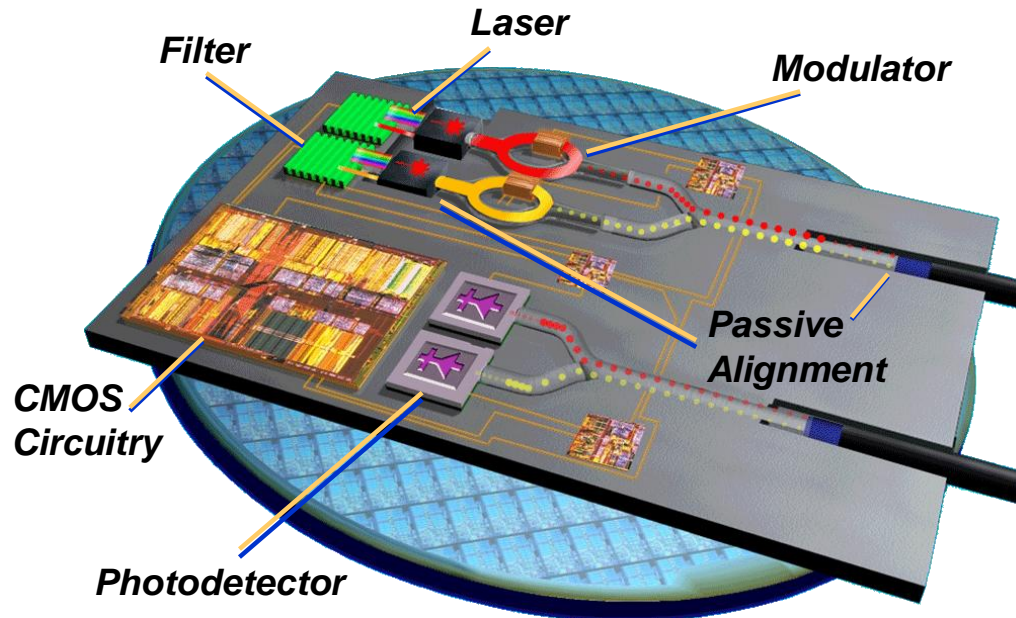


# Silicon Photonics: The Emerging Technology

- Progress in Si Technology
  - More Moore: Continuation of **Scaling** and **Integration**
  - More than Moore: New Materials, **New Technology (Photonics)**



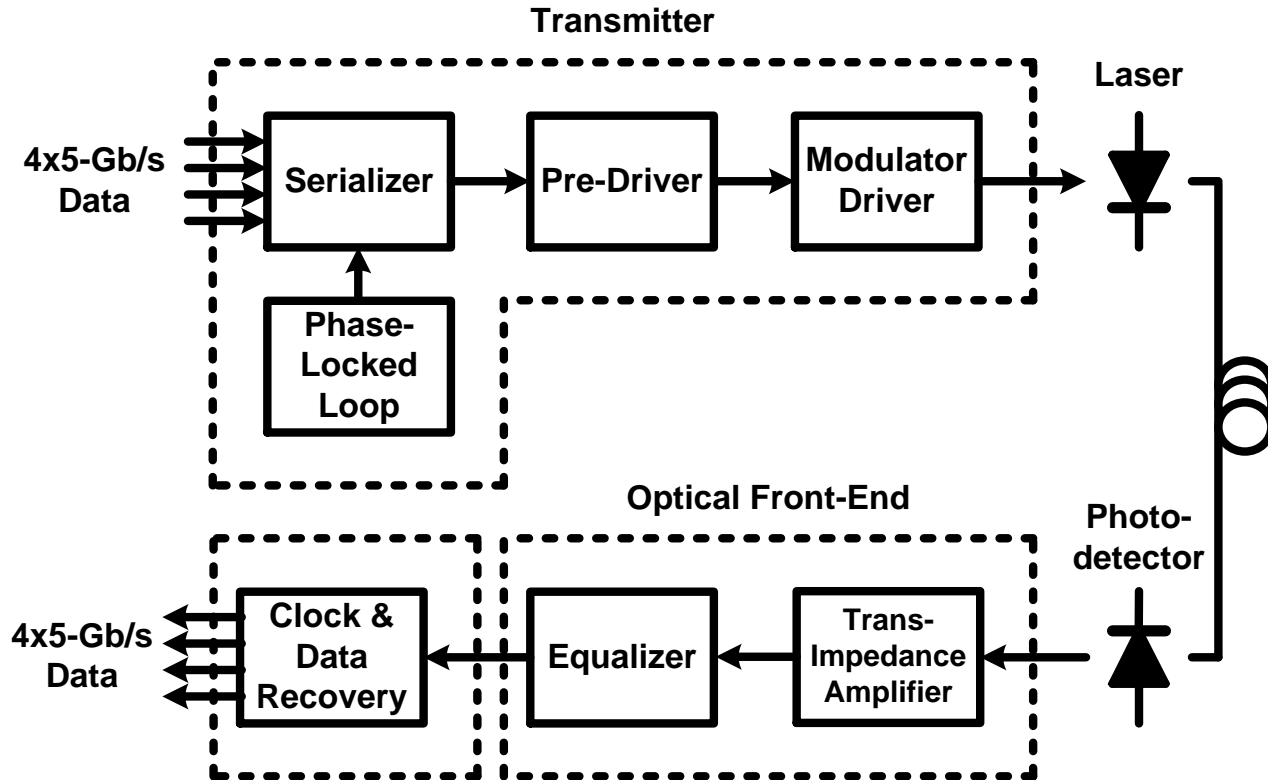
***“Development of CMOS-compatible optical components is of paramount importance”***

(ITRS Road 2009 – Interconnect, p.56)

# 20-Gb/s Optical Transceiver System

- Research Strategy

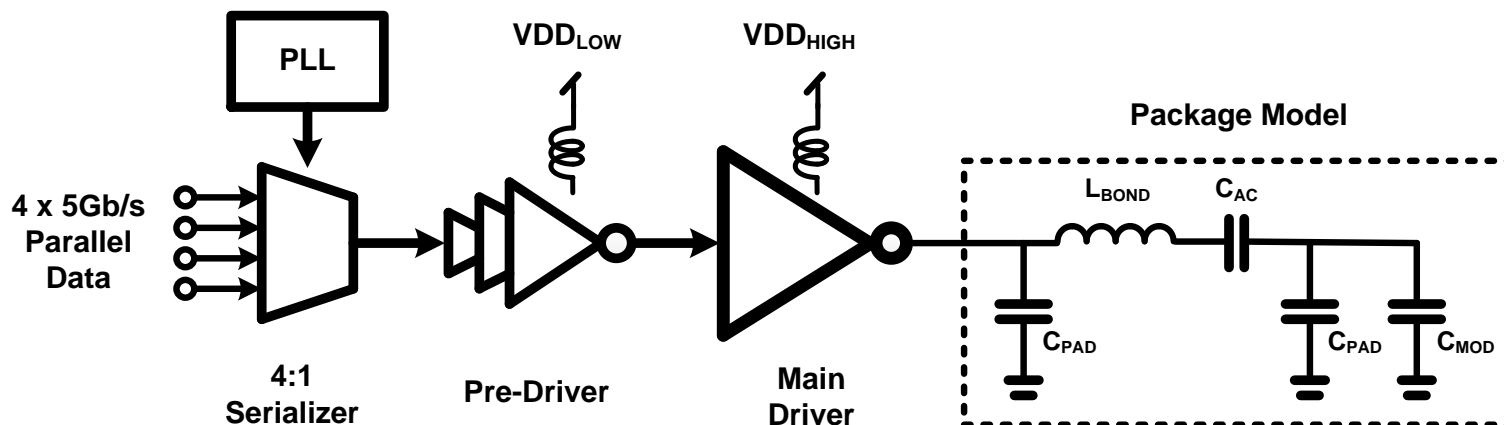
- Electrical Circuits: Standard CMOS Technology
- Optical Devices: Silicon-On-Insulator CMOS Technology



# 20-Gb/s Optical Transceiver System

- Transmitter

- Serializes and amplifies four parallel 5-Gb/s data stream into 20-Gb/s data stream, which drives optical modulator.
- Consists of 4:1 serializer, phase-locked loop, pre-driver and main driver.



- Circuits (CMOS) and Devices (SOI) will be wire-bonded (package model) for initial stage of our research.
- Our research aims for **single-chip integration** of circuits and devices and **optimization** as well, **with smart-monitoring system**.