Automotive 10G+ Copper CFI consensus building

Christopher Mash – Marvell
Steve Carlson – High Speed Design

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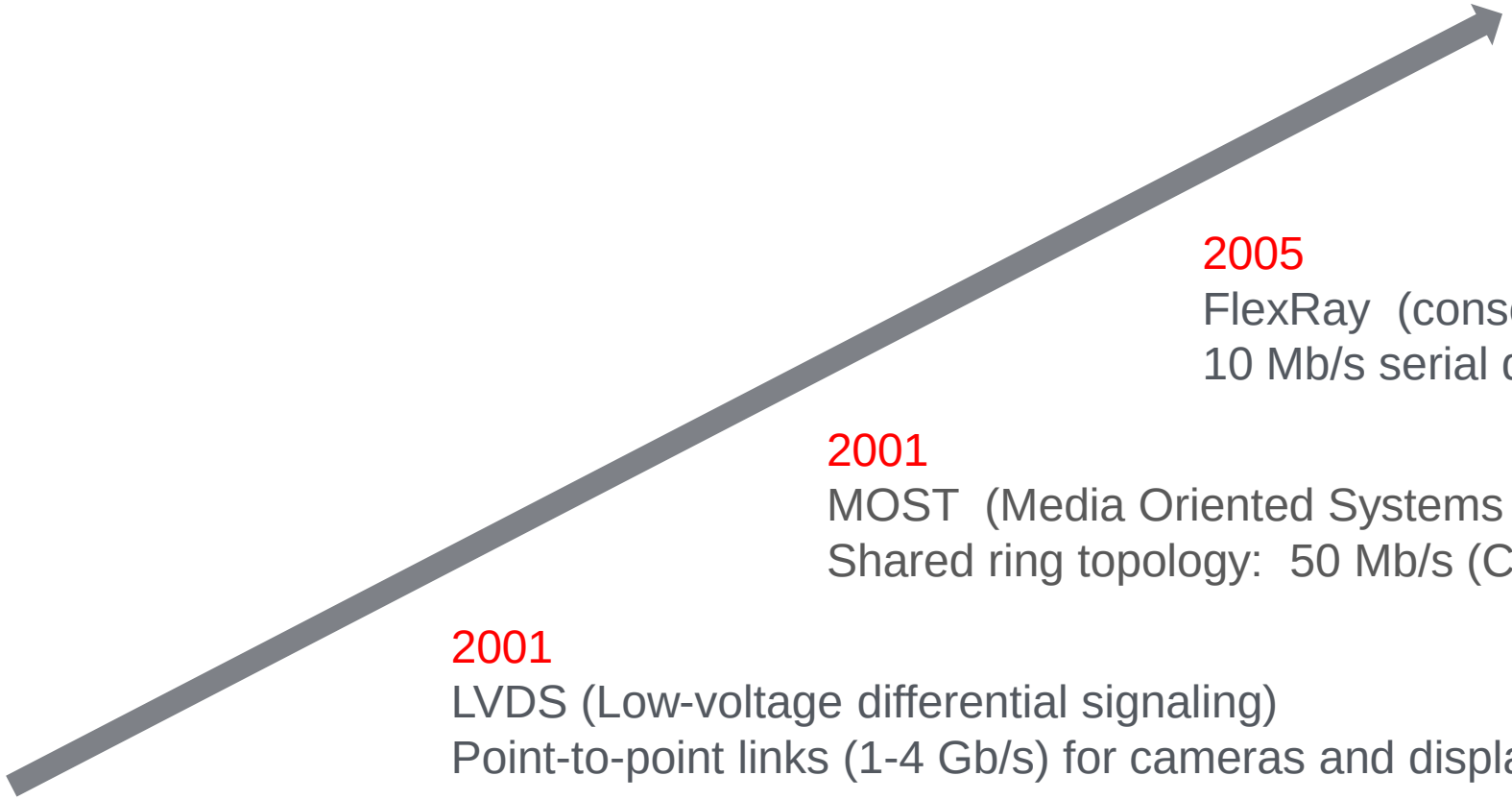
Introduction to Automotive Networking



2008
Ethernet
100M, 1G, 2.5/5/10G, & 10G+

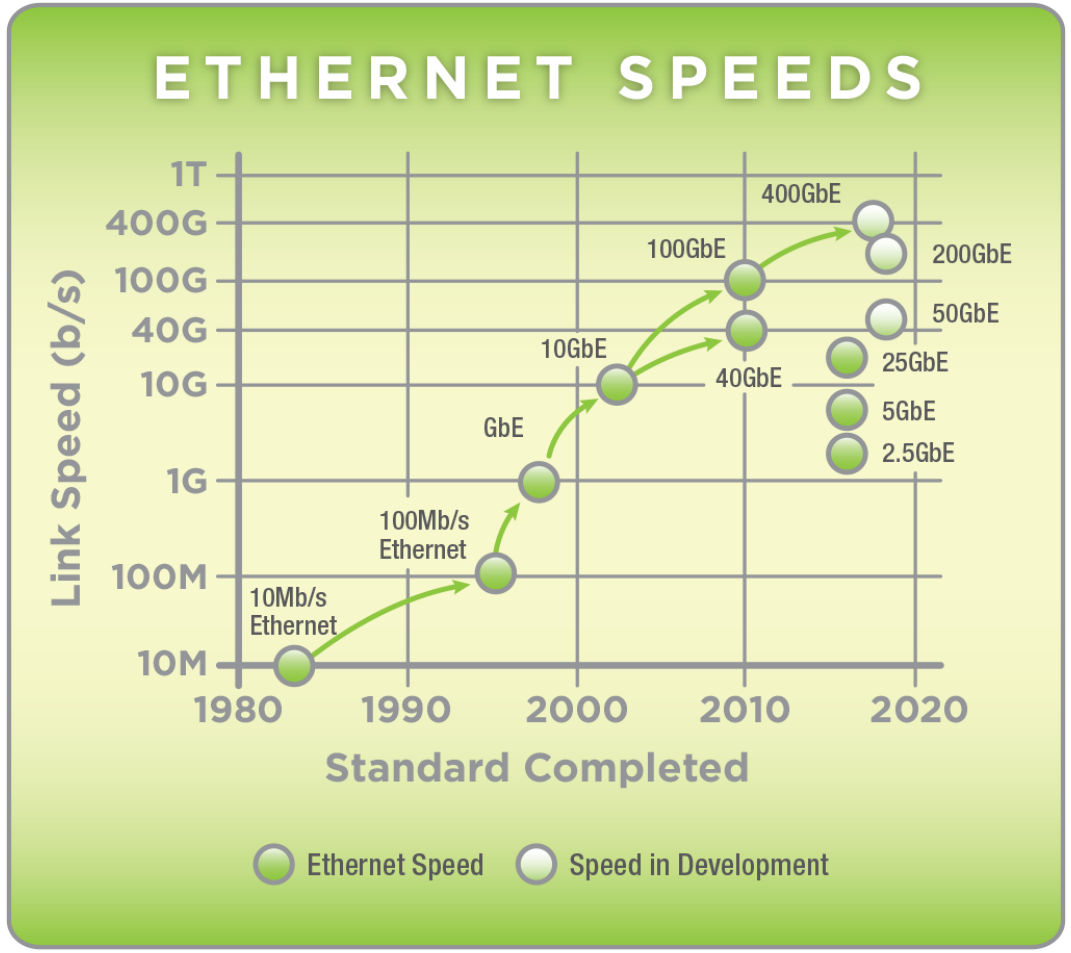
2005
FlexRay (consortium of automotive companies)
10 Mb/s serial data bus (single or dual channel)

2001
MOST (Media Oriented Systems Transport)
Shared ring topology: 50 Mb/s (Cu), 150 Mb/s (POF, Coax)

2001
LVDS (Low-voltage differential signaling)
Point-to-point links (1-4 Gb/s) for cameras and displays

1991
CAN (Controller Area Network) (1Mb/s)
Low-speed serial data bus (<1Kb/s)

Ethernet Alliance Roadmap



ethernet alliance

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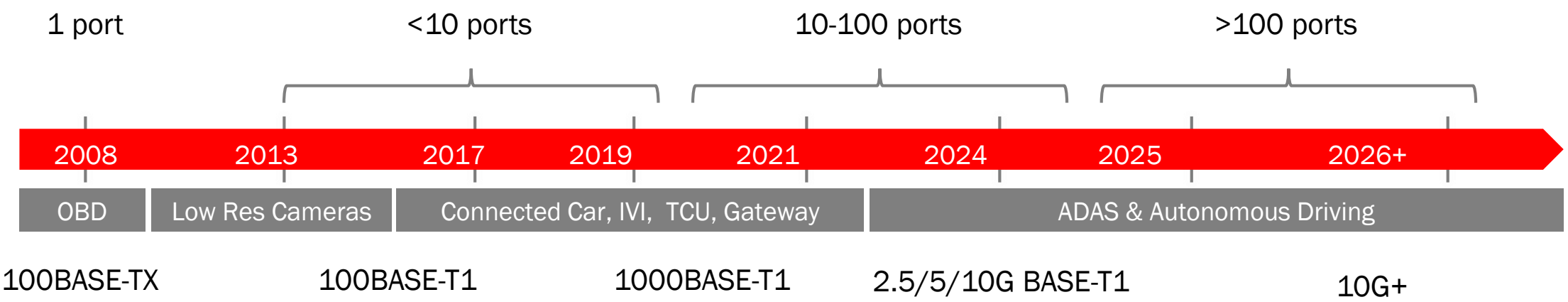
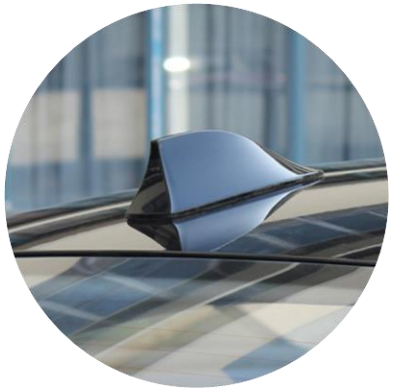
Trends in Automotive Ethernet





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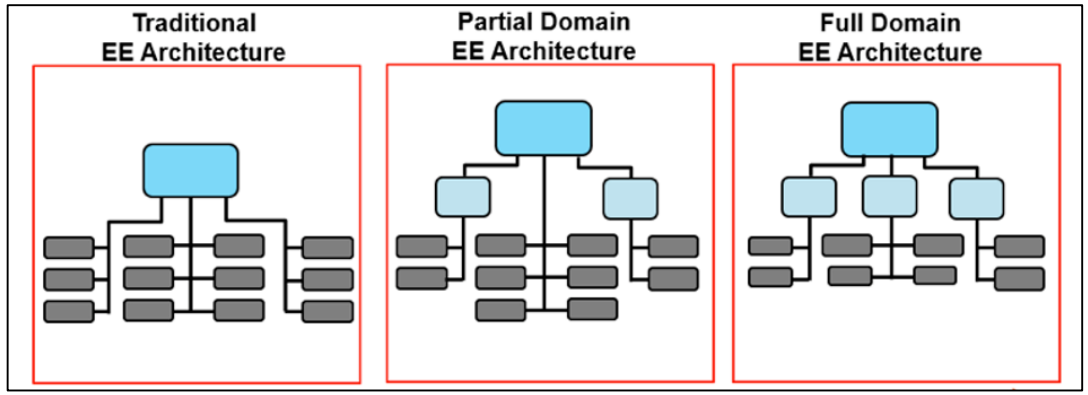
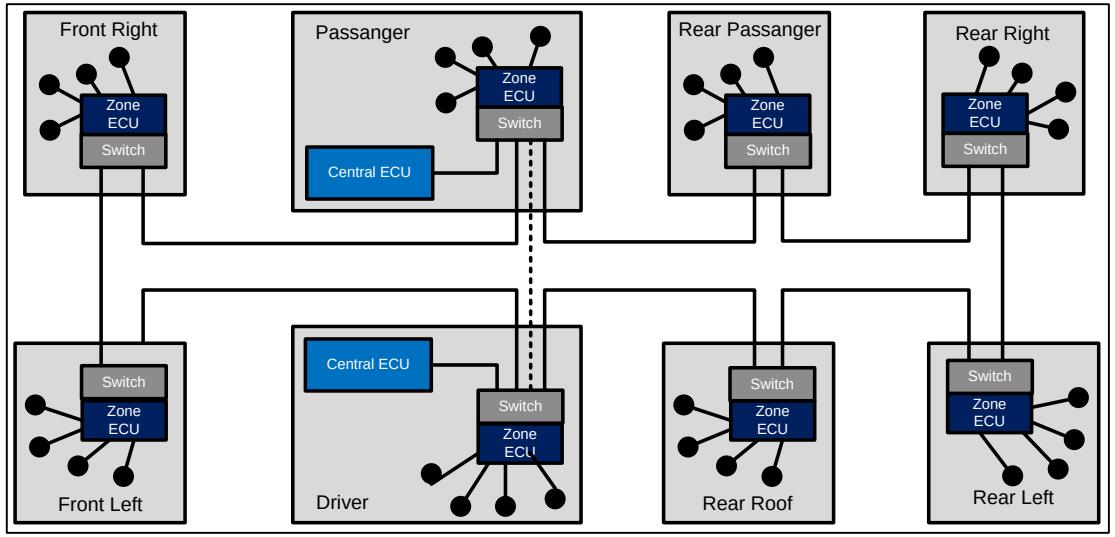
Why 10G+





Transition from domain to zonal architectures will require 10G+ links between the zonal ECUs

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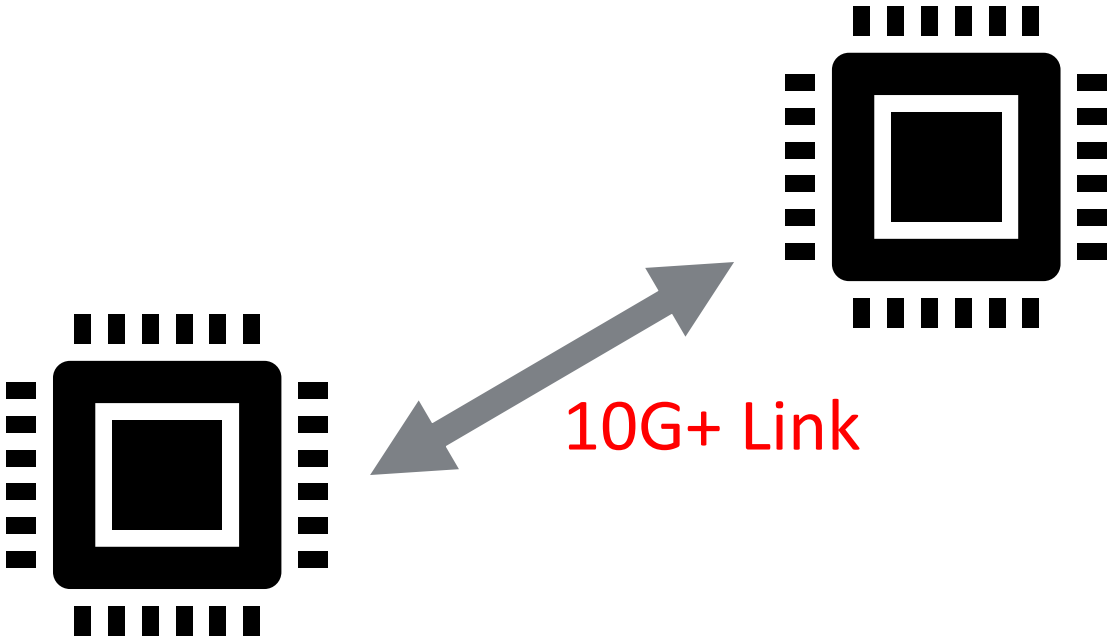
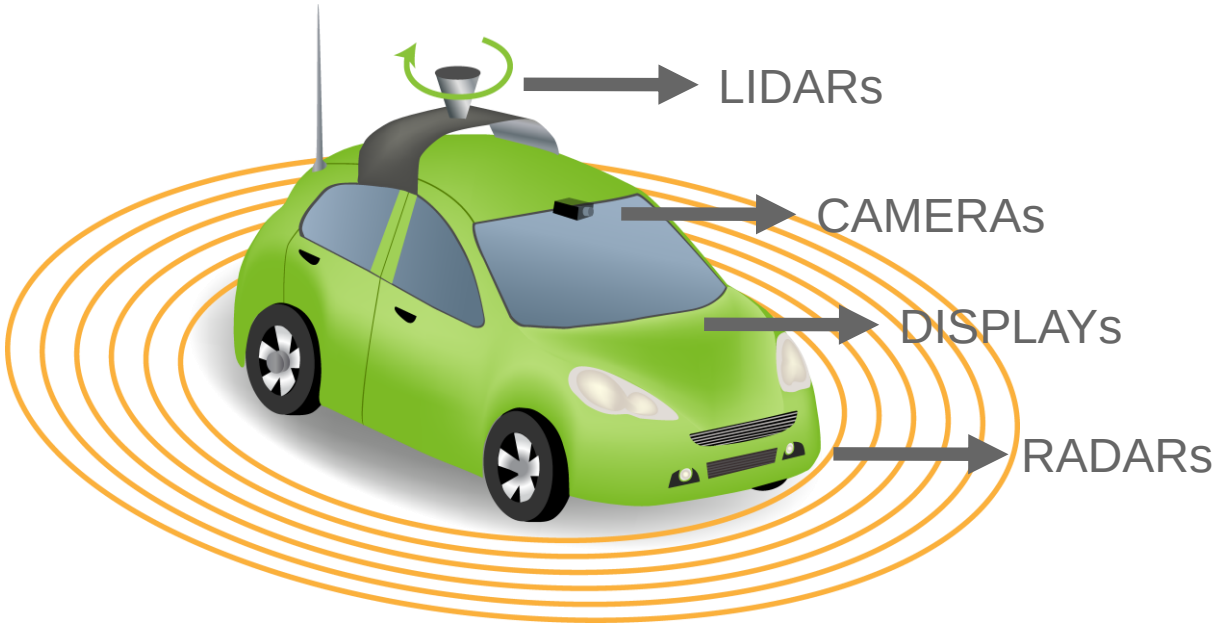
Why 10G+



Redundant processing units needed to enable autonomous cars will require 10G+ connections

Why 10G+



Autonomous driving systems incorporate sensors that transmit uncompressed data requiring 10G+ bandwidth

Why 10G+

‘Black Box’ in the car will require significant bandwidth/capacity to store raw sensor data

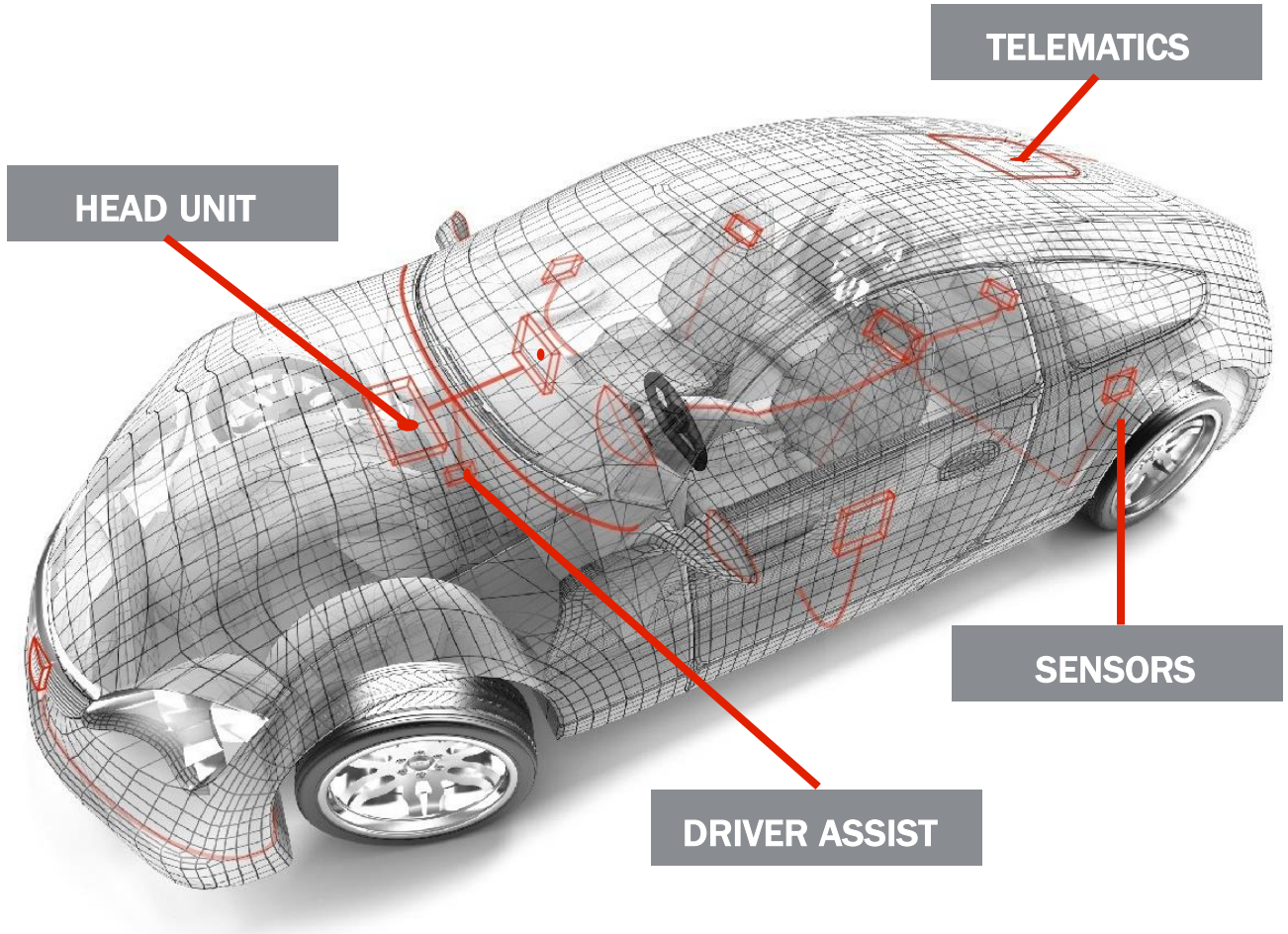
Data Drives Autonomous Cars

Autonomous Vehicles

UTILIZE

4 TERABYTES

PER DAY



Source: Mashable January, 2017

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Interim Solutions Already Available

Car OEM test vehicles already using enterprise class Ethernet devices supporting 25 / 50G

Require automotive variants before mass production for MY25

10G+ Copper Thoughts

- Leverage MAC speeds that are already available
  - No need to ‘reinvent the wheel’
- OEMs already using enterprise Ethernet devices at 25/50G
  - Use these as the starting point for further investigation

Update 802.3ch Objectives?

- Would add significant delay releasing 802.3ch standard
  - Currently at D1.0a, timeline shows SASB approved draft mid-2020
- Car OEMs will implement multi-gig in MY2023 (production in 2022)
- Final P802.3ch draft needs to be available by 2020
  - Car OEMs require production silicon to meet next generation releases
- Conclusion: a separate project is the best way forward

10G+ Organization

- Expect majority of .3ch & .3cg participants to attend
  - 802.3cg –D2.2 2nd WG ballot, expect to complete in 2019
  - 802.3ch –D1.0a TF review, expect to complete in 2020

- If CFI successful, Study Group formation out of March 2019, with PAR, CSD and objectives approval expected end 2019; expectation that .3cg will be close to completion

- Schedule meetings so .3ch and new project will not overlap

Thank you