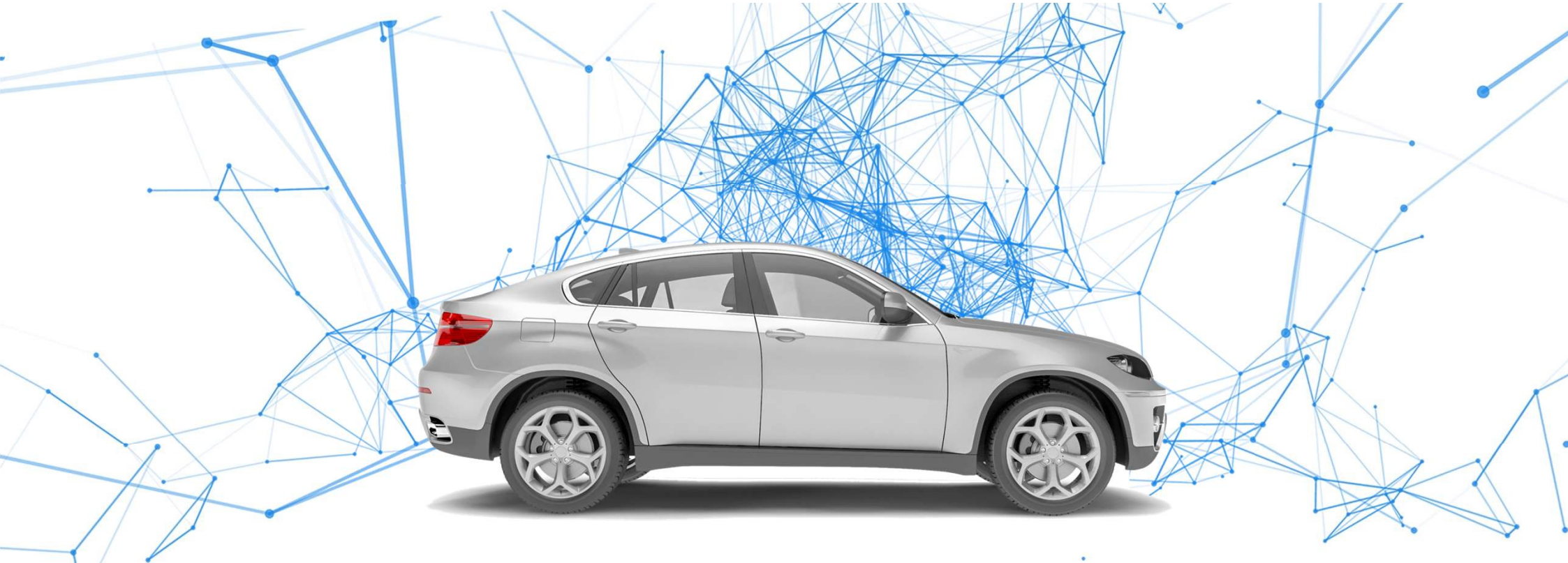

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TRANSFORMING HOW CARS OF THE FUTURE ARE BUILT

CAN ERROR-HANDLING OVER IEEE1722B | 2020-09-15

2020 IEEE contribution – 1722b

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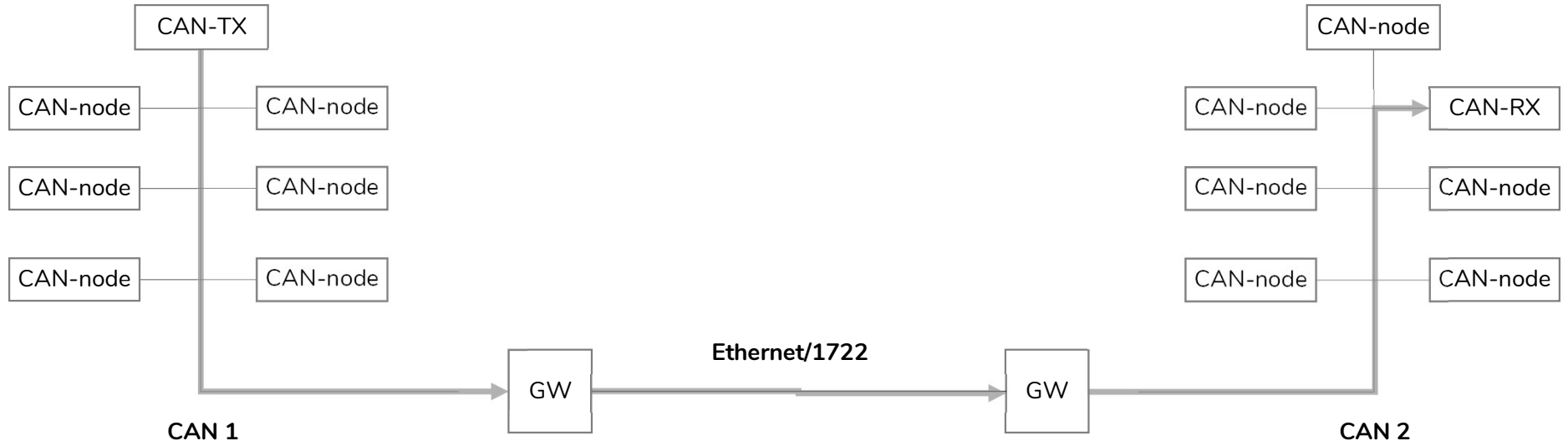
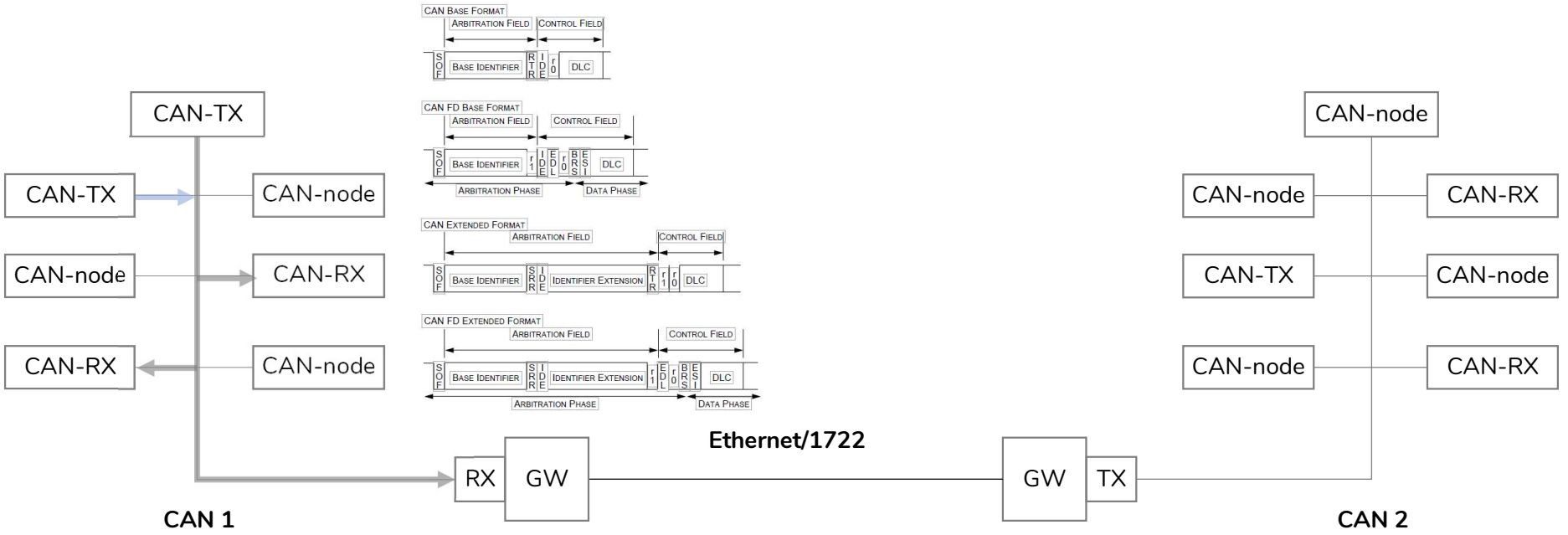
CAN “Tunnel” via Ethernet/IEEE1722.



CAN-Busses form Arbitration-Domains.



Lost Arbitration

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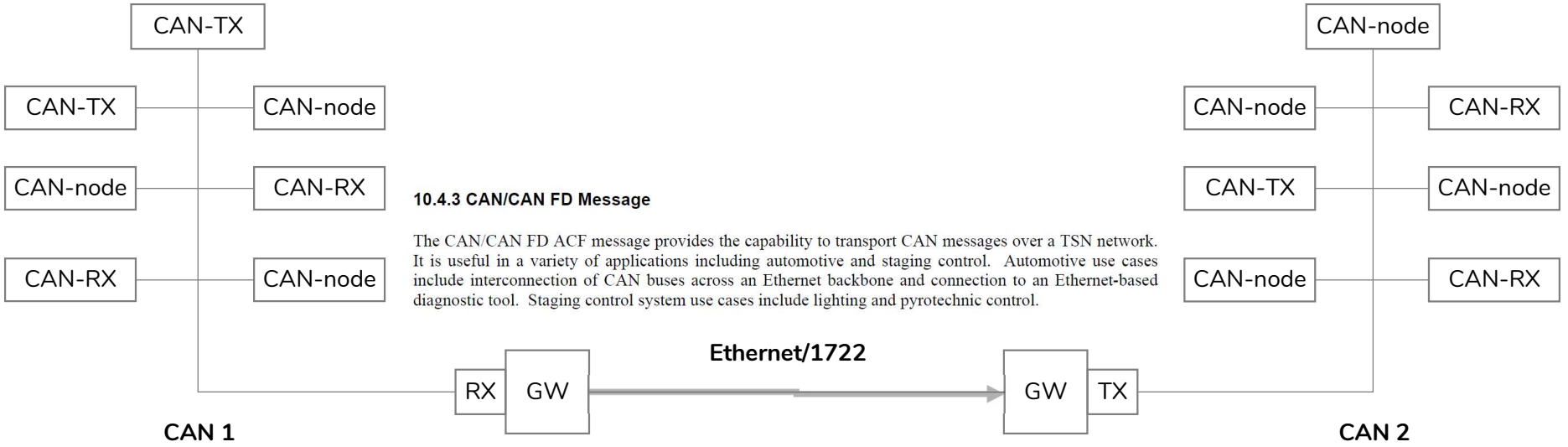
IEEE1722 trasports Messages not Bits.



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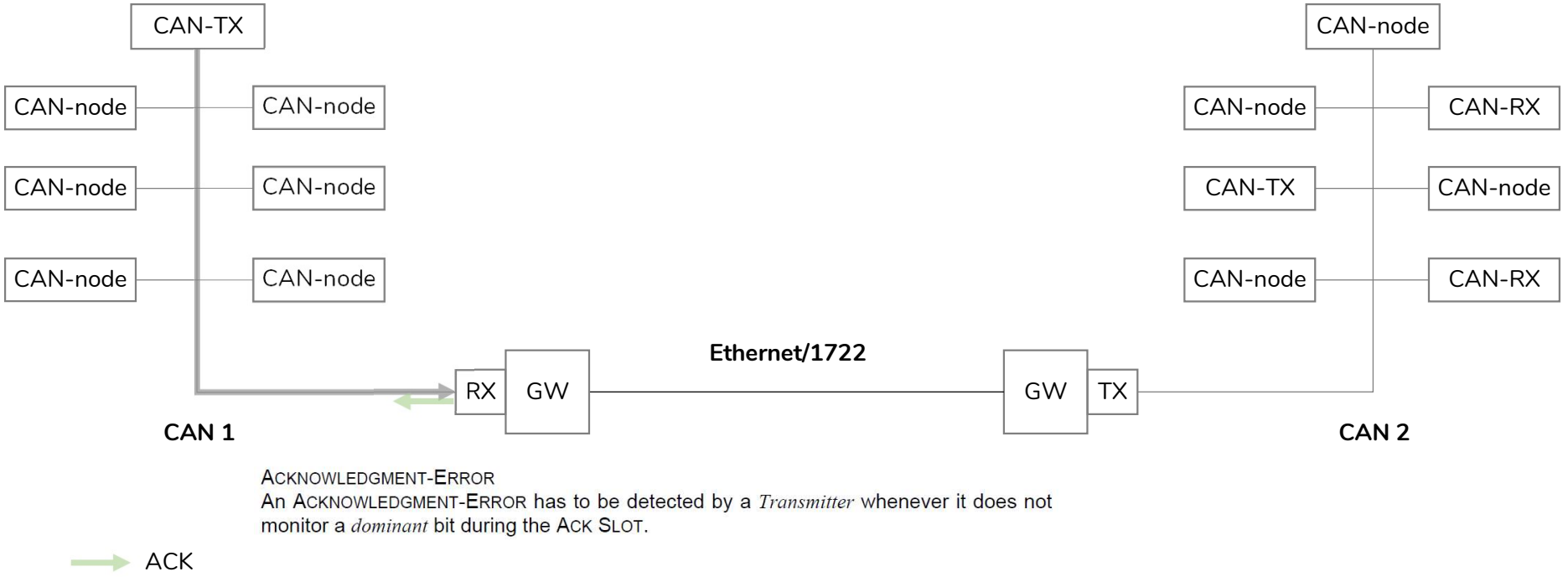
GW must set ACK independent of TX.



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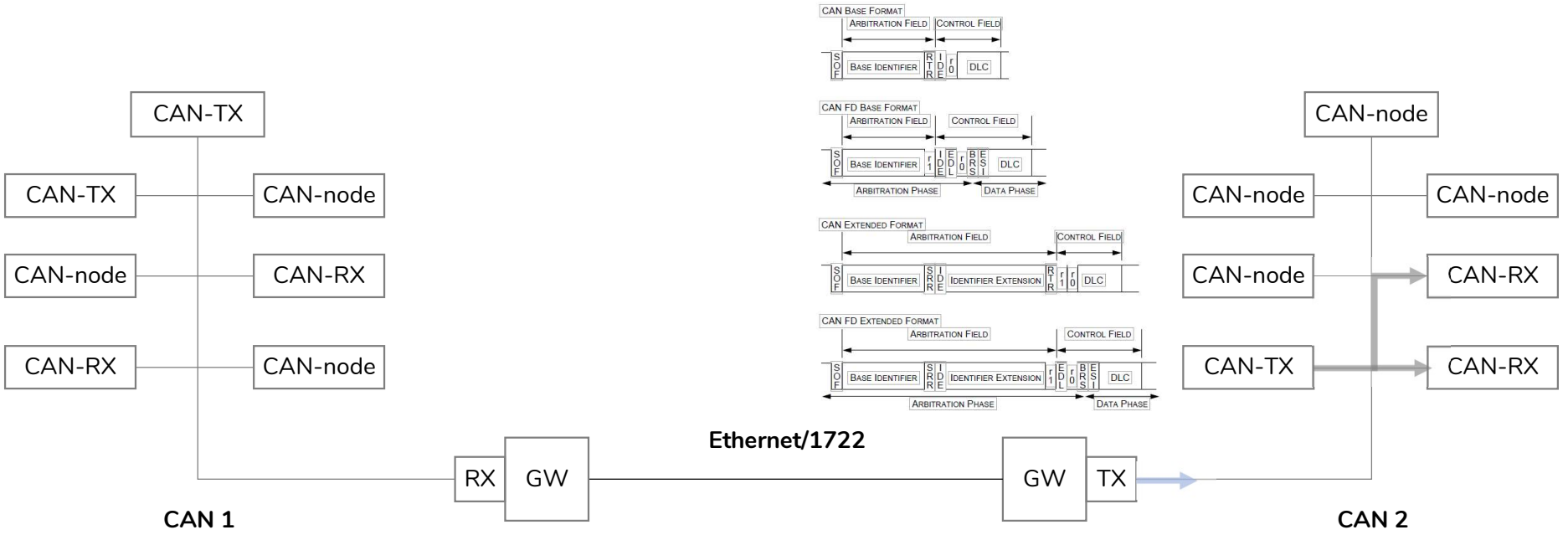
GWs must buffer on TX.



Lost Arbitration

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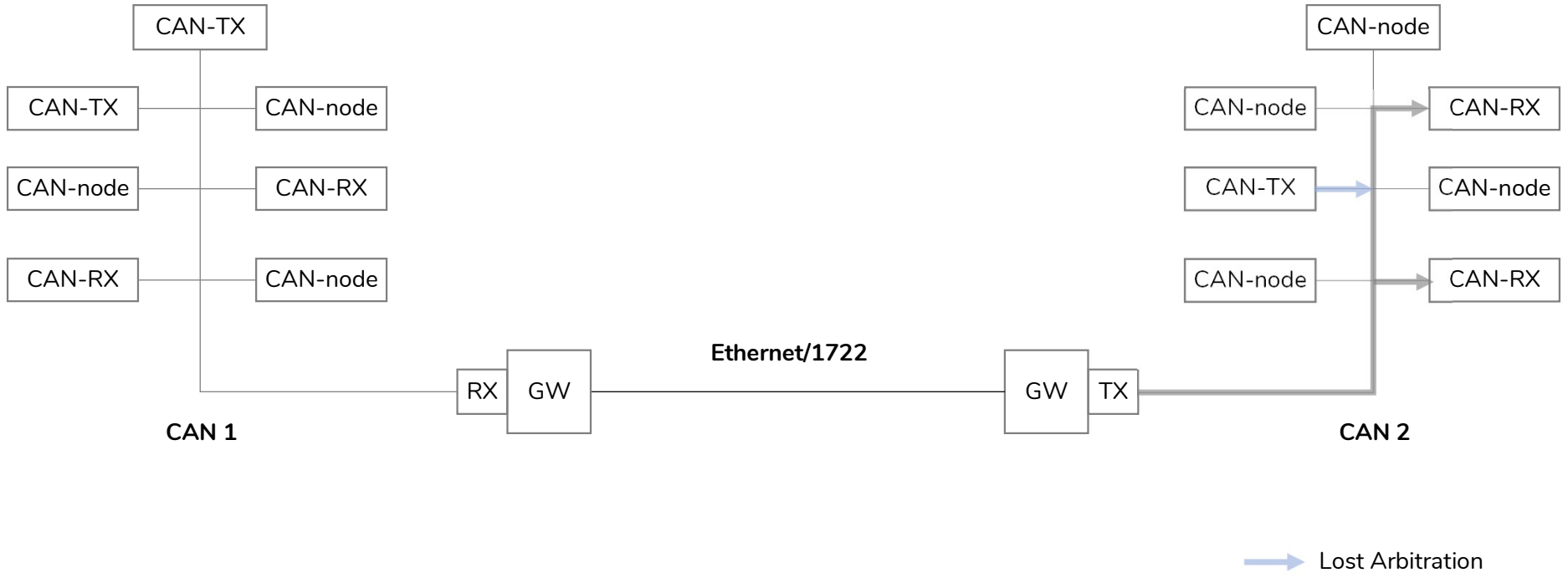
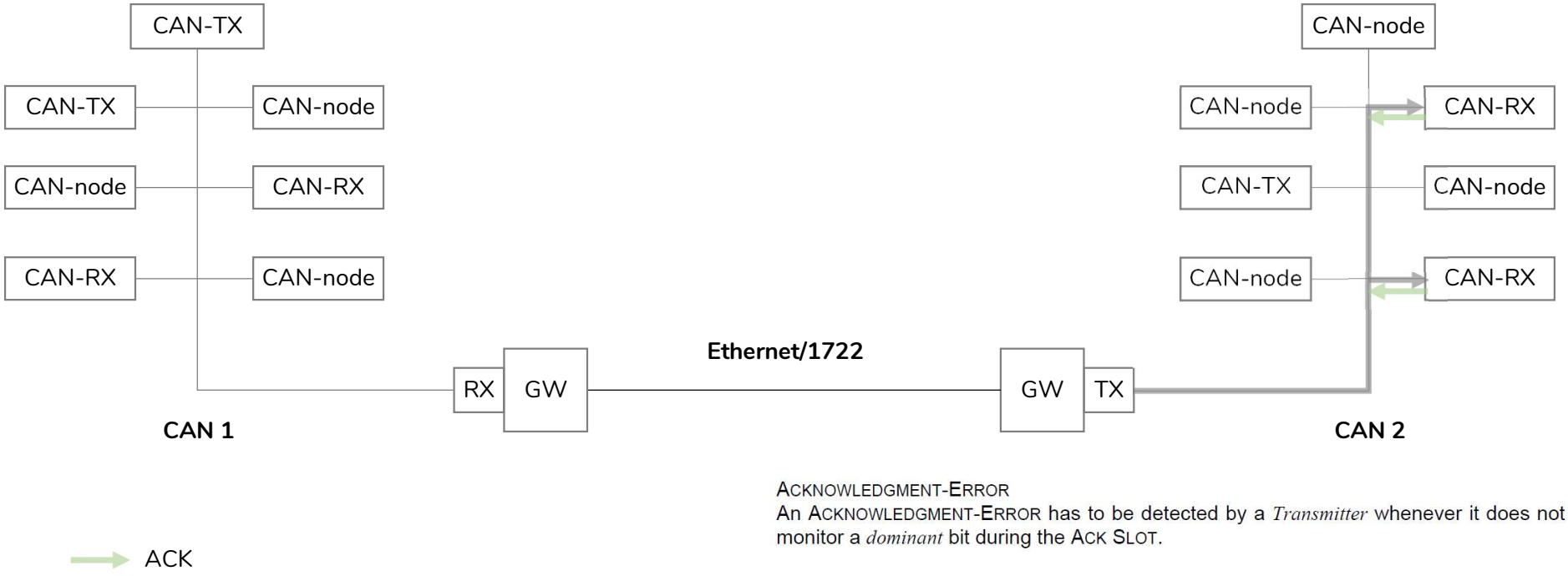
CAN-Busses form Arbitration-Domains.



CAN-Busses form ACK-Domains.



ACKNOWLEDGMENT-ERROR
An ACKNOWLEDGMENT-ERROR has to be detected by a *Transmitter* whenever it does not monitor a *dominant* bit during the ACK SLOT.

CAN-Bus Errors.

BIT-ERROR
A unit that is sending a bit on the bus also monitors the bus. A BIT-ERROR has to be detected at that bit time, when the bit value that is monitored is different from the bit value that is sent. An exception is the sending of a *recessive* bit during the stuffed bit stream of the ARBITRATION FIELD or during the ACK SLOT. Then no BIT-ERROR occurs when a *dominant* bit is monitored. A *Transmitter* sending a PASSIVE ERROR FLAG and detecting a *dominant* bit does not interpret this as a BIT-ERROR.

STUFF-ERROR
A STUFF-ERROR shall be detected at the bit time of the 6th consecutive equal bit level in a message field that should be coded by the method of bit stuffing.

CRC-ERROR
The CRC SEQUENCE consists of the result of the CRC calculation by the *Transmitter*. The *Receivers* calculate the CRC in the same way as the *Transmitter*. A CRC-ERROR shall be detected if the calculated result is not the same as that received in the CRC SEQUENCE.

FORM-ERROR
A FORM-ERROR shall be detected when a fixed-form bit field contains one or more illegal bits. (Exception is the detection of a *dominant* bit during the last bit of END OF FRAME by a RECEIVER, or the detection of a *dominant* bit during the last bit of ERROR DELIMITER or OVERLOAD DELIMITER by any node). When the value of a fixed STUFF-BIT in the CAN FD format CRC SEQUENCE is equal to its preceding bit, this shall also be detected as a FORM-ERROR.

ACKNOWLEDGMENT-ERROR
An ACKNOWLEDGMENT-ERROR has to be detected by a *Transmitter* whenever it does not monitor a *dominant* bit during the ACK SLOT.

CAN-Bus Errors.

BIT-ERROR
A unit that is sending a bit on the bus also monitors the bus. A BIT-ERROR has to be detected at that bit time, when the bit value that is monitored is different from the bit value that is sent. An exception is the sending of a *recessive* bit during the stuffed bit stream of the ARBITRATION FIELD or during the ACK SLOT. Then no BIT-ERROR occurs when a *dominant* bit is monitored. A *Transmitter* sending a PASSIVE ERROR FLAG and detecting a *dominant* bit does not interpret this as a BIT-ERROR.

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ACKNOWLEDGMENT-ERROR
An ACKNOWLEDGMENT-ERROR has to be detected by a *Transmitter* whenever it does not monitor a *dominant* bit during the ACK SLOT.

CAN-Busses form Error-Domains.

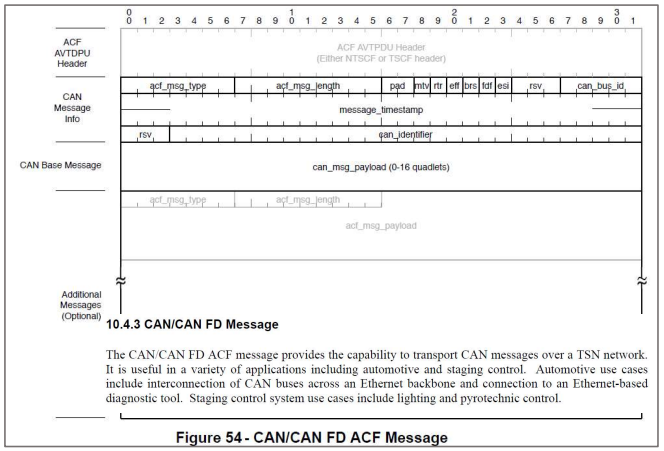
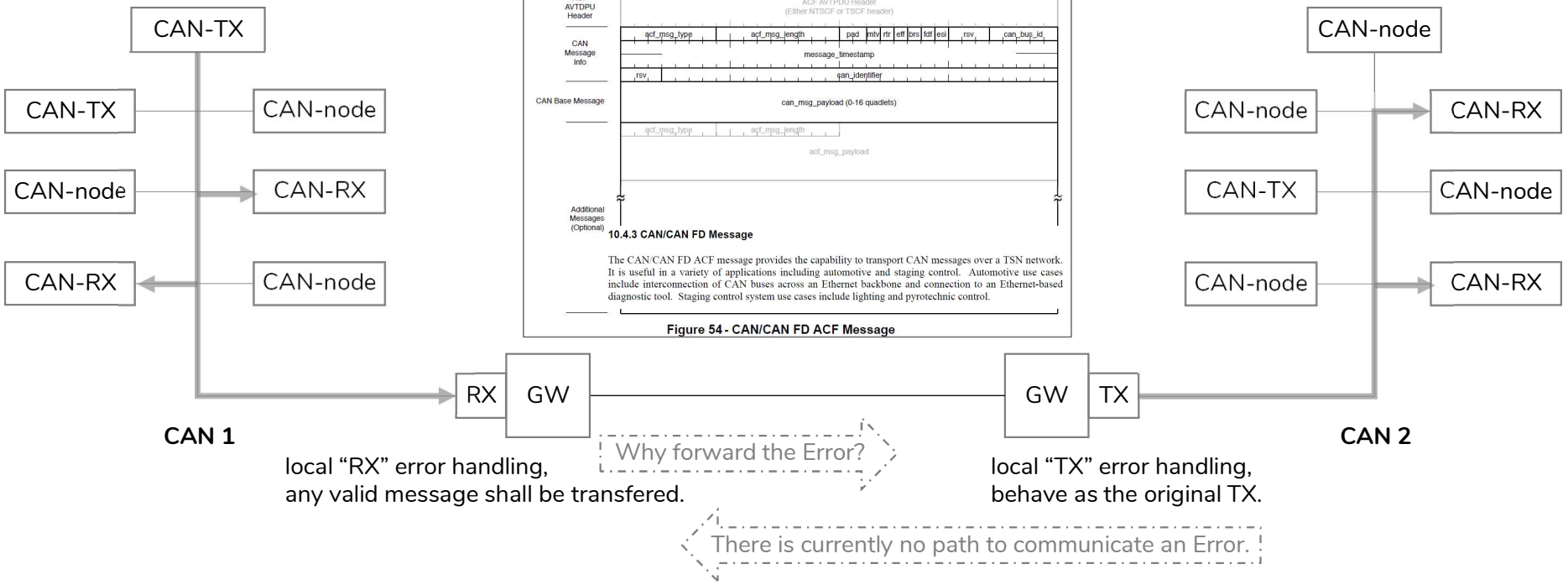


Figure 54 - CAN/CAN FD ACF Message



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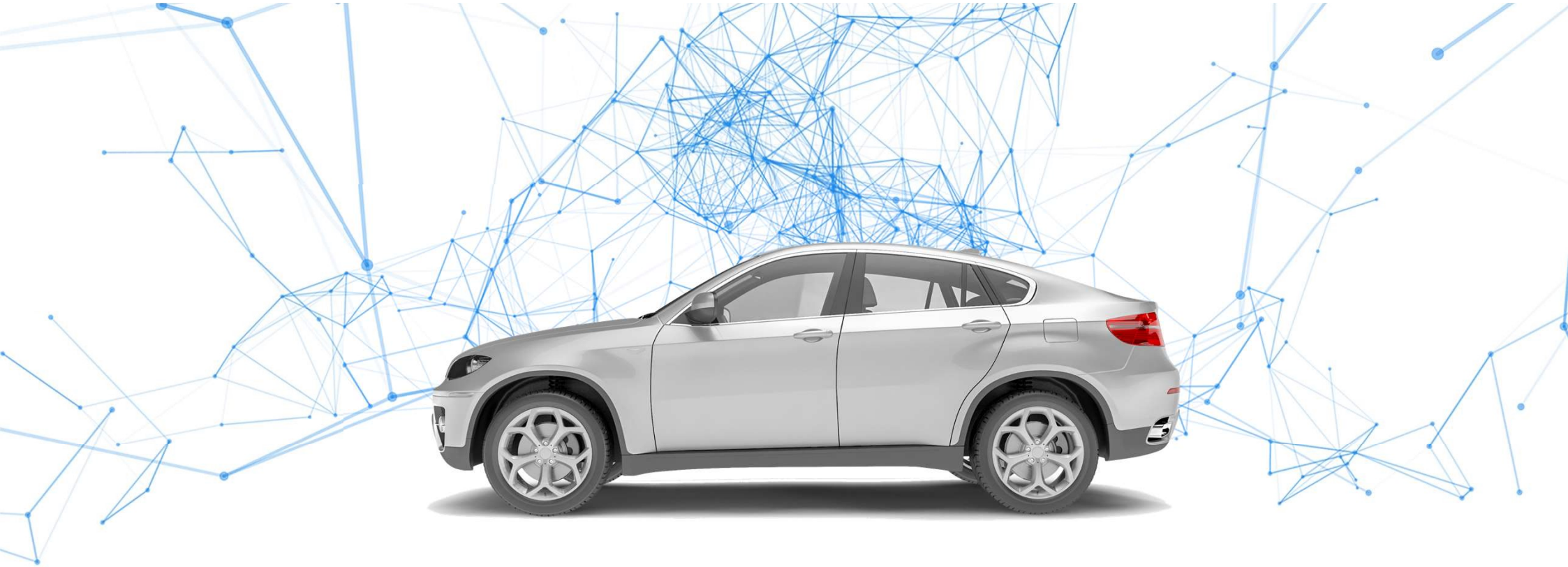
TRANSFORMING HOW CARS OF THE FUTURE ARE BUILT



THANK YOU

ETHERNOVIA | max.turner@ethernovia.com