IEEE1722C

LIN-AMENDMENT PROPOSAL

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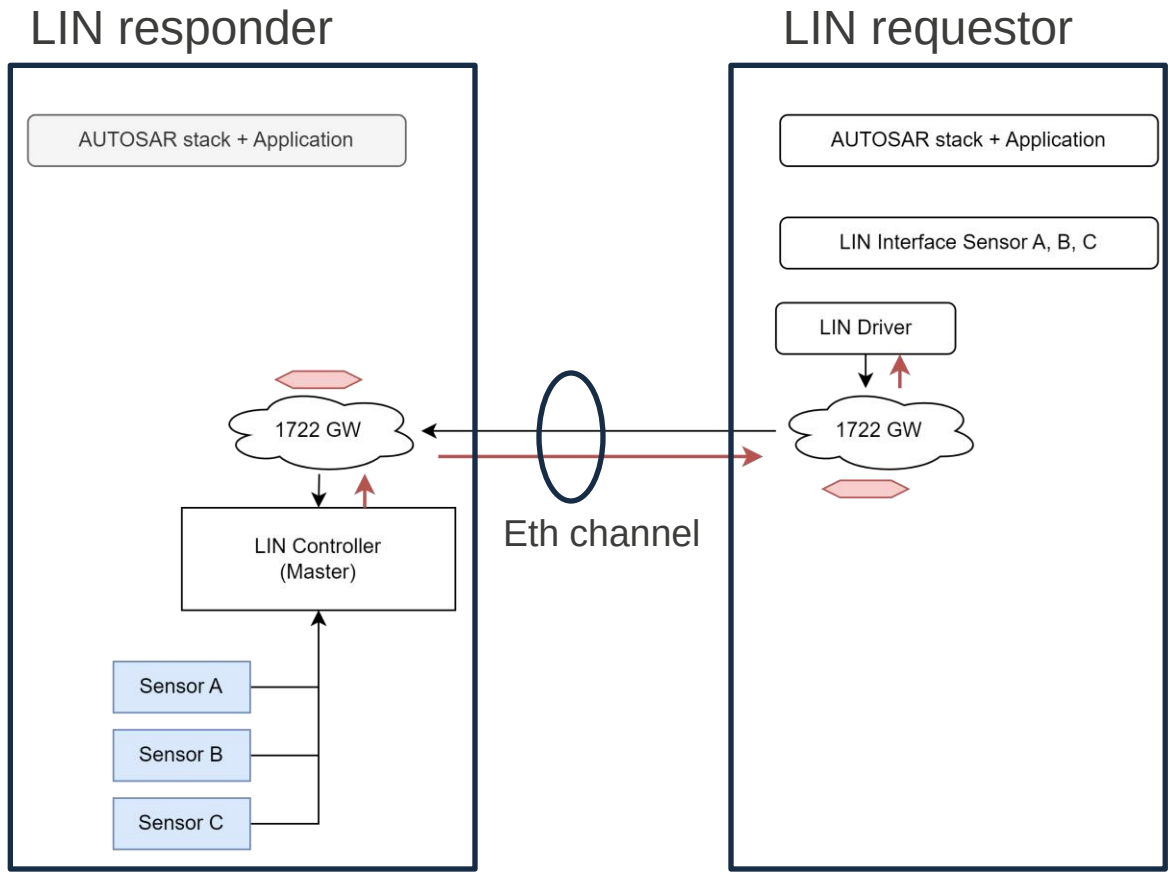
MATERIAL 2025-02-25

PROBLEM STATEMENT

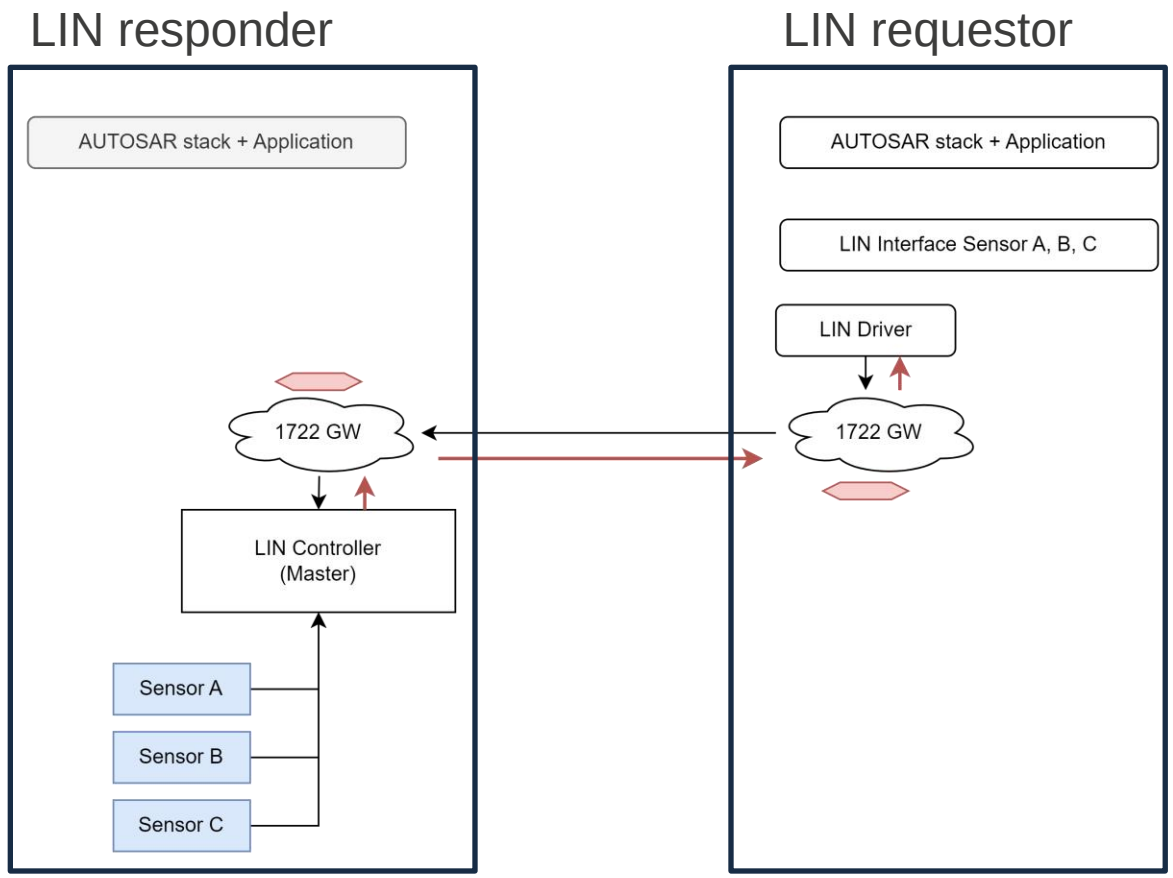
- LIN is a request-response protocol
  - LIN requestor puts LIN ID on the bus ←
  - LIN responder (addressed by ID), replies with data →
- IEEE1722b describes how LIN data is transported that could represent
  - a response for a locally initiated read
  - a remote write
- It is not defined how to initiate a remote read
  - For remote management, user defined higher layer protocols are necessary
- This appears inconsistent to introduced methods for I2C and GBB



PROPOSAL

- Expand ACF_LIN by adopting concepts used in GBB/ I2C
  - Introduce concept of transaction number
  - Specify bit that differentiates access mode (req/ rsp, read/ write)
  - Requestor requests with LIN ID, bus_ID, transaction number, mode and data
  - Responder replies with transaction number used for request and data (basically no change to current format)
  - Indication for incomplete/ faulty response
- It may be possible to maintain compatibility with LIN_ACF version 2 by using reserved fields

- GBB could be used and achieve the same, but
  - Generic formats have interoperability challenges
  - ACF_LIN was specified for a good reason so we should maintain



LIN ACF PROPOSAL

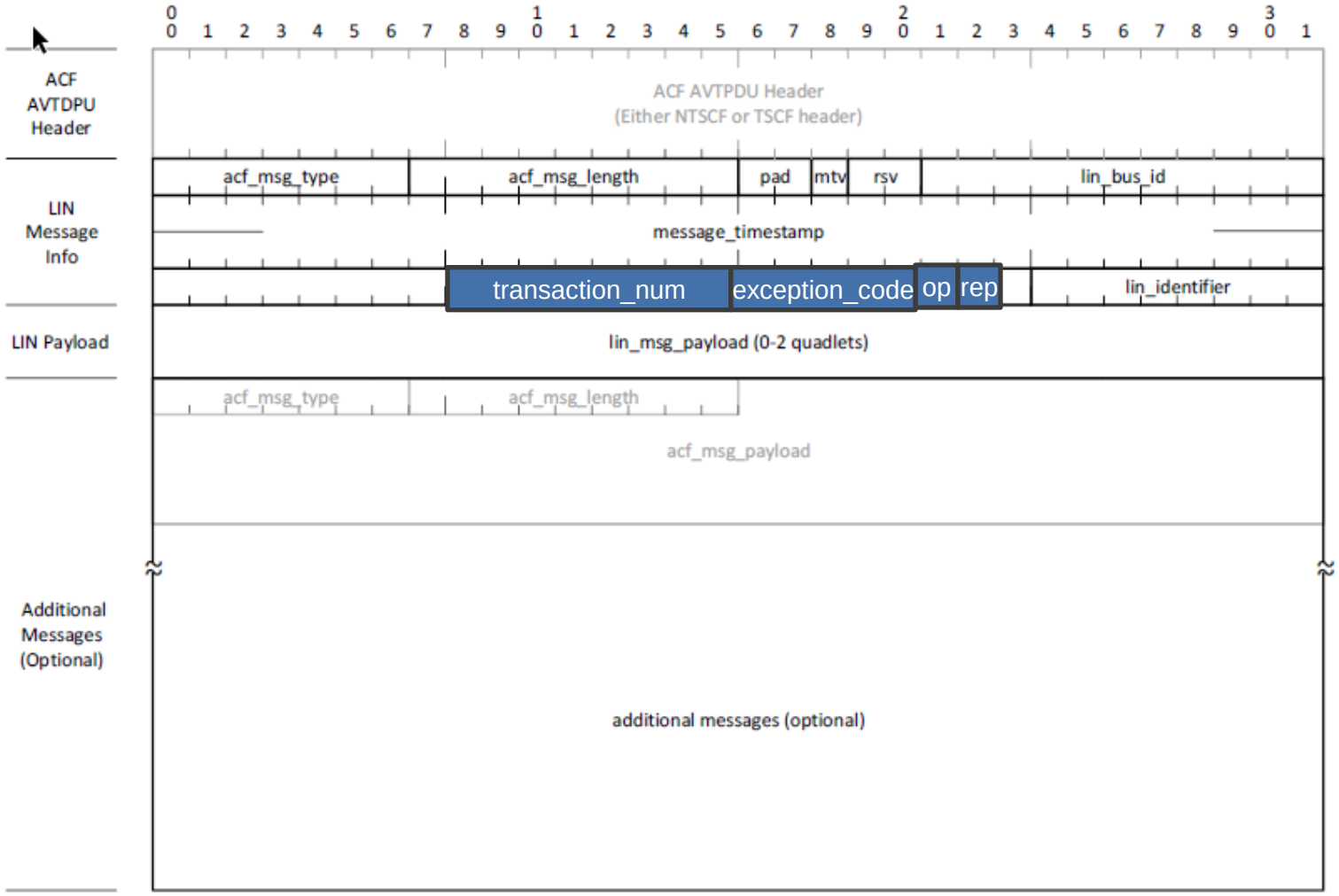


Figure 71—LIN ACF message version 2

DISCUSSION DURING MEETING 2025-02-25

- There was no objection by attendees to consider additional LIN use-cases and agreed further investigation and expanding proposal based on discussion
- Team discussed pros and cons to extend ACF_LIN or if GBB could be used instead
  - Covers GBB all intended use-cases and data flows?
  - Functional safety and other use-cases may require an acknowledge mechanism (e.g. that a write was at least received). Currently, except in GBB, all transactions are posted. Is it necessary to introduce non-posted transactions?
    - What is the consequence of this for requester and responder (bus load, CPU load)?
    - Do we need to make the acknowledge optional (for GBB or extended ACF_LIN)?
    - If ack is required, why only for LIN? The decision here might have bigger impact. Is the definition of req/ ack within scope of IEEE1722 or is this a higher level protocol
- Next actions
  - Define use-cases
  - Check usability of GBB instead of enhancing ACF_LIN
  - Discuss need for acknowledgement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