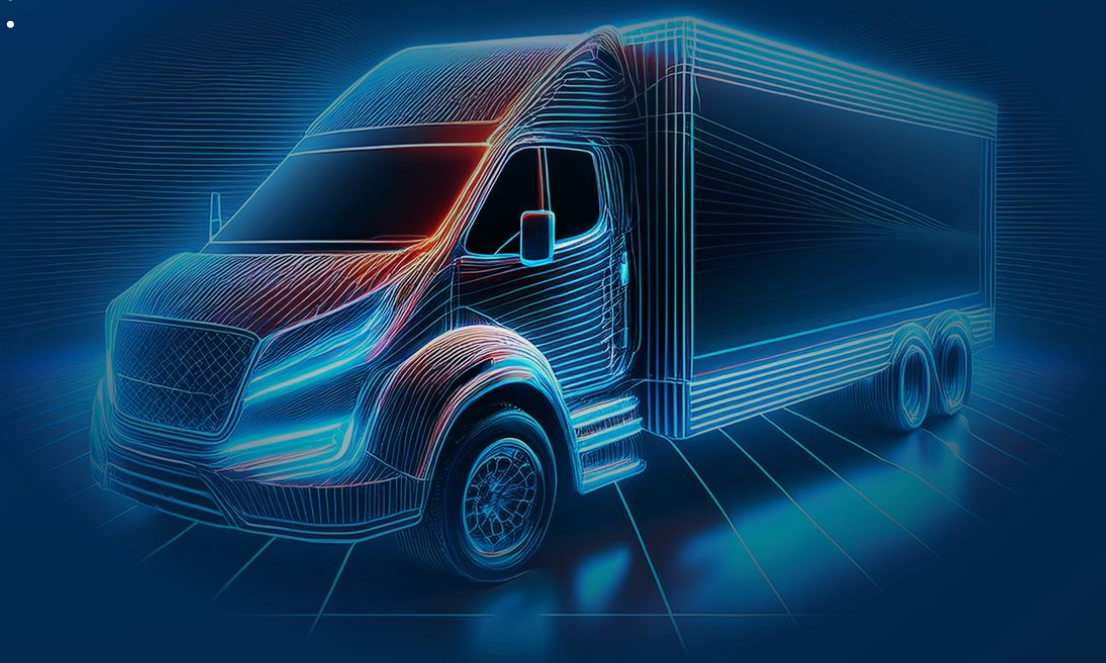
#2 | 15 YEARS OF SOME/IP

TRENDS TODAY

CURRENT TRENDS

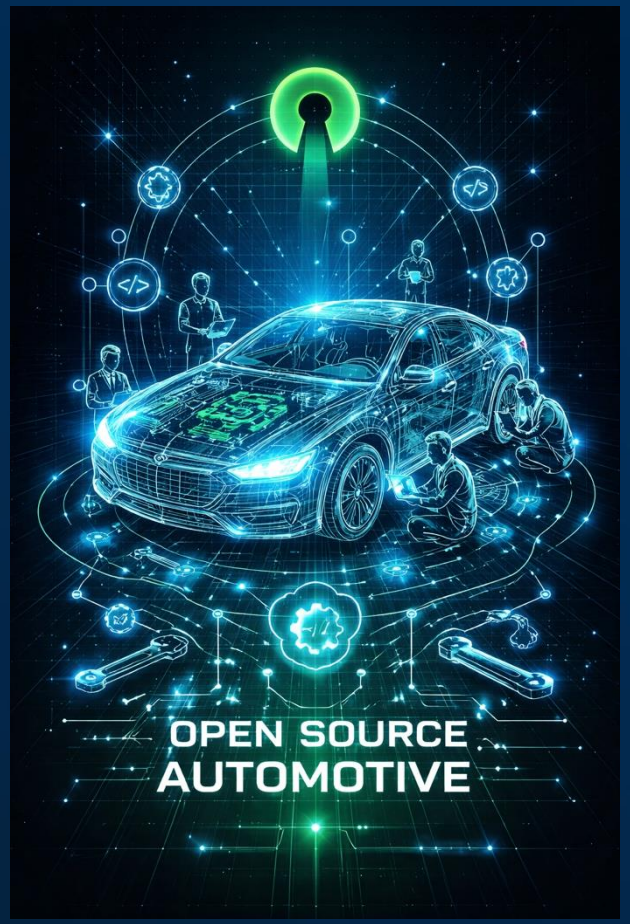
TREND 1: FROM CARS TO VEHICLES

- The pull towards SOME/IP was simple so far:
  - On Automotive Ethernet, SOME/IP is already there.
  - It is the only alternative created for automotive.
  - The eco system is established and wide-spread.
  - It is used by most of the major OEMs worldwide.
- Commercial vehicles introduce Ethernet.
  - Commercial Vehicle OEMs are looking at SOME/IP.
- But: they are not so AUTOSAR focused.
  - Currently, AUTOSAR limits the access to SOME/IP.



CURRENT TRENDS

TREND 2: THE OPEN-SOURCE ECO SYSTEM

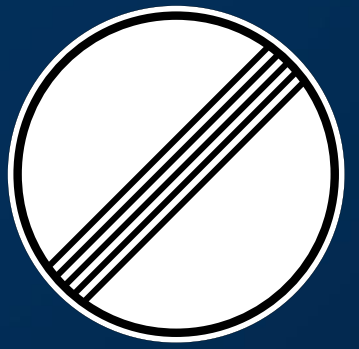


- Open-Source initiatives promise major improvements:
  - Innovations do not have to wait for standard releases.
  - Improved development velocity instead of waiting for RFQ.
  - Continuous development instead of a new stack again.
  - Less vendor lock risk.
- Eclipse SDV is the forum for Automotive Open-Source.
  - S-CORE – huge alternative to Adaptive AUTOSAR.
  - OpenBSW – project for embedded real-time stack.
- Needed: SOME/IP specification for Open-Source?
  - AUTOSAR specifications do not allow Open-Source!

CURRENT TRENDS

NEEDS VS OFFERING

- Essential for SOME/IP and protocols in general:
  - One (open) Standard
  - Interoperability and Conformance
  - Ecosystem combining commercial and Open-Source
  - For middleware specifically: (open) configuration format



- AUTOSAR currently cannot fully provide this!
  - SOME/IP specifications cannot be used for Open-Source.
  - ARXML specification cannot be used for Open-Source.
  - Usage for other standards very limited as they generally allow Open-Source.

?

#3 | 15 YEARS OF SOME/IP

MAKING SOME/IP READY FOR PHASE 2

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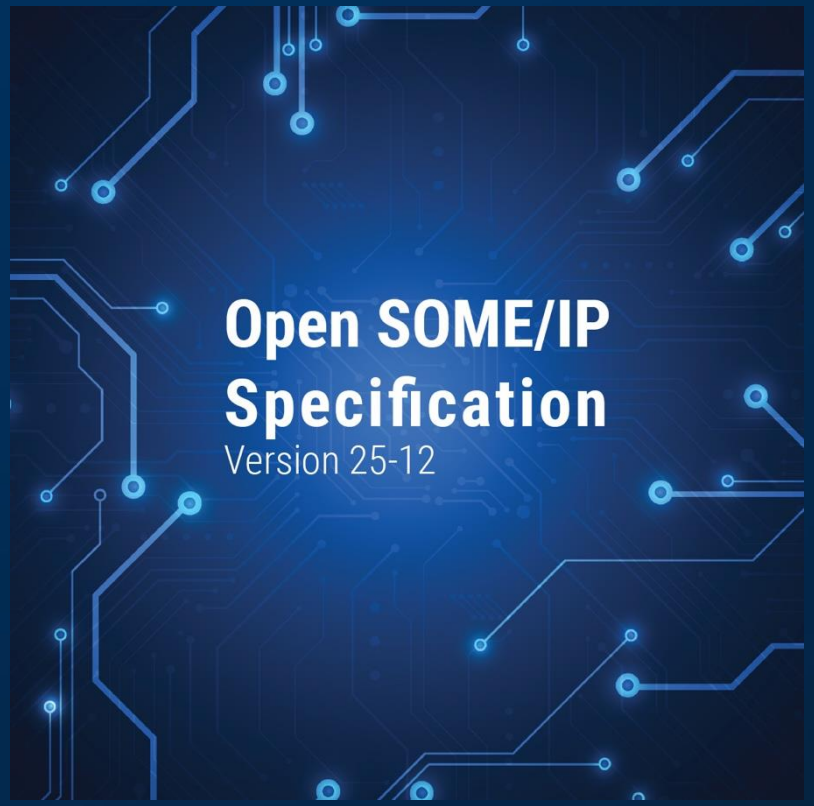
SOME/IP IMPROVEMENTS.

THE WAY FORWARD: THE OPEN SOME/IP SPECIFICATION

- Problem: SOME/IP needs an open standard.
- Solution: Open SOME/IP Specification was released.

- What is the Open SOME/IP Specification?
  - Rerelease of IP provided to AUTOSAR and others.
  - Specification as code based on Sphinx Needs.
  - Allows Open-Source implementations!
  - Allows to be used by ISO, SAE, or others as standard input.

- All features present?
  - SOME/IP core features present.
  - Proprietary features not included as IP must be submitted by authors.
  - Work on additional security specification items in progress.



https://github.com/some-ip-com/open-someip-spec

SOME/IP IMPROVEMENTS.

OPEN-SOURCE IMPLEMENTATIONS.

- Already existing (mainly based on BMW IP):
  - Wireshark code.
  - COVESA vsomeip.
  - pysomeip for prototyping.

- New:
  - opensomeip being developed based on Open SOME/IP Spec
    - opensomeip-python as python wrapper for opensomeip

- Next potential projects (under investigation):
  - Eclipse SDV: S-CORE
  - Eclipse SDV: OpenBSW

SOME/IP IMPROVEMENTS.

THE WAY FORWARD: FLYNC AS CONFIGURATION LANGUAGE.

- Problem: An open configuration language is missing.
- Solution: FLYNC was release.

- What is FLYNC?
  - Describing the whole vehicle (network) not only the ECU.
  - Configuration as Code language for Automotive
  - Design for humans, CI/CD, and git-based workflows.
  - YAML and Pydantic based.

- Are all aspects covered?
  - Still work in progress!
  - SOME/IP is mostly covered.
  - Some aspects of Automotive Ethernet in progress.

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#4 | 15 YEARS OF SOME/IP

CONCLUSION

15 YEARS OF SOME/IP

CONCLUSION

- SOME/IP: 15 years of proven success!
- Phase 1: AUTOSAR Era
  - Established SOME/IP as a scalable, production-ready standard.
  - Enabled a strong ecosystem across OEMs and suppliers.
  - But: Open-Source and Commercial Vehicles demand a better option.
- Phase 2: Community-driven future
  - Open SOME/IP Specification better enables Open-Source and Commercial Vehicles.
  - FLYNC is creating a community to describe the whole vehicle.
- Other protocols and technologies will follow a similar evolution path toward openness and ecosystem-driven growth.

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