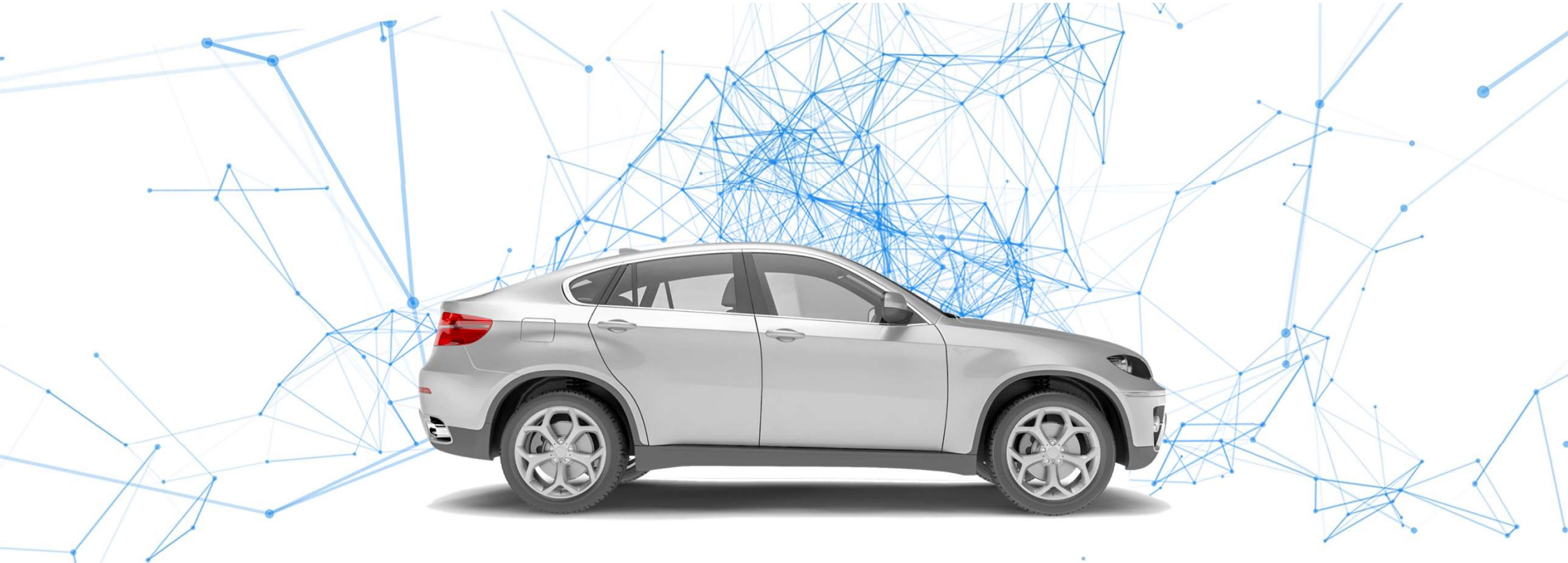

ETHERNOVIA

TRANSFORMING HOW CARS OF THE FUTURE ARE BUILT

IEEE802.1CB – REQUEST FOR RATIONALE IN AUTOMOTIVE APPLICATIONS TO BE INCLUDED IN IEEE802.1DG.

2021-04-06

IEEE contribution

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TRANSFORMING HOW CARS OF THE FUTURE ARE BUILT

Sections 1.2 Rationale and 7.1.1 Goals and objectives

- “The reason for Frame Replication and Elimination for Reliability (FRER) is to increase the probability that a given packet will be delivered.”
  - Is delivery of “a given packet” an important system goal?
    - Within a certain time (latency)?
    - Un-corrupted information.
    - In order? (7.4.3)
    - There is other methods to do this.
- “It is expected that, in many applications, other means to increase the probability of delivery are likely to be used as well.”
  - Why add FRER?
- “… FRER can substantially reduce the probability of packet loss due to equipment failures.”
- “This configuration protects against all 7 possible one-link failures …”
  - This assumes independence of the causes for such equipment or link failure.
    - Connectors at the Talker and at the Listener End System are in close proximity (same mechanical failure likely).
    - Why are Talker and Listener End System less likely to fail than Relay Systems?
    - Why are Talker and Listener End Stations (data sources) less likely to fail than Relay Systems?
    - What equipment failure causes are common to all the Relay Systems on both paths (e.g. power supply)?
    - Proximity of wiring may cause same EMI, especially close to the Talker and Listener End Systems.

Section 7.6 Sequence encode/decode function

- Only the R-Tag can be considered mandatory in IEEE802.1CB (5.6:d, 5.9:e, 5.12:d and TE10, LE6, RS7)
  - Do not allow other sequence encode/decode functions.

- Is there enough information to allow upper layers to do in-order delivery?
  - See IEEE1722 Annex L discussion

- Fix the position of the R-Tag to be between the VLAN-tag(s) and the application layer Ethertype (IPv4, IPv6, IEEE1722, ...).

Section 7.4.3 Recovery

- The only focus is on the sequence number.
  - “Rogue” packets, meaning packets outside the frerSeqRcvyHistoryLength window …
  - If a Talker or a relay system fails in such a way as to repeatedly transmit packets with the same sequence_number subparameter (perhaps repeating exactly the same packet), …
  - “e.g., a stuck transmitter repeatedly sending the same packet,” can not be detected if above sequence number generation
- There is no checking if data on both paths is identical and the upper layer can not check as the data is dropped.
- Creation of the sequence number must have same level of reliability (safety assurance) as the data generation.

Addressing

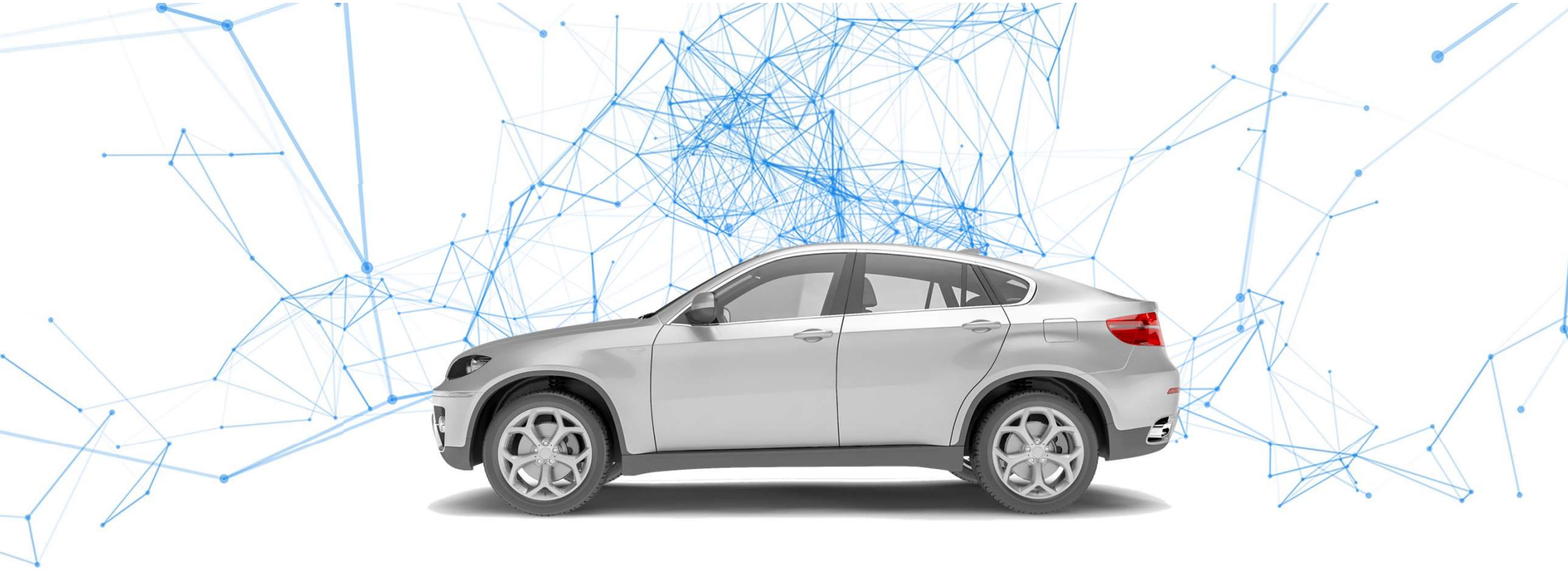
- Require use of at least one VLAN Tag on all FRER frames.
- Require per VLAN ARL table learning for source addresses.
- Require Multicast (MAC) destination addressing for all FRER frames.

Section 7.11 Autoconfiguration

- Require Autoconfiguration.
- As forwarding rules to establish paths are to be configured outside IEEE802.1CB, no value is added by “manual” configuration.
- Resource considerations are also outside of IEEE802.1CB.

Please HELP!

- If you see a need to include IEEE802.1CB in the profile, please provide a contribution on:
  - Use Cases and applications
  - Suggest further limitations on the wide options variety



THANK YOU

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