



Eliminating Cables from PXI ATE systems

Gary Clayton – Sales Director - EMEA

# About MAC Panel

- Established for almost 60 years as a provider of innovative connection, or Mass Interconnect systems for use in technically challenging and rugged electronics test environments where contact reliability and performance is essential
- Based in North Carolina USA
- European technical and sales support in United Kingdom
- >60 employees worldwide
- Global sales and support infrastructure
- Interconnection partner on many global government and commercial projects and programs

# ATE Systems come in all shapes and Sizes



# Evolving ATE Design Trends

- Reduced “time to market” requires simplified, agile and efficient ATE designs
- Modularity is key to flexibility in production or in maintenance applications
- Users need to maximise system scalability in order to respond to evolving ATE needs
- Instrument performance evolution necessitates the need for practical and viable system updates and enhancements
- Global system distribution requires ATE designs that yield performance continuity and practical remote upgrade capability

# Why Eliminate Cables

- Cables add cost, complexity, size to ATE designs and reduce signal performance and integrity



# The PXI Platform

- The PXI modular instrument platform is the choice for ATE instrumentation and switching in the majority of new ATE designs around the world
  - More than 1500 PXI different instruments/switches available globally
  - RF instrumentation performance now competes strongly with “traditional” instrument platforms but in a very small form factor
  - Signal switching/matrices are available in excess of 500 cross points per PXI slot
  - Some instruments have very high density I/O connectors with >200 connections per PXI slot
  - More PXI measurement instruments and power sources are available
  - Specialist measurement technologies are now widely available in the PXI platform – for commercial and defence markets

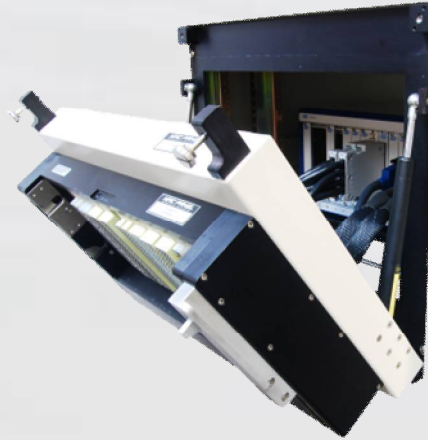
# Options for Connecting to a PXI modular system

Option 1:



**Multiple Cables**

Option 2:



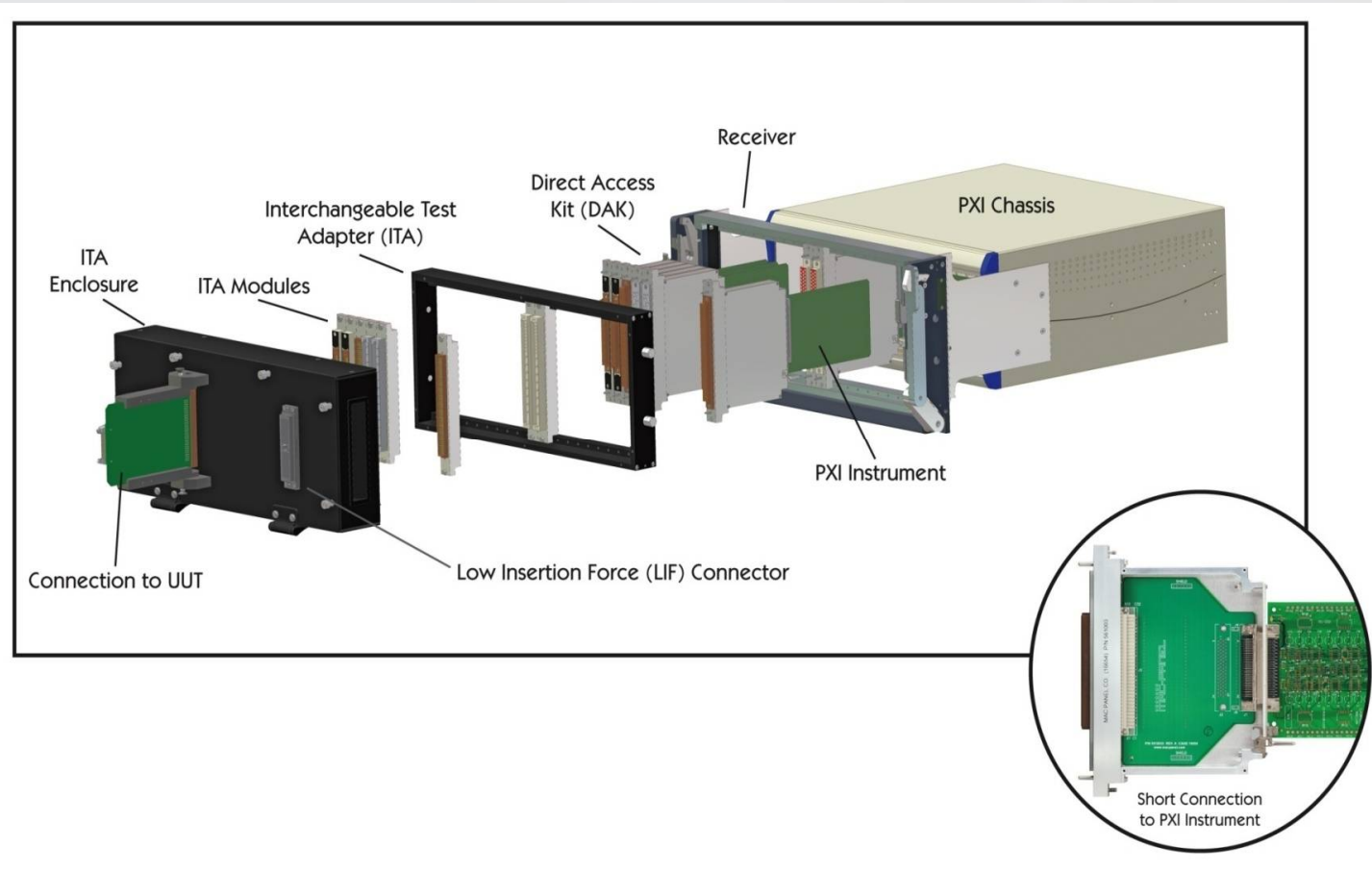
**Traditional Mass Interconnect**  
Makes all connections at once  
but still relies on individual  
cables between instruments  
and connector mechanism

Option 3:



**Cable Free Mass Interconnect**  
Makes all connections at once whilst  
simultaneously removing cable  
assemblies from the system

# Cable Free Connection Concept





# Stabilise and Control Connection Performance

Traditional Mass Interconnect Cables



Varies - typically 600mm – 1M



Cable Free Connection Module



150mm



PCBs and Flex Circuit connections will always have a superior outright, repeatable and stable performance

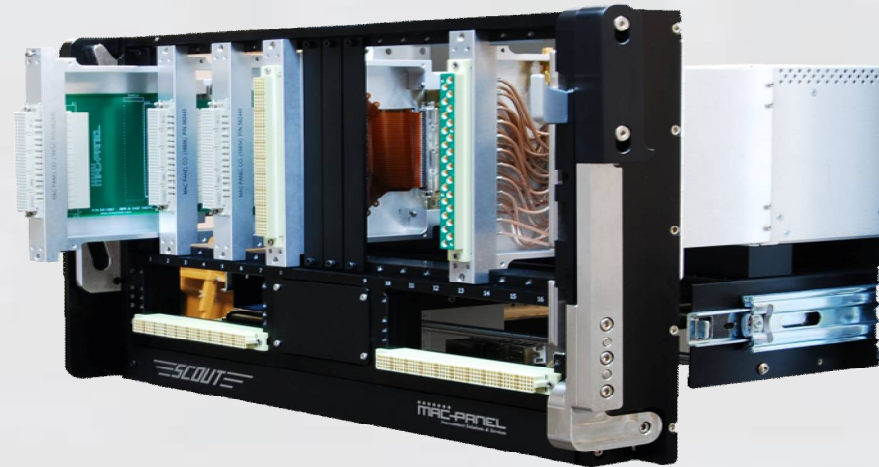
# Some Obvious Advantages of Eliminating Cables

Traditional Cable Mass Interconnect



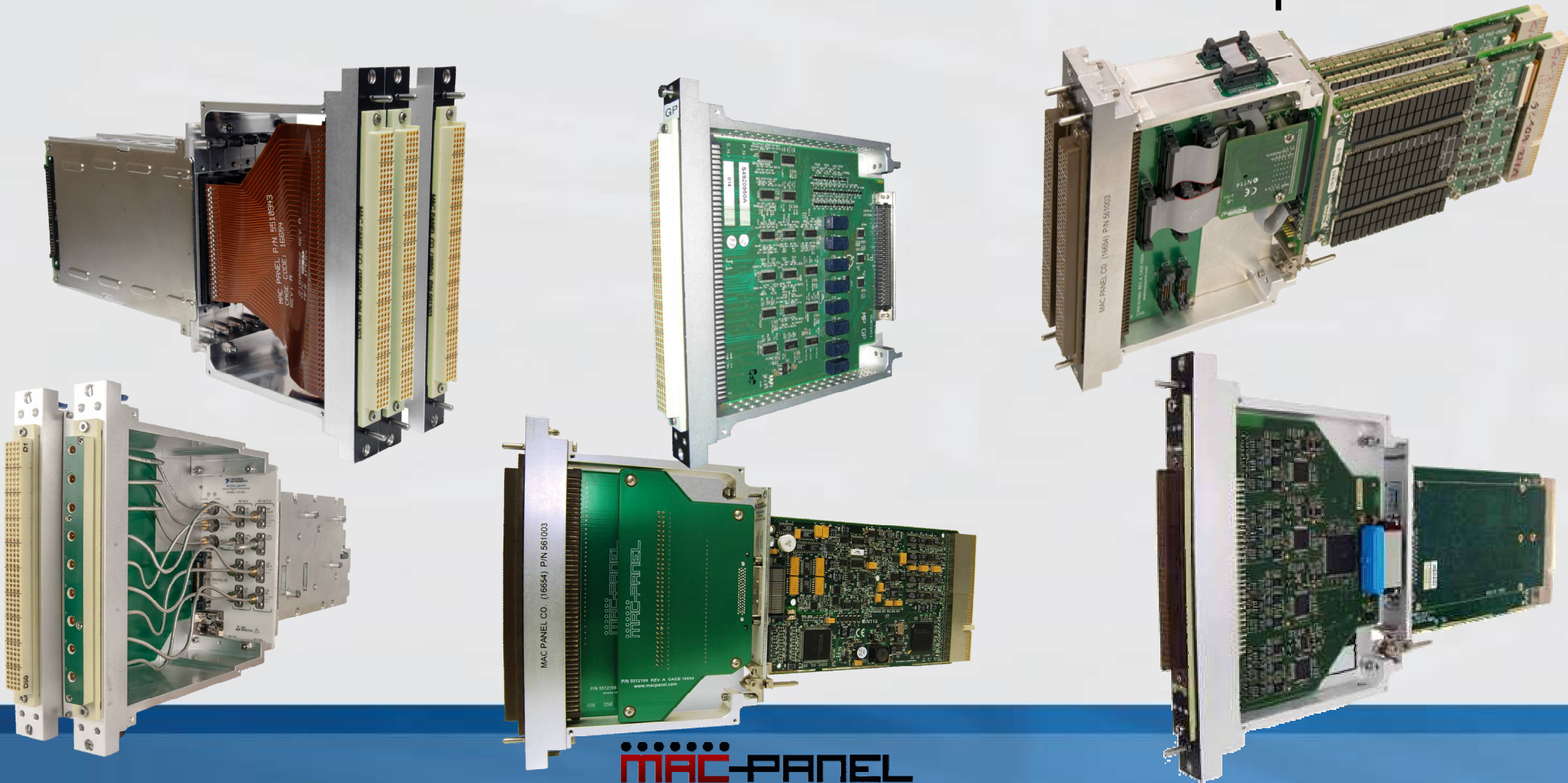
- High Engineering Costs
- Wiring labour = days/weeks
- Difficult to maintain
- Difficult to upgrade/scale

SCOUT Mass Interconnect

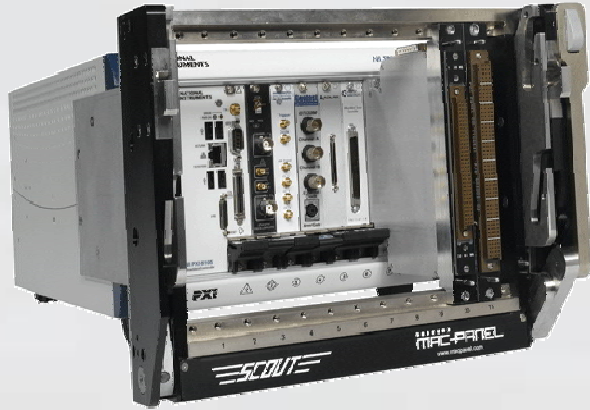
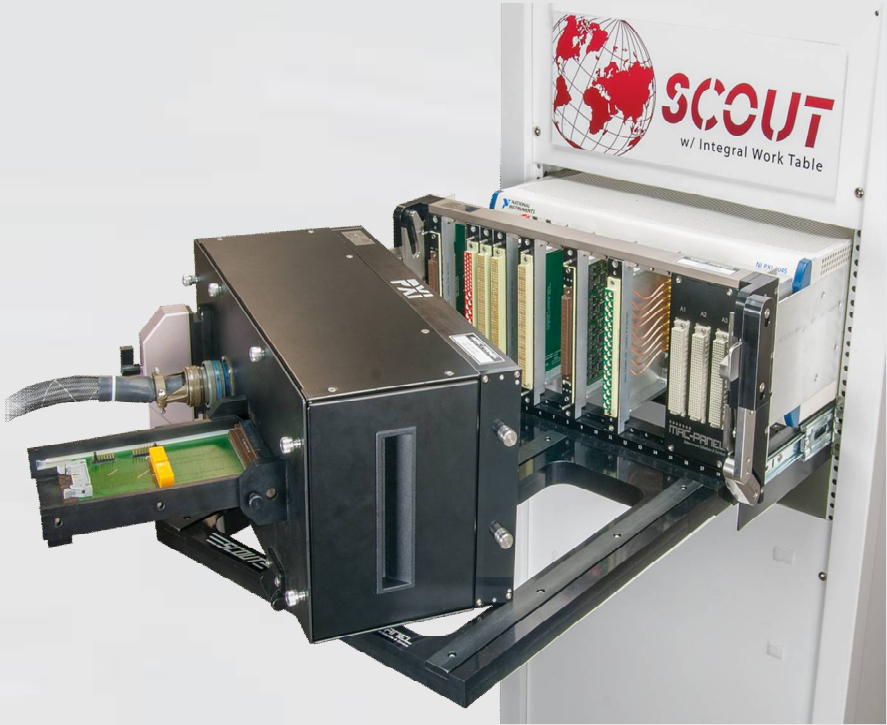


- Instruments connected in minutes
- Build a complete system in hours
- Lowest cost PXI test interface with highest performance

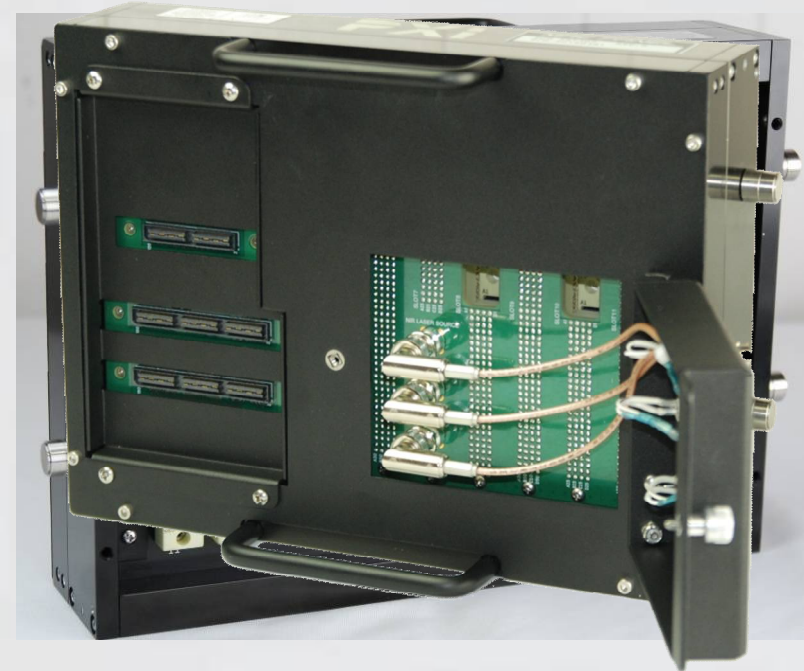
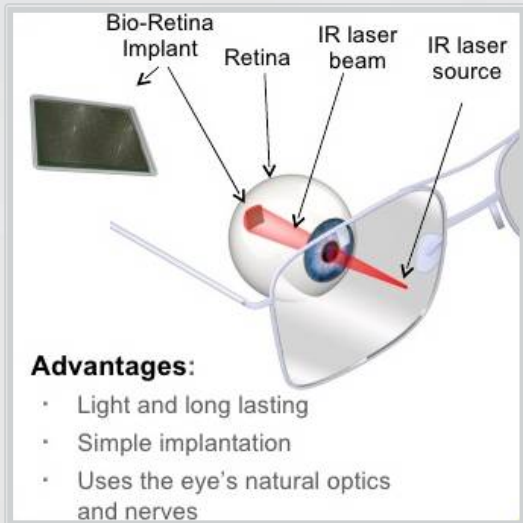
# Cable Free PXI Connection Module Examples



# Cable Free Interface Examples

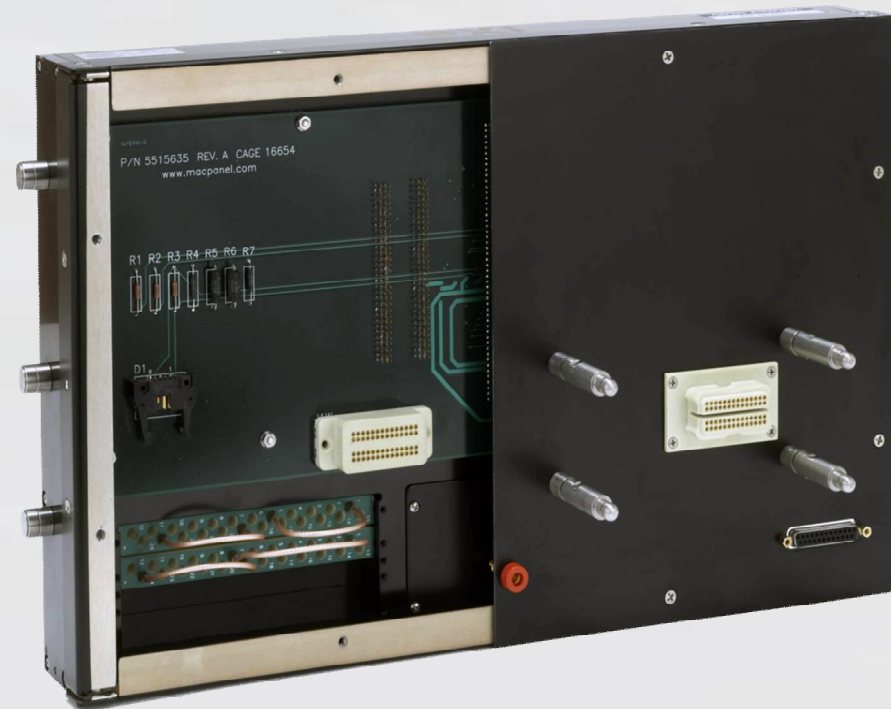


# Eliminate Cables from the Test Fixture



All connection in the fixture to the UUT were connected via PCB with matched impedance traces to provide optimal signal performance and stability

# Chip Validation using Cable Free ITA Design



No cables between the PXI  
instruments and the unit under test

Optimum, stable and consistent  
measurement performance

# Which is the Right Choice?

	Standard Mass Interconnect	SCOUT Mass Interconnect
Signal quality	* * *	* * * *
Eliminating cross-talk	* *	* * * *
Continuity of performance (system to system)	* *	* * * *
Frequent changeover between DUTs	* * * *	* * * *
Production testing	* * *	* * * *
Research and Development	*	* * *
Ease of system maintenance and upgrade	*	* * * *
System reconfiguration (scalability)	* *	* * * *
Multiple systems (global deployment)	* *	* * * *

# Summary of Cable Free Advantages

- Reduce or eliminate traditional PXI wiring to the Mass Interconnect
- Significantly reduce system design, build time and costs
- Provides the shortest available connection between PXI instruments and Mass Interconnect - for maximum signal integrity and performance
- Easily integrate/combine other instrument platforms – LXI, GPIB etc.
- Simplify system updates, maintenance and calibration
- Establish continuity of connection performance instrument to instrument and system to system
- Eliminate skew and crosstalk associated with traditional cabling methods
- Offers flexibility and scalability to users providing short and long term cost and asset resource management





Questions?