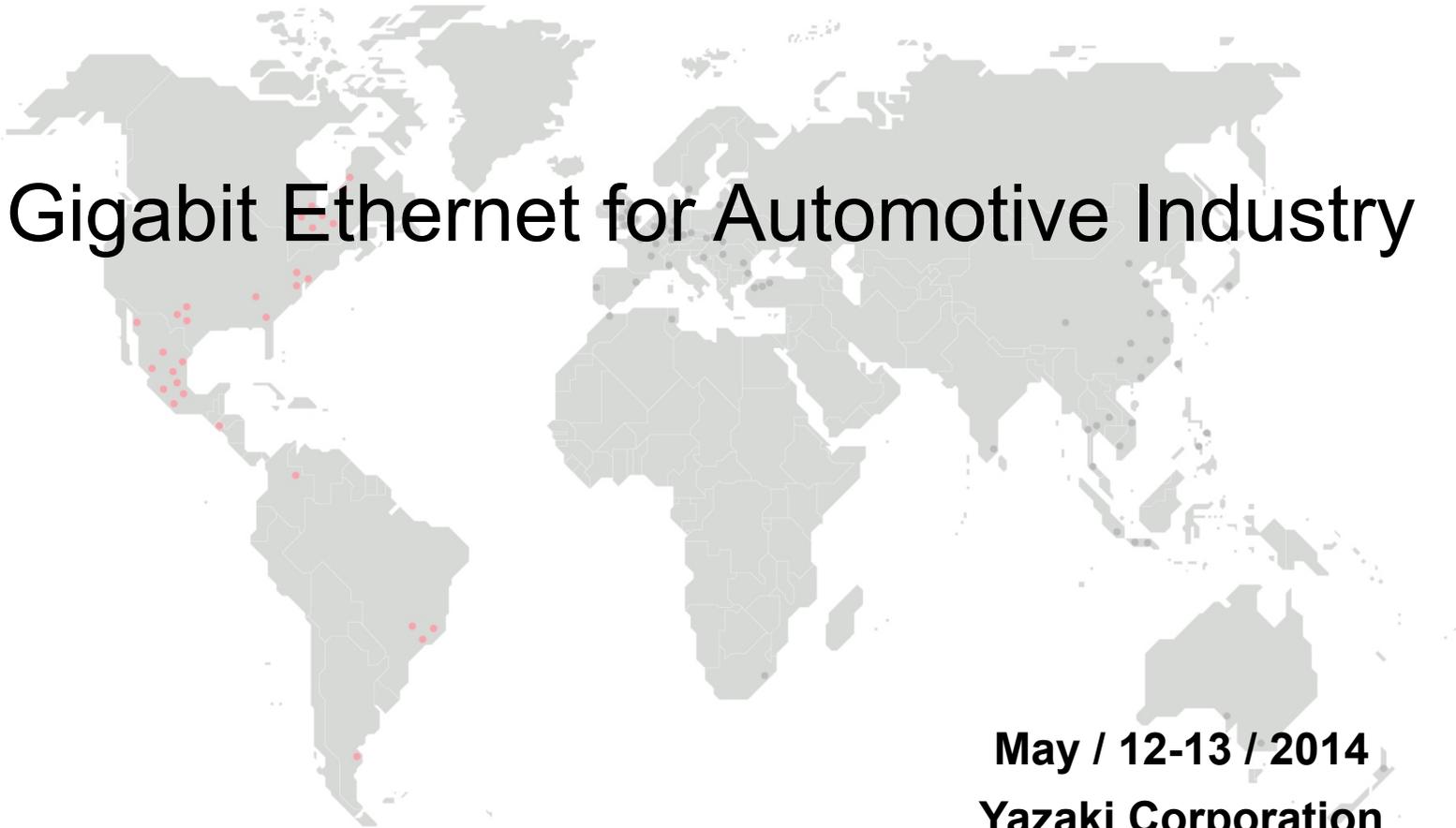


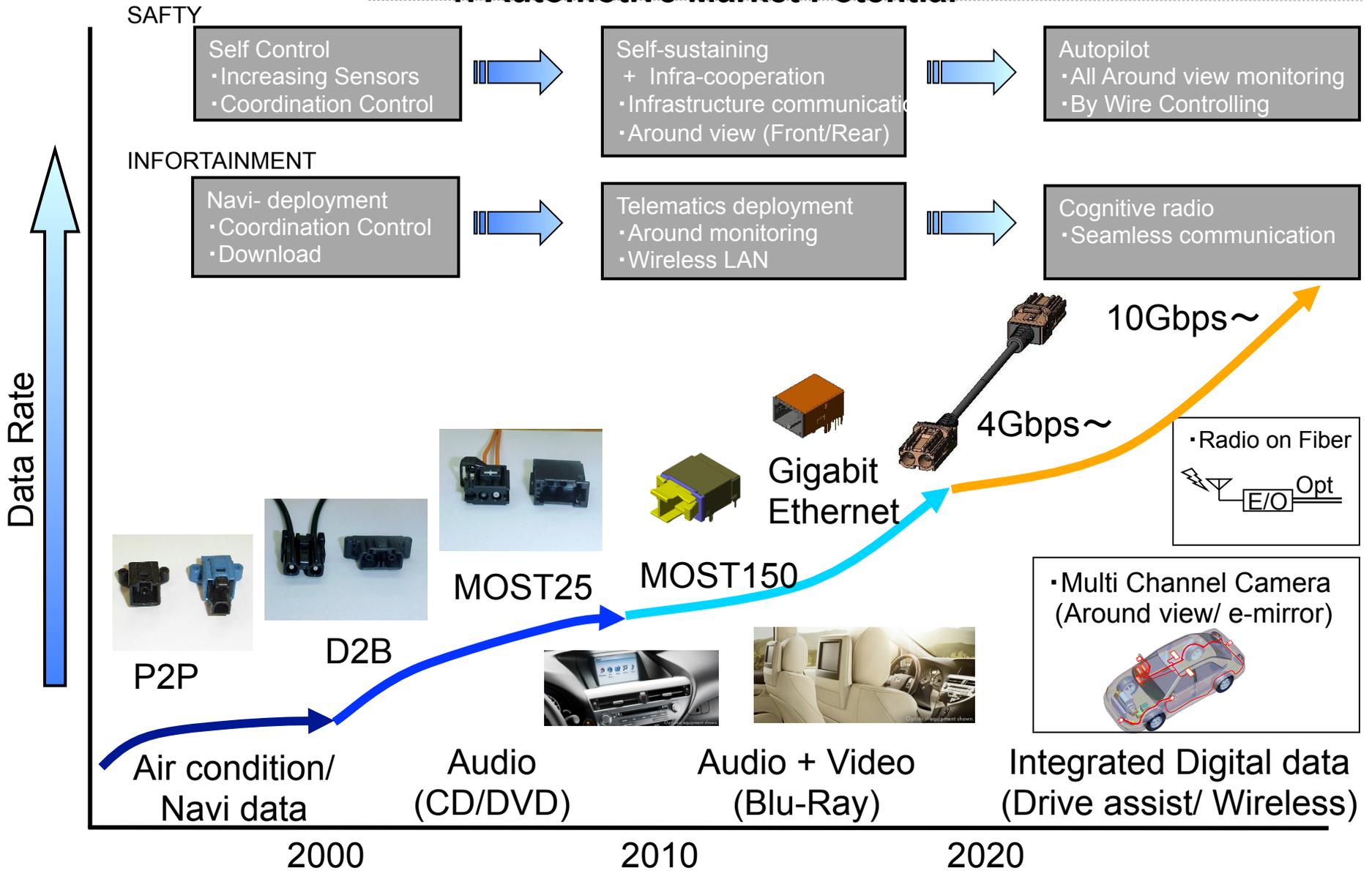
Gigabit Ethernet for Automotive Industry



May / 12-13 / 2014
Yazaki Corporation
Naoshi Serizawa

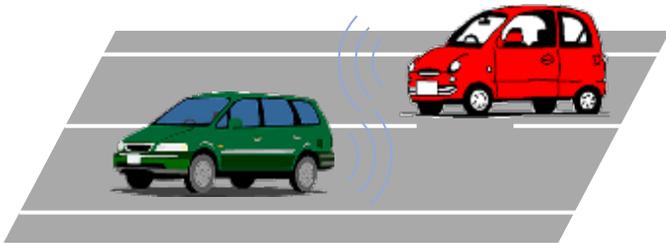
1. Automotive Market Potential
2. Compatibility Requirement
3. Application
4. Summary

1. Automotive Market Potential



1. Automotive Market Potential

- Fiber optics solutions for Automotive have been installed since 1980's
- Increasing data rate due to the video applications (camera, HD display)
- Very Strict about EMC requirement in the automotive environment, especially Hybrid Vehicles and Electric Vehicles
- Scaling up a seamless communications (V2X)
 - Access to WiFi, WiMax....., vehicle will be a one of the devices
- Increasing the number of circuits in the wire harness (W/H) due to vehicle intelligences, W/H will become a heavy weight



Vehicle to vehicle (V2V) communication



Vehicle to X (V2X) communication

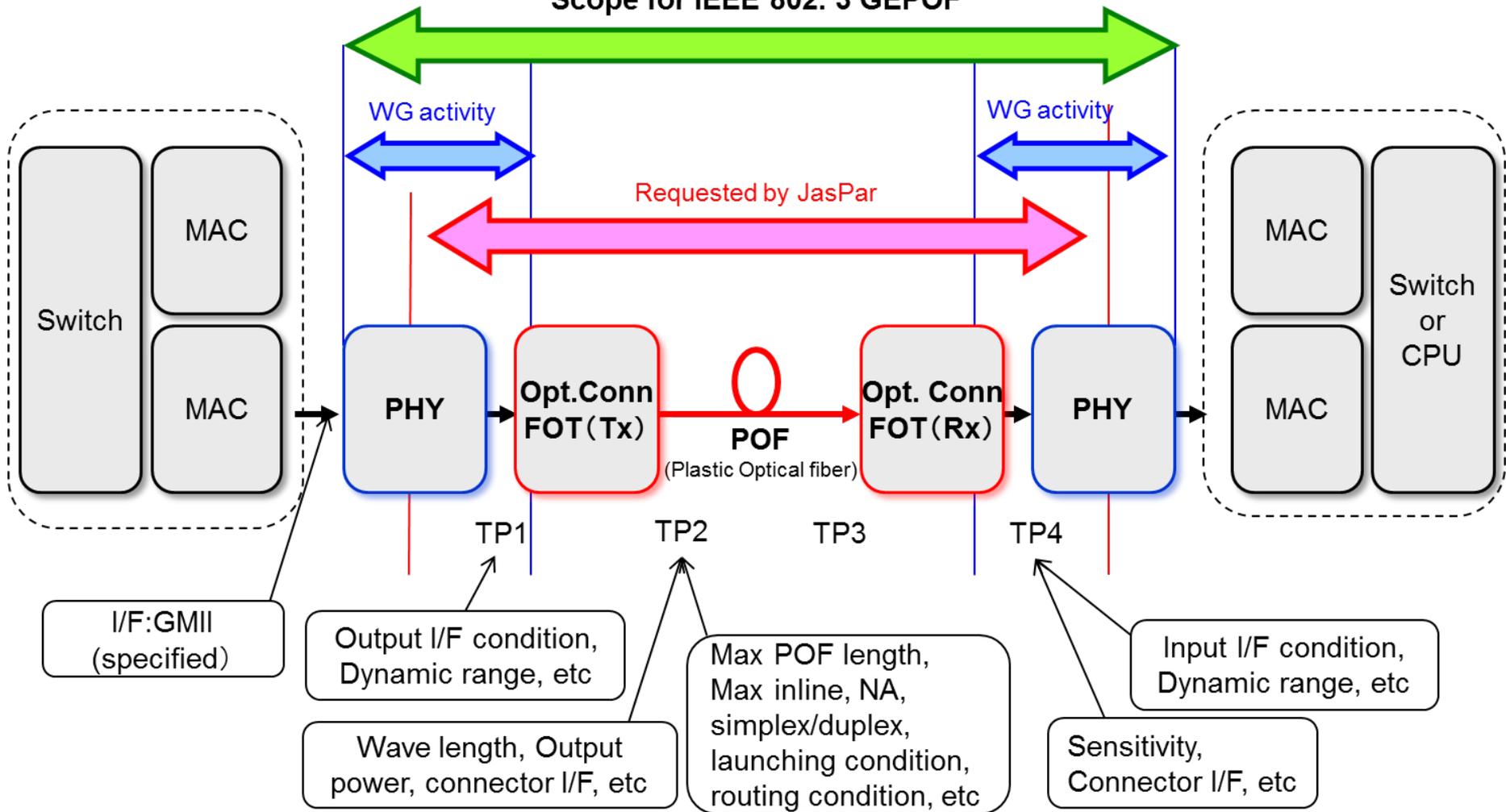
V2X: Vehicle to something

■ 2. Compatibility Requirement

- **Automotive manufactures (OEMs) are willing to have multi vendors because of BCP**
- **OEMs are hardly to guarantee whole system, and want to ask suppliers to provide good components**
- **Well-organized specifications and standards are required**
- **Need to have rigid specifications (in order to avoid ambiguous responsibilities)**
- **Interface has to be specified (foot print, pin-assign have to be compatible)**
- **Certification authority is needed (third party)**

2. Compatibility Requirement

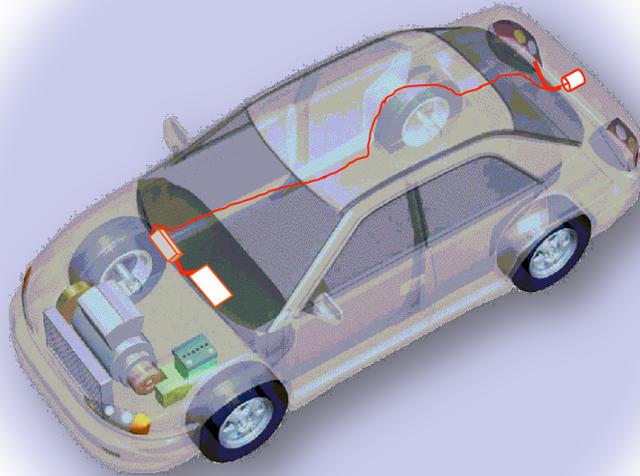
Scope for IEEE 802.3 GEPOF



FOT: Fiber Optic Transceiver

OEMs is preferring to specify TP1 to TP4, respectively

Infotainment/ Camera Display



Display size:

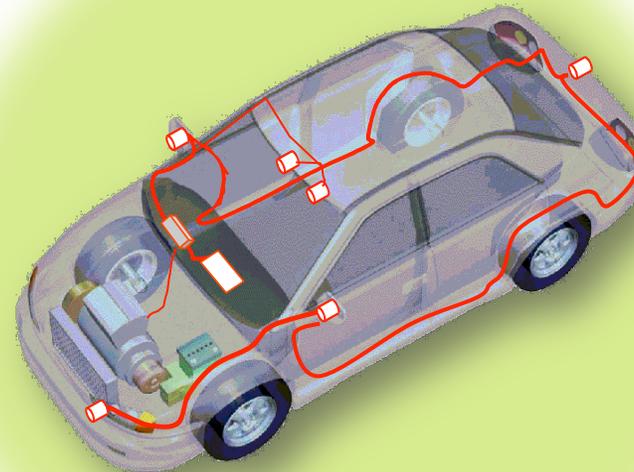
Current: VGA (640 x 480, 30 fps)

≙ 150 Mbps

Future: WXGA (1280 x 768, 60 fps)

≙ 950 Mbps

Reliability for Autopilot



Bit Error Ratio (BER)

Frequency: 1 time a day

Data rate: 1 Gbps

→ 1E-14 would be needed
(ca. 1 times / 27 hours)

**Physical Layer of 1 Gbps is mandatory for the vehicle network
BER would be required as 1E-14**

- **POF system was used more than 25 years with no failures**
- **Physical layers of 1 Gbps is required in the vehicle network applications**
- **One interface with multi vendors is required by OEMs**
- **Rigid component specifications are required**
- **Highly signal integrity and BER of 1E-14@1Gbps are required**

Thank you for your attention.