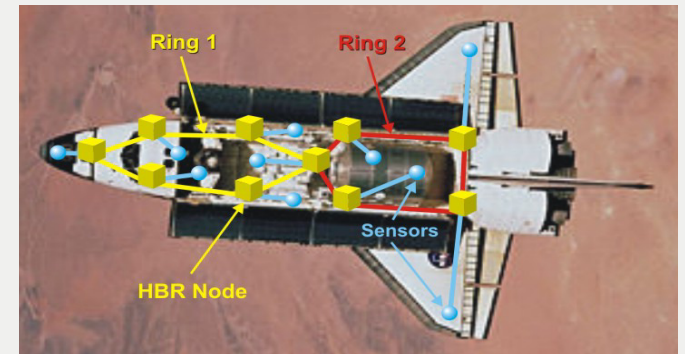
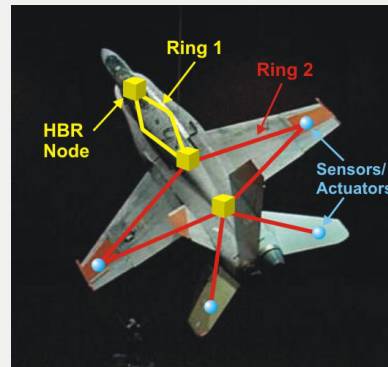


High Bit Rate (HBR-2502) Platforms for FLY-By-Light

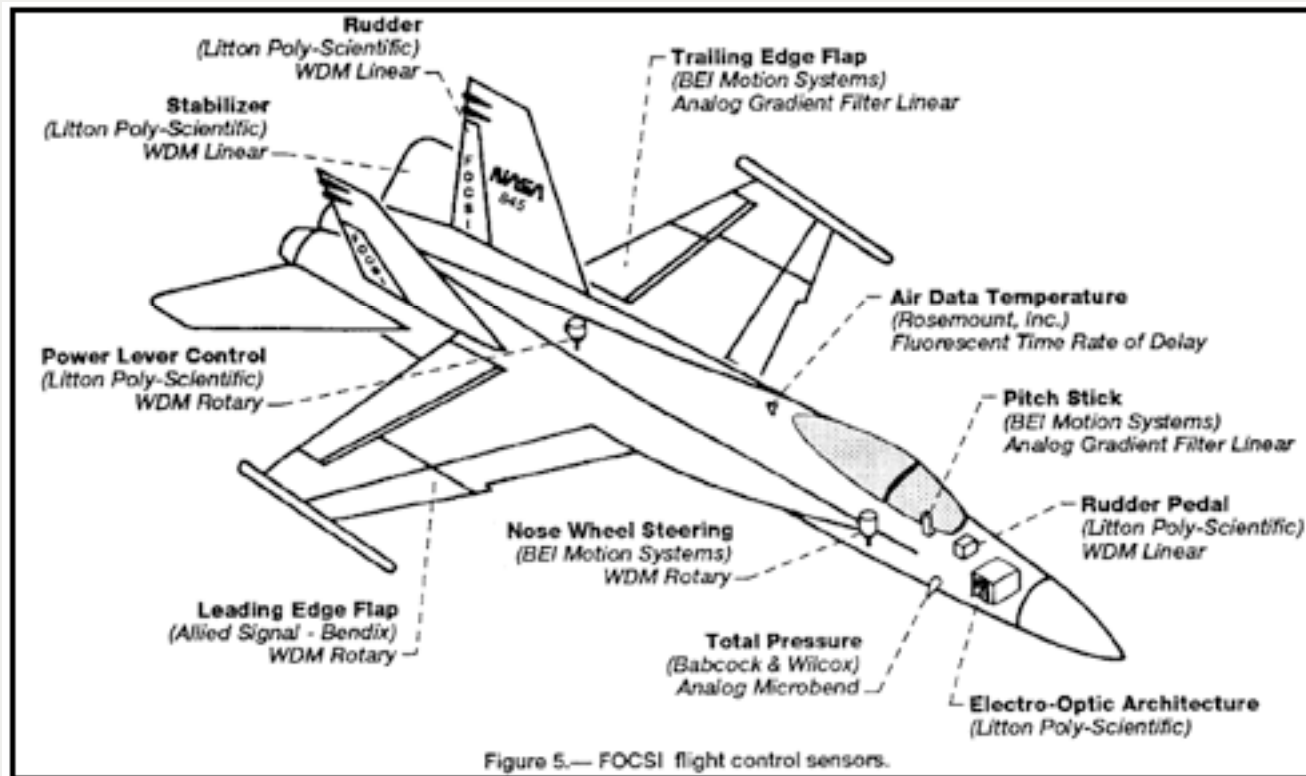
Donald H. Buell, John C. Bellamy, and Michael M. Salour
August 2007

Fly-By-Light

- We applied IPITEK's HBR-2502 architecture in optical networking for deployments on Mobile platforms with a major Aerospace Corporation.



Fly-by-Light



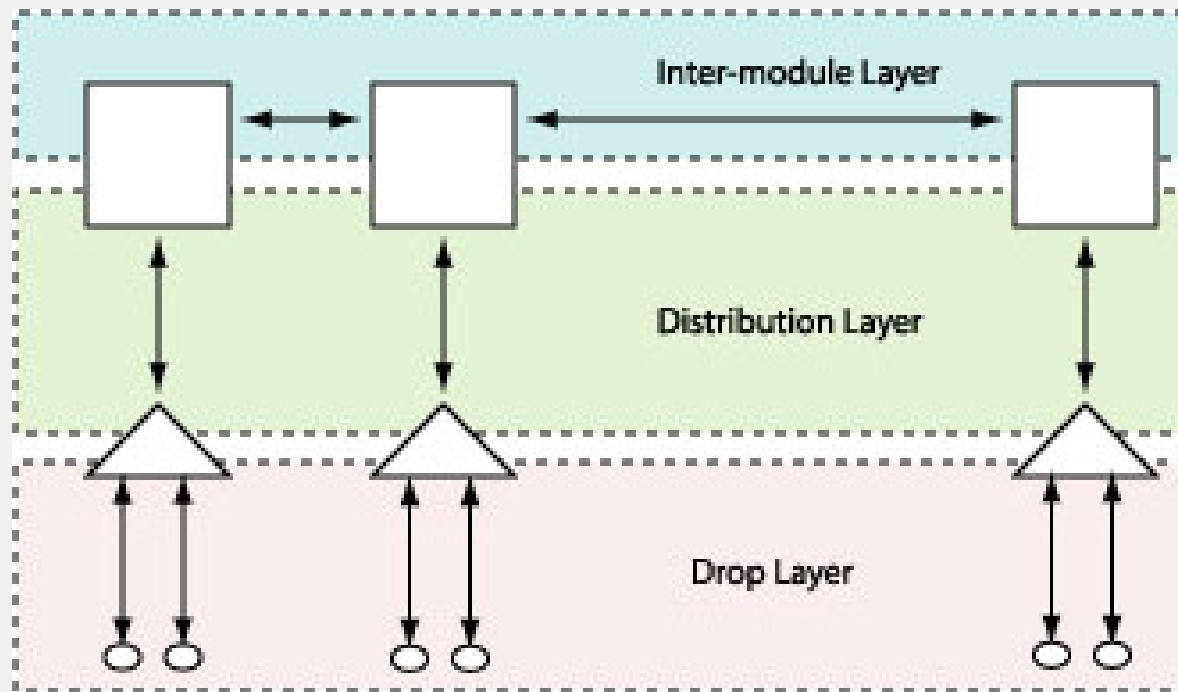
Optically controlled actuators and optical sensors

Fly-By-Light Goals & Features

- Unified Network
 - Sensors, Command/Control, Video, Communications
- Minimized Electrical Connections
- Generic Processing Modules
- Transparent to higher level protocols
- Automatic Fault Isolation & Identification

Physical Connection Layers

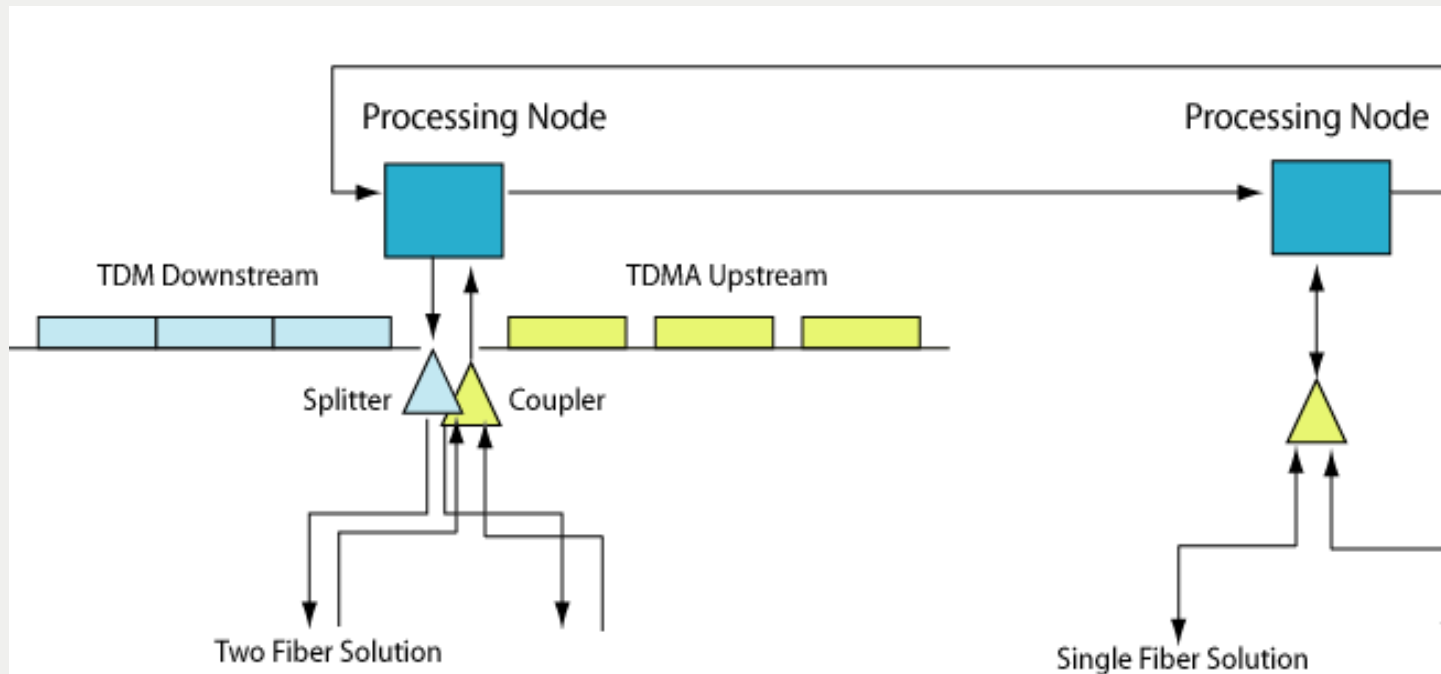
Use concepts from telephone and cable networks to analyze and design avionics networks



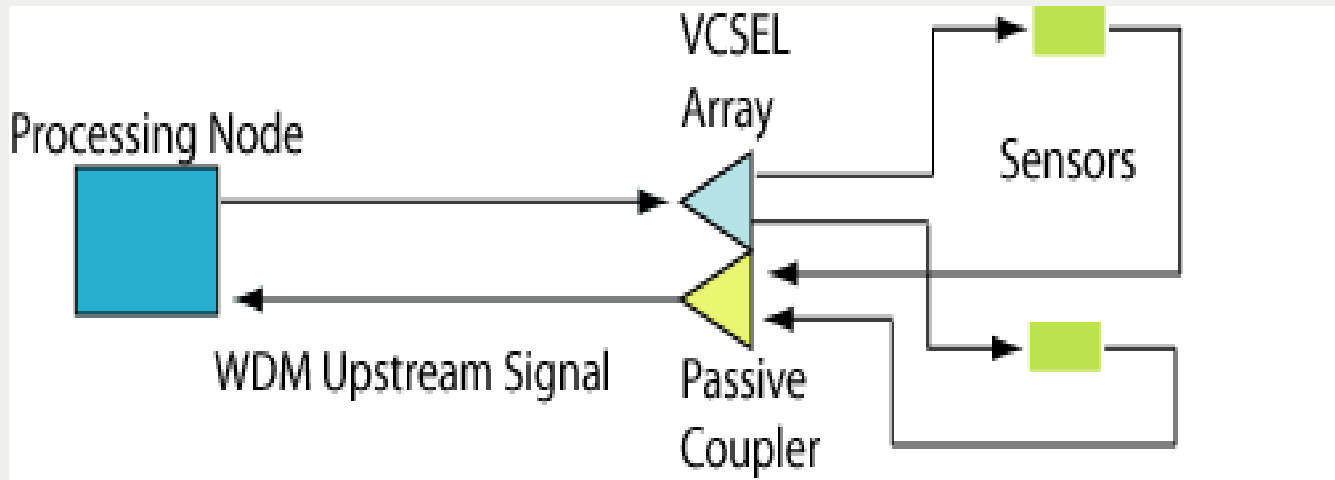
Develop Components for Avionics Networks that can be applied to Commercial Applications

- Splitter/Combiner component for Passive Optical Networking (PON)
- Protection Switching component Ring Network reliability enhancement

TDM/TDMA Distribution/Drop

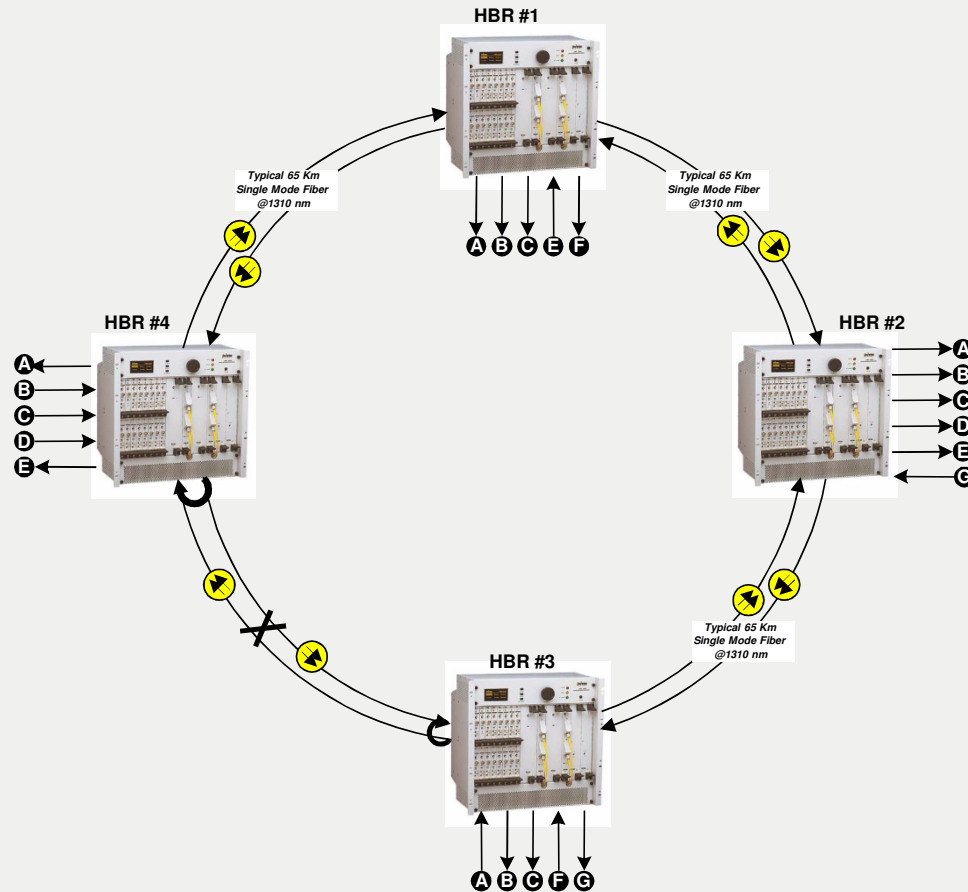


VCSEL Sensor Support

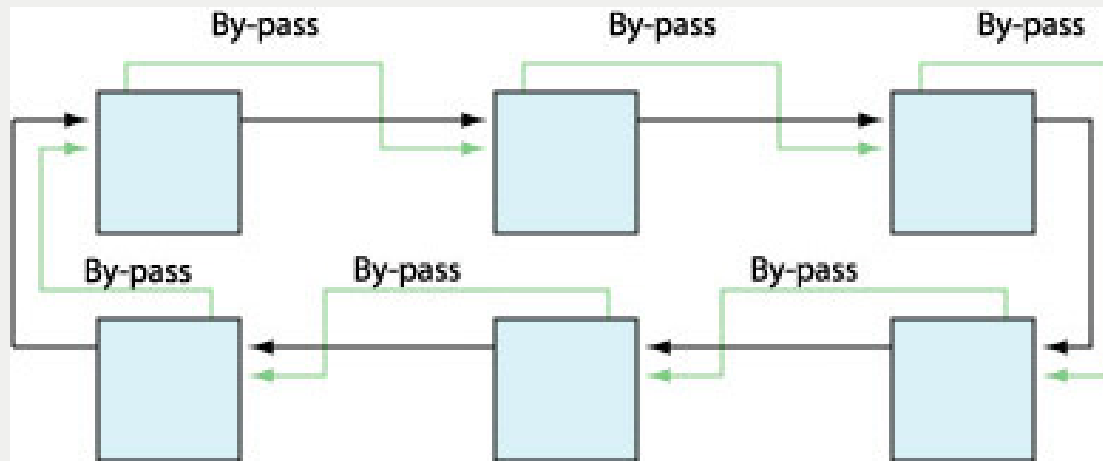


VCSEL array produces a different wavelength for each sensor
Sensors modulate the optical signal which is returned upstream
Passive coupler multiplexes the upstream signals using WDM

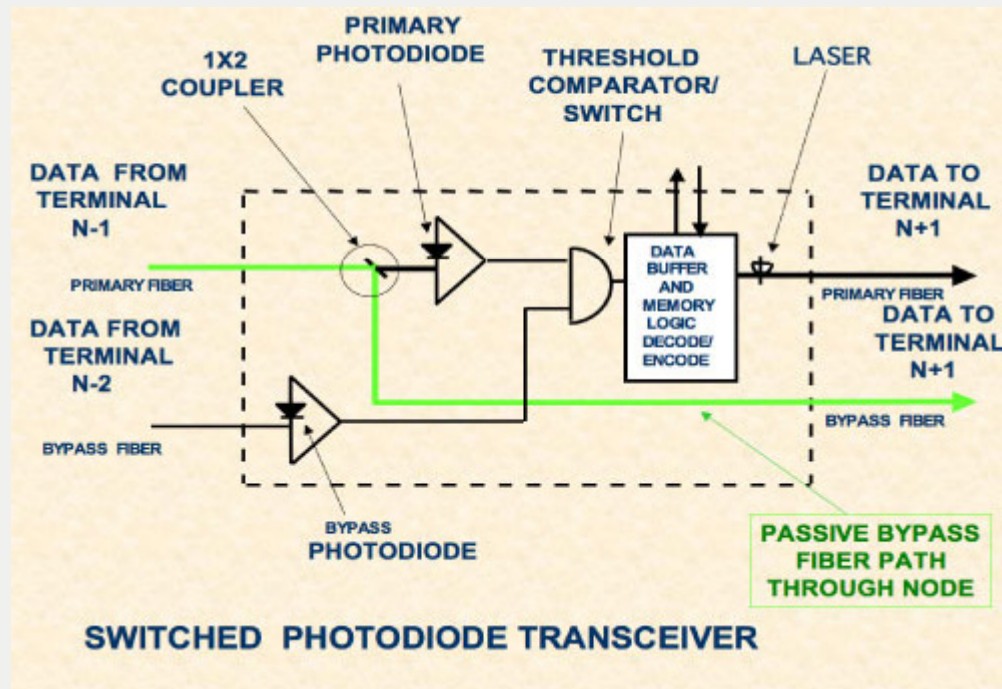
IPITEK HBR-2502 Ring



Avionics Ring Network



Avionics Component



Summary

- HBR-2502 is designed for high reliability delivery of video services
- Fly-By-Light deployments obviously need extreme reliability
- Optical networking and sensors provide reliable, low weight solution

