Automotive Connectivity
Module 1: Lesson 2 Recap

Carlo Augusto Grazia

Tenure-Track Assistant Professor

Department of Engineering *Enzo Ferrari*
University of Modena and Reggio Emilia

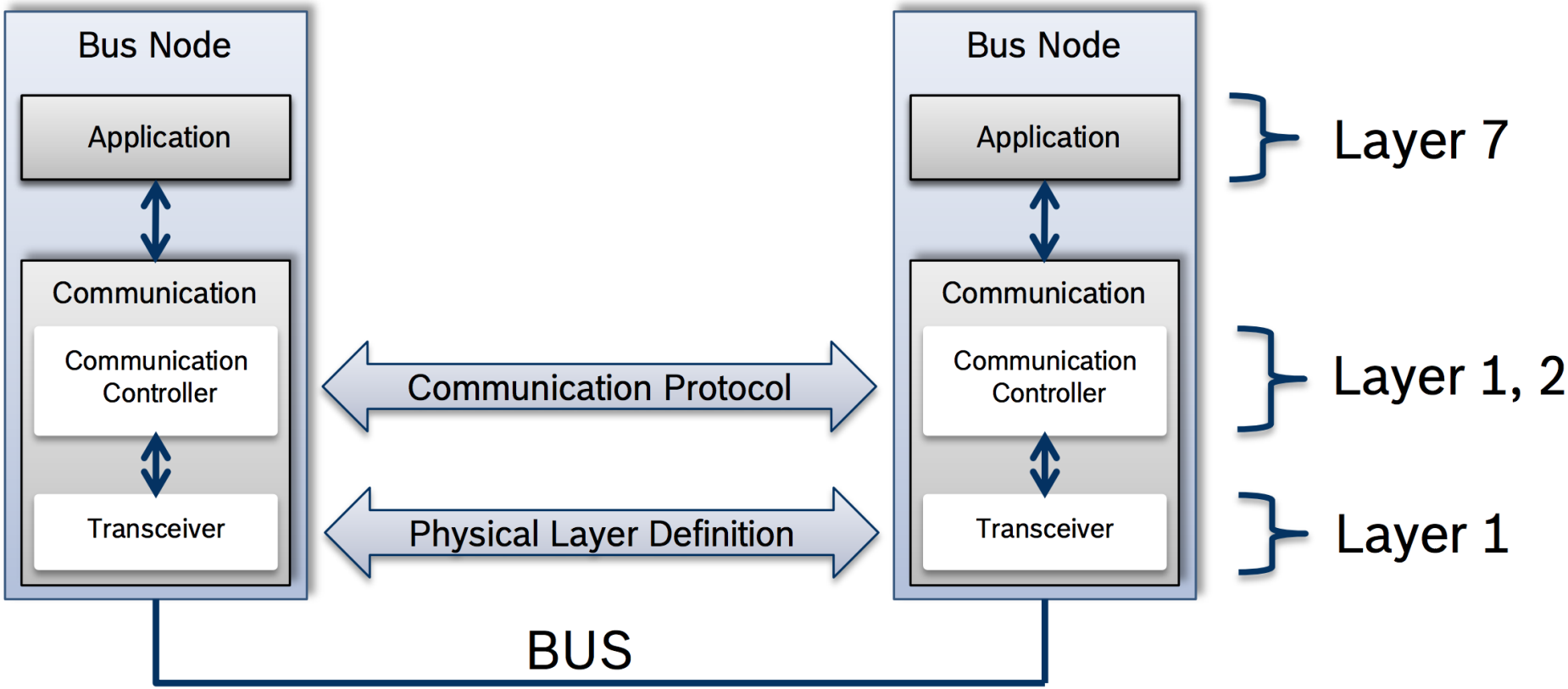
Modena, 24th September 2024

Possible Questions for the Exam

Q1

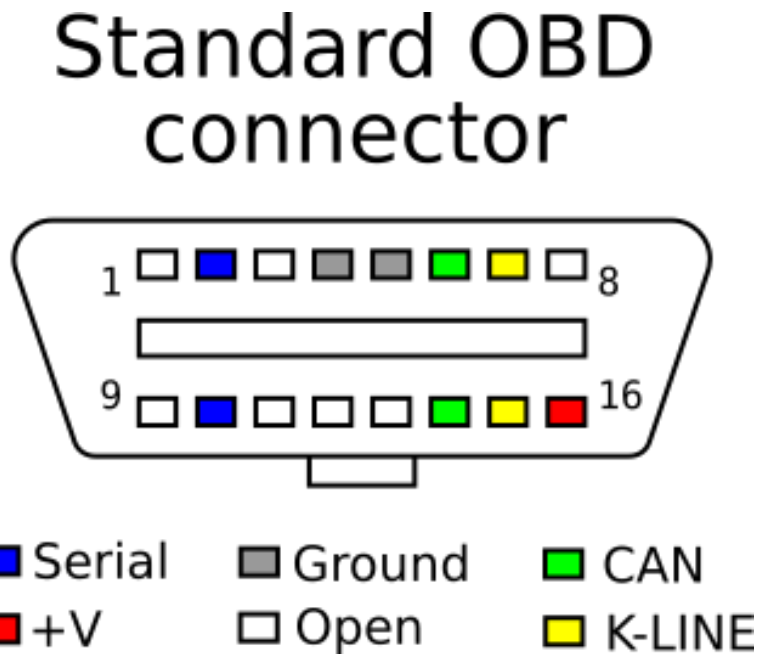
How many (and which ones) ISO/OSI layers are implemented by CAN Bus?

A1


Bus Node
Application
Communication
Communication Controller
Transceiver
Bus Node
Application
Communication
Communication Controller
Transceiver
Communication Protocol
Physical Layer Definition
BUS
Layer 7
Layer 1, 2
Layer 1

A vendor (e.g. Fiat, Toyota, etc.) can configure the OBD connector?

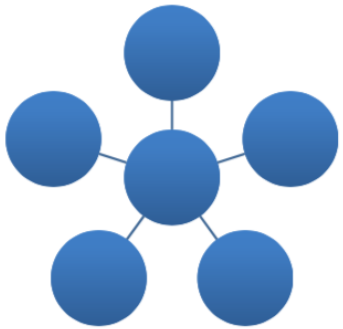
A2: Only few (open) pins

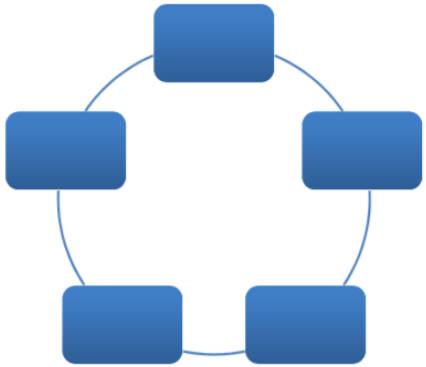


Why star topology is dangerous in automotive?

A3: Single Point of Failure

- Line
  - **Cost**
  - **Complexity**
  - Robustness
- Star
  - Cost
  - **Complexity**
  - ***Robustness***
- Ring
  - **Cost**
  - Complexity
  - **Robustness**



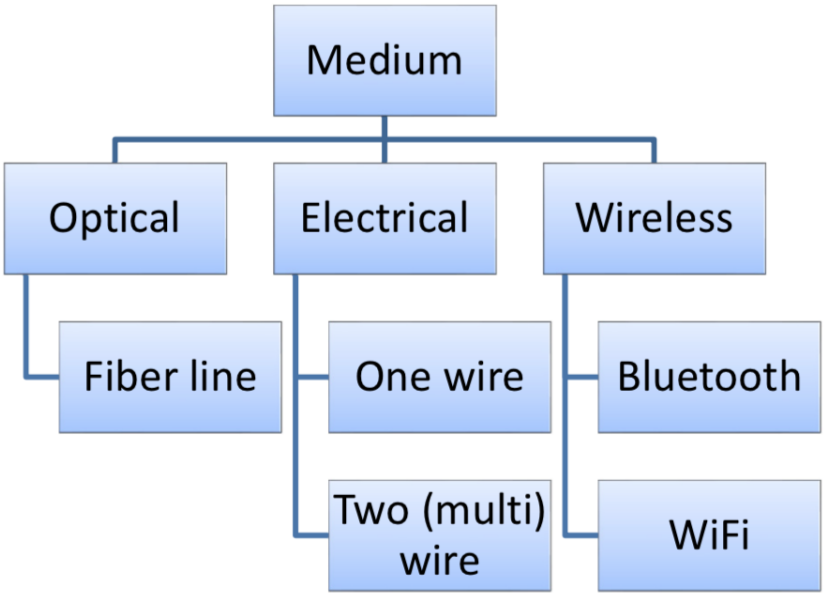


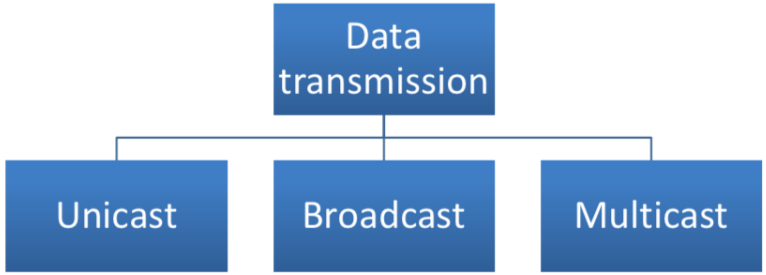
A3 extra

Too many connections for the central node

Classify CAN Bus in terms of Medium and Data Transmission typology

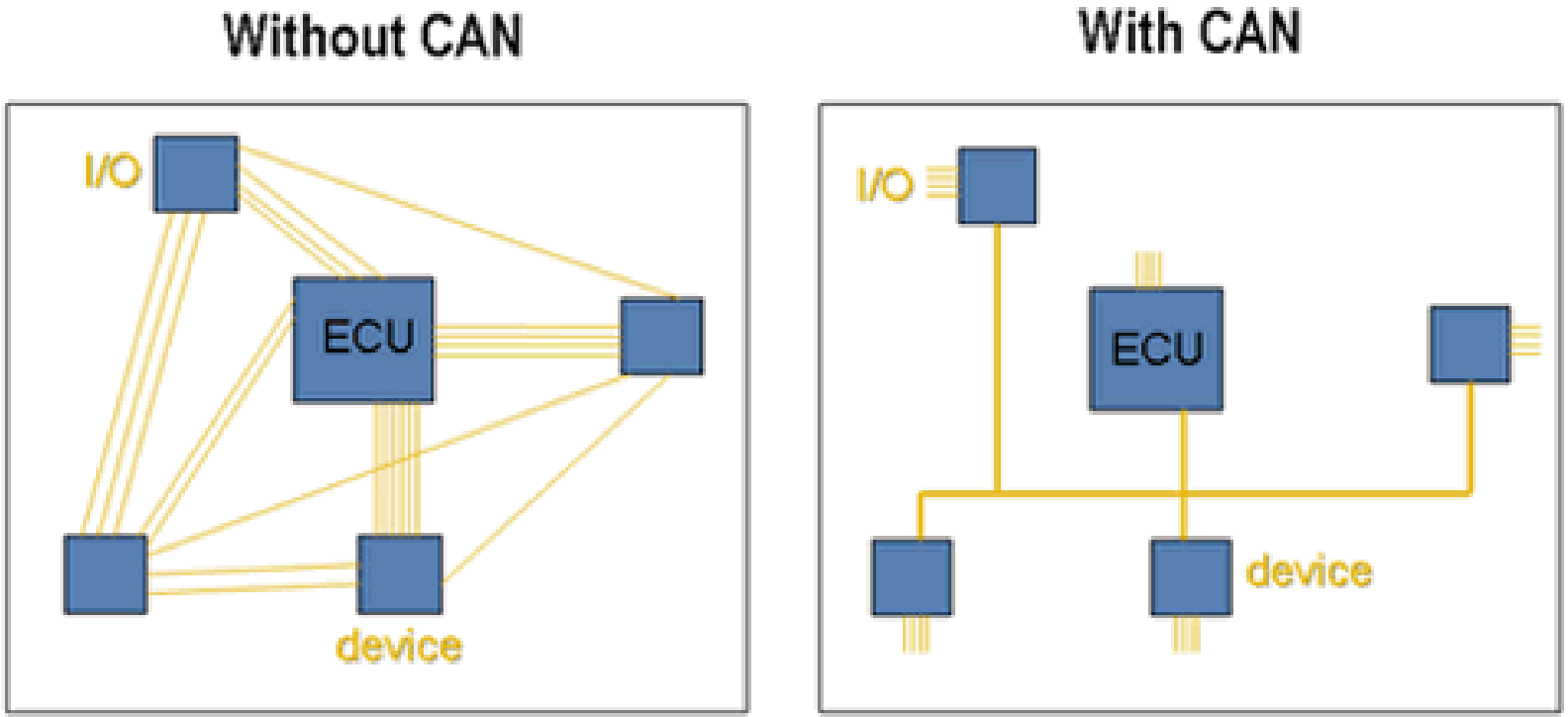
A4: Electrical and Broadcast





Benefit of CAN Bus on the "lines" or alternatively Why we need CAN Bus?

A5: Quantity



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1. Dense network where nodes have always something to transmit
2. Network with few nodes and sporadic data exchange

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   Deterministic + Distributed: e.g. TDMA. Otherwise lot of time is wasted accessing the channel and colliding
2. Network with few nodes and sporadic data exchange
   Random: e.g. CSMA/CD. Otherwise lot of time is wasted waiting for the slot/token