Building the Case for a Lighting Intrafixture Standard

DOE SSL R&D Workshop Paul Pickard January 29th, 2020

SMARTER FIXTURES

Opportunities















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UNIQUE SOLUTIONS

Impediment to Adoption



ANALOGS

Common Computer Ports





ANALOGS





CAN BUS

Five Critical Advantages of CAN Bus Communication

1. Low Cost: ECUs communicate via a single CAN interface. (i.e. not direct analogue signal lines, reducing errors, weight, costs)

- 2. Centralized: The CAN bus system allows for central error diagnosis and configuration across all ECUs
- 3. Robust: The system is robust towards electric disturbances and electromagnetic interferences, making it deal for e.g. vehicles.
- 4. Efficient: CAN frames are prioritized by ID the top priority gets bus access, yet frames are not interrupted
- 5. Flexible: Each CAN-connected ECU can receive all transmitted messages. It decides relevance and acts accordingly this allows modification and inclusion additional nodes (e.g. CAN bus data loggers) c.f. below figure





Fig. 1: Example of CAN and Without CAN in automotive application.







SCENARIO 2



SCENARIO 3



SCENARIO 3



SOLUTIONS EXIST (PROPRIETARY)



ECOSENSE[®]

KEY CHARACTERISTICS

Low Latency/Low Overhead

- Allows for low cost implementation
- Prevents response a lag due to communications delay

Scalability

- Large number of nodes to allow for unanticipated future complexity
- End to end bidirectional communication
- Static and dynamic grouping

Flexibility

- 4 wires for both power and data (differential mode could allow for much longer distances with 5th wire)

Reliability

- Collision avoidance
- Collision detection

COOPERATION REQUIRED









SO...WHO's IN?

