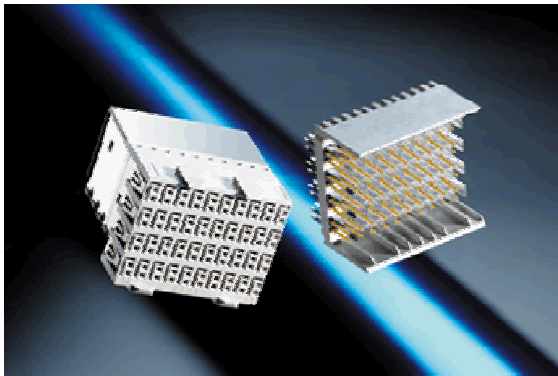
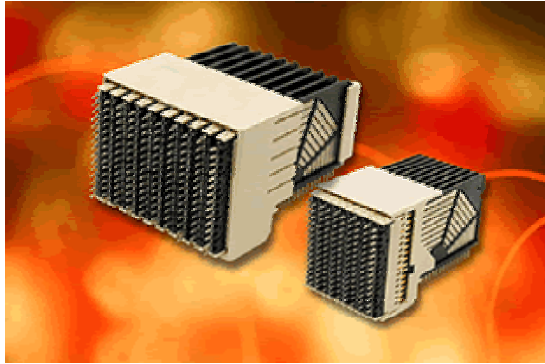




# Technical Seminar Series

*Be Smart — Choose the Right Parts*

## Welcome to “Connectors...The Need for Speed”



The continuing need for increased speed and package density can be seen most clearly in the world of the backplane connector system. A once basic product has now evolved to meet the needs of today's systems and the challenges that will be set by tomorrow's.

This seminar will help engineering and purchasing professionals evaluate their options by explaining the competing technologies and by revealing the backplane product roadmaps of key connector manufacturers.



# Technical Seminar Series

*Be Smart — Choose the Right Parts*

Welcome – Michael Knight, TTI, Inc.

## Technology Options

### **High Speed Backplane Connector Technology**

- Bob Hult, Bishop & Associates

### **AirMax VS Connector System**

- John Burkett, FCI

### **GbX Backplane Connectors**

- David Brearley, Molex

### **High Performance 2pc Backplane Interconnects**

- Jeff Brown, Tyco

Q&A



# *High Speed Backplane Connector Technology*

*Bob Hult  
Director of Product Technology  
Bishop & Associates Inc.*

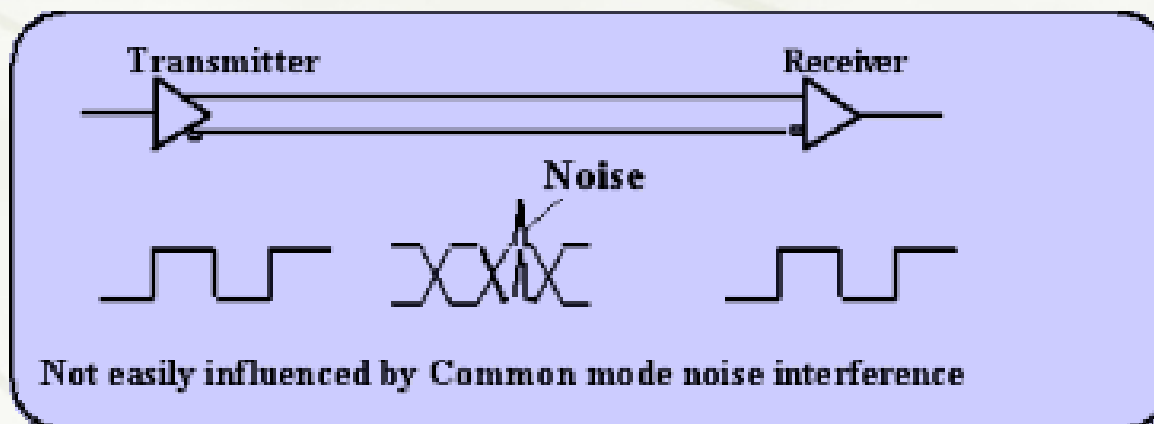


# *Market Drivers*

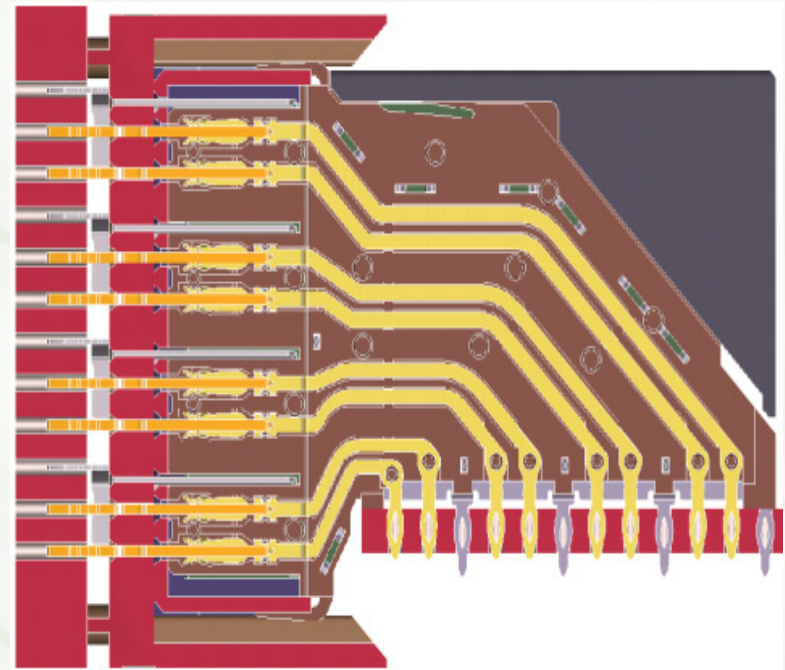
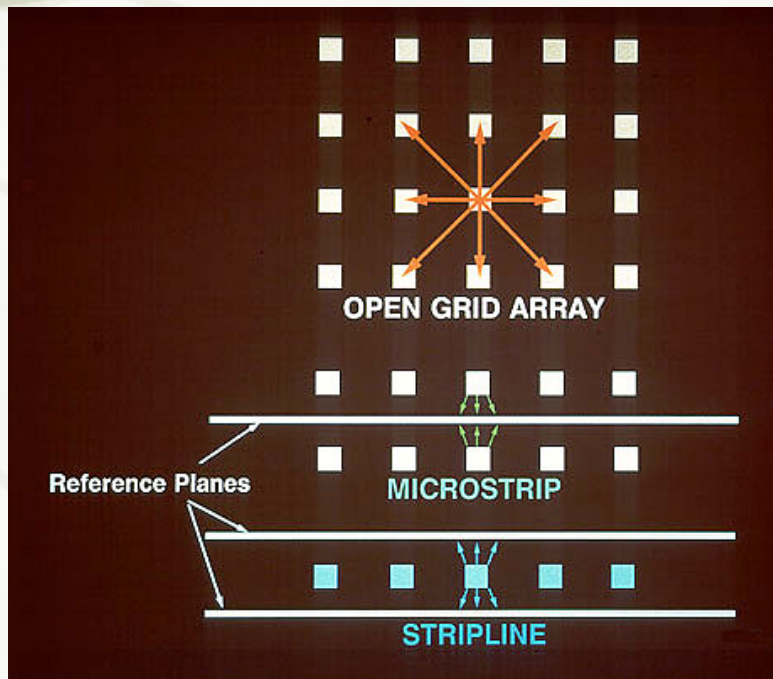
- 1. Faster Data Rates*
- 2. Increased Packaging Density*
- 3. Scalability / Headroom*
- 4. Reduced Cost*
- 5. Reduced Risk*

# *Transitioning from wide parallel buses to serial*

## *Single ended to high-speed differential signaling*



# *Open pin field connectors moving to shielded differential pairs*





# *High Speed Channel Objectives*

*Minimize Signal Loss*

*Minimize Crosstalk*

*Minimize Reflections*

*Minimize Skew / Jitter*

*Maintain controlled impedance*



# *Signal Integrity*

*Characterized by:*

*Near / Far end Crosstalk*

*Skew / Jitter*

*Propagation delay*

*TDR Impedance*

*Eye diagrams*

*SPICE analysis*


*3-D field solvers*

*S-Parameters*

*Statistical eye analysis*

*Vendor supplied test boards*

*Bit error rate (BER)*



# *Recognition of synergy between all elements of the channel*

- 1. Connector*
- 2. Connector to PCB launch*
- 3. PCB materials*
- 4. PCB design*
- 5. Silicon features*

# Continuing Evolution

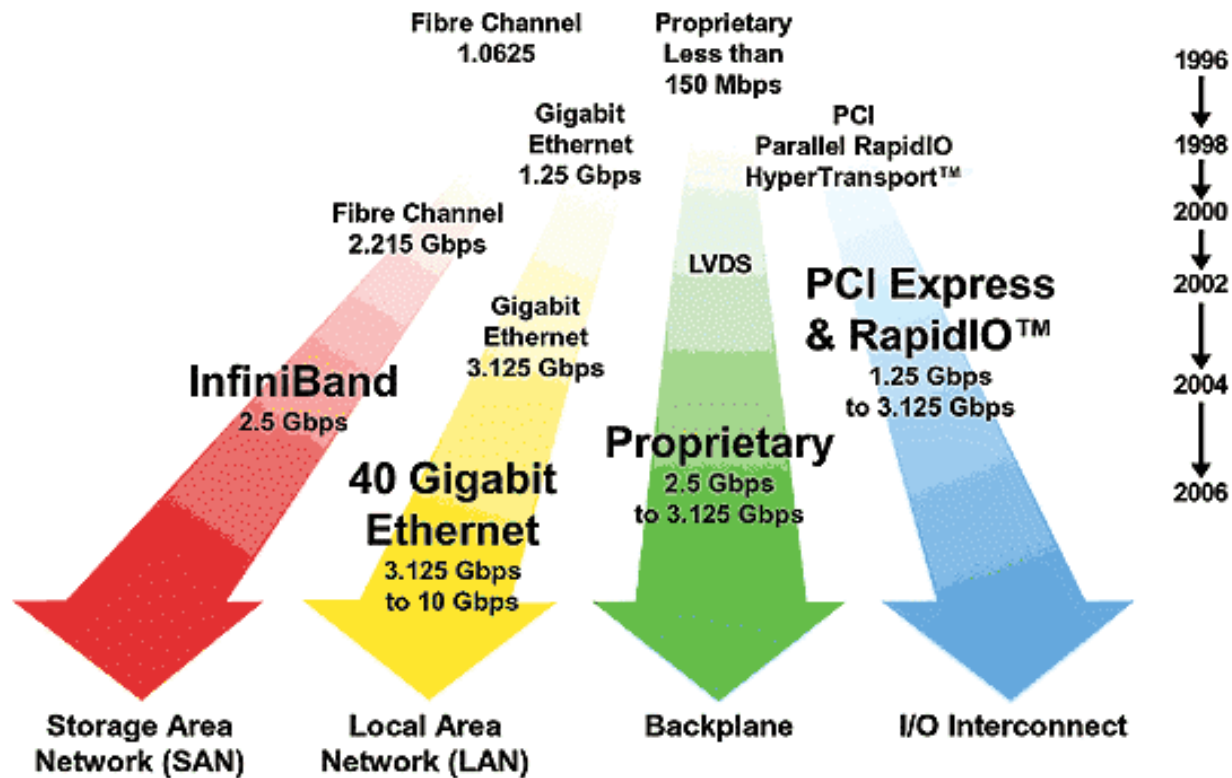


Figure 1. High-speed communication interfaces and buses request high performance transceiver and connector technologies (source: Altera).