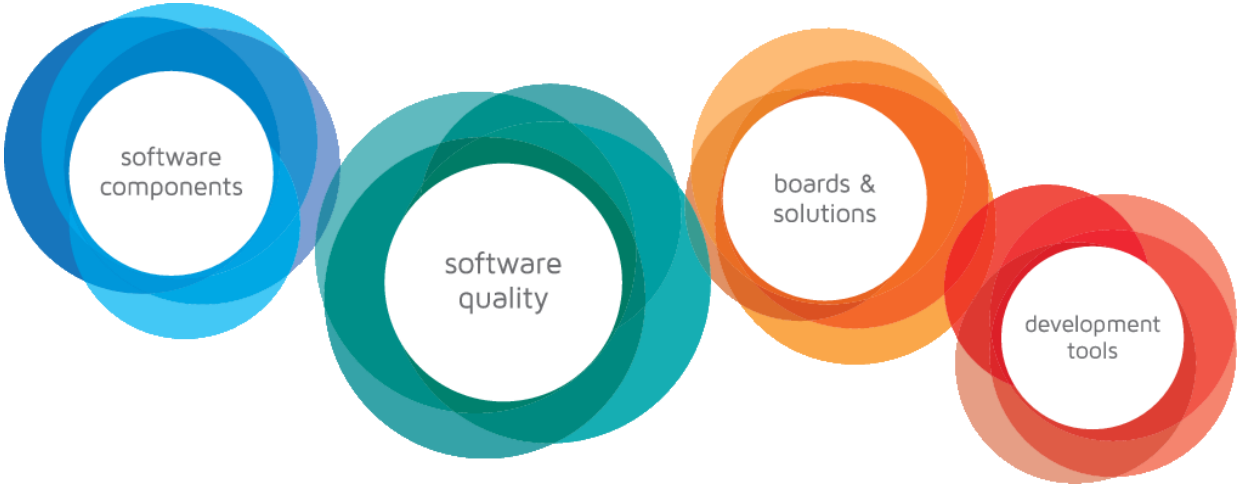
Snel en veilig hardware testen



Logic Technology

SOLUTIONS

LOGIC TECHNOLOGY
There's always a Logic Solution!

Software Components

Logic Technology offers a variety of tested software components that make sure your design meets the industry standards and assure compatibility now and in the future.

Software Quality

Logic Technology helps you to be more productive and seamlessly improve the quality of your software.

SOLUTIONS

LOGIC TECHNOLOGY
There's always a Logic Solution!

Boards & Solutions

Logic replaces the complexity of the hardware design and helps to improve overall board testability by offering a wide range of standard and custom made modules and supplies.

Development Tools

Logic Technology keeps you agile with high performance, feature rich, development tools and debuggers, tuned for various microcontroller and processor architectures.

TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

- What ?
- Why ?
- at any Cost ?
- How ?
- Challenge ?
- Solution ?

What Test

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Smoke Test
- PCB Inspection
- ICT / FP
- Prototype Test/Debug
- JTAG
- **Functional Testing**

What Test ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

- From Wikipedia, the free encyclopedia

- **Automatic** or **automated test equipment** (**ATE**) is any apparatus that performs tests on a device, known as the Device Under Test (DUT), Equipment Under Test (EUT) or Unit Under Test (UUT), using automation to quickly perform measurements and evaluate the test results.

TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

- What?
- **Why?**
- at any Cost ?
- How ?
- Challenge ?
- Solution ?

Why Test?

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Customers
- Short Term vss. Long Term Costs

- If you don't have time to do it right, when will you have time to do it over?
(John Wooden)

Skip Functional Test ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Seems a silly question but considerable companies still only box test or only conduct basic tests on raw electronic assemblies.
  - Basic tests can be just visual inspection
- Test equipment is often deemed too expensive and requires to much resources to implement.
  - Especially if the volume is low
  - Labour cost are increasing

Skip Functional Test ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Most 'Test' Engineers in smaller / medium size organisations do not have the required skills to develop complex test equipment.
  - Companies cannot afford to employ full blown electronic engineers
  - As hardware get more complex so does the testing requirements
- Obviously the answer is 'NO' but the pressure on reducing budgets normally means that 'Functional Testing' is given a significantly lower priority

TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

- What?
- Why?
- **at any Cost ?**
- How ?
- Challenge ?
- Solution ?

Test at any Cost ?

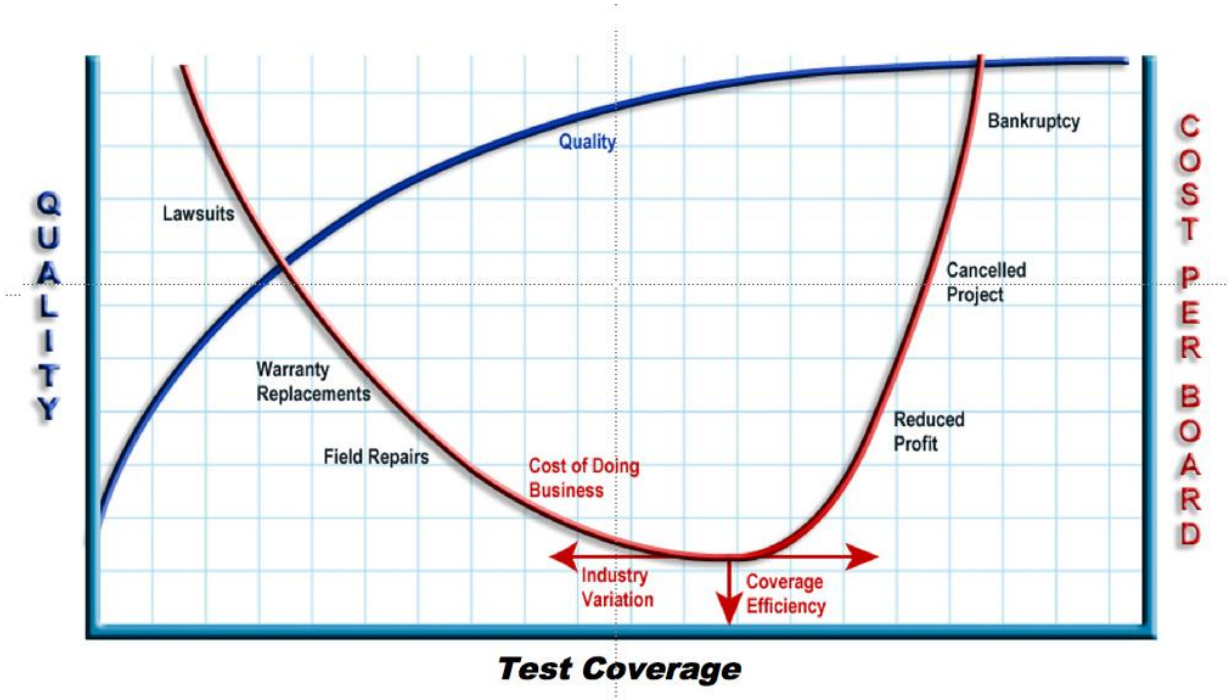
LOGIC TECHNOLOGY
There's always a Logic Solution!

- The metric of development and **test efficiency** is typically a formula that includes the following factors:

  1. Cost
  2. Duration
  3. Safety
  4. Feasibility

At Any Cost ?

LOGIC TECHNOLOGY
There's always a Logic Solution!



TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

- What?
- Why?
- at any Cost ?
- **How ?**
- Challenge ?
- Solution ?

How ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

Write a Testplan

- IMPOSSIBLE only means you haven't found the Solution yet

How ?

A test plan documents the **strategy** that will be used to verify and ensure that a product or system meets its design specifications and other requirements.

- A test plan is usually prepared by or with significant input from Test Engineers

How ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Methods
  - test methods may be determined by standards, regulatory agencies, or contractual agreement
  - test equipment to be used in the performance of the tests and establish pass/fail criteria
- Responsibilities
  - test methods at each stage of the product life
  - plan, acquire or develop test equipment and other resources necessary to implement the test methods

How ?

LOGIC TECHNOLOGY
There's always a Logic Solution!

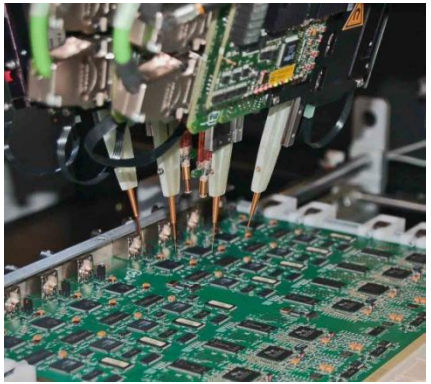
One outcome of a successful test plan should be a record or report of the verification of all design specifications and requirements as agreed upon by all parties

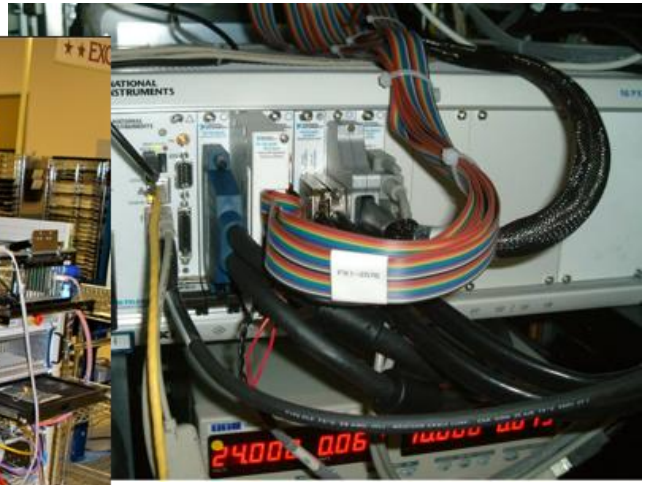
DFT

- add **certain** testability features to a hardware product design

How To Connect ?

LOGIC TECHNOLOGY
There's always a Logic Solution!



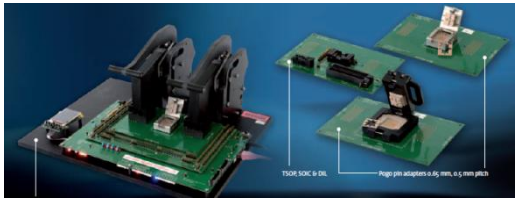


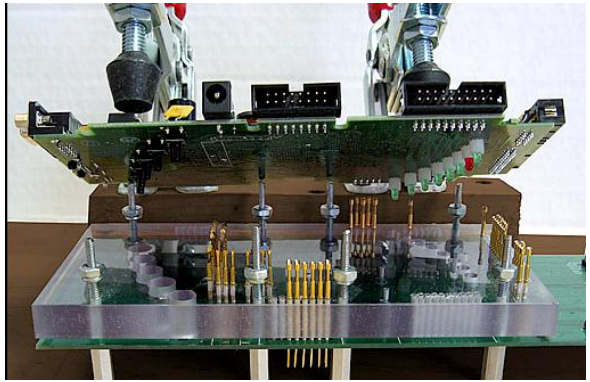
From Wikipedia, the free encyclopedia

Mass interconnect systems act as the connector interface between test instruments (PXI, VXI, LXI, GPIB, SCXI, & PCI) and devices/units under test (D/UUT).

Used in defense,aerospace, automotive, manufacturing, and other applications. By mating a receiver on the tester side with an **interchangeable test adapter** (ITA) on the UUT, the mass interconnect enables the entire system to mate together at one time. Mass InterConnect systems are available in multiple sizes and configurations to accommodate virtually any testing requirement.

Companies that manufacture mass interconnects include: Virginia Panel Corporation, Mac Panel, & Everett Charles Technologies.



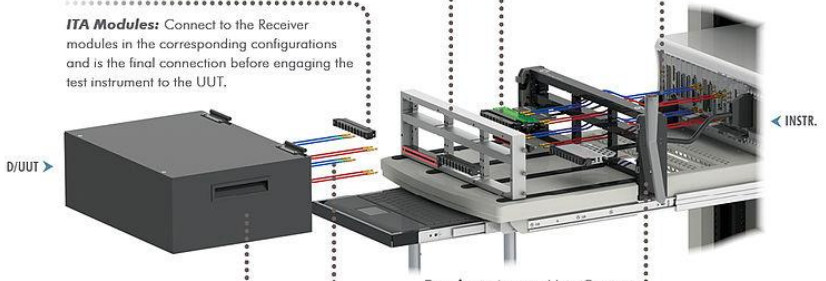


Cable Assemblies and Receiver Patchcords: Modules connect to the instrument-specific connector(s) and are also available in PCB adapter configurations that accept COTS (commercial off-the-shelf) cable assemblies. Receiver patchcords allow discrete wiring.

Receiver Modules: Present multiple configurations of signal, power, RF/coaxial, pneumatic, vacuum, thermocouple, or fiber optic in varying densities.

Interchangeable Test Adapter (ITA): Mates to the Receiver and houses the modules, PCB adapters, cable assemblies, and patchcords for connection to the UUT.

ITA Modules: Connect to the Receiver modules in the corresponding configurations and is the final connection before engaging the test instrument to the UUT.



ITA Enclosures: Protect and provide strain relief for wiring. Enclosures offer a mounting surface for UUT accessories such as edge-card adapters and other connectors.

Receiver: A rugged InterConnect mechanism to house connector modules, patchcords, cable assemblies, and PCB adapters for connection to test instrumentation. Mates with the ITA frame.

ITA Patchcords: Supply the user a contact with pre-terminated wire in a single or double-ended format to connect the ITA to the UUT in a customized arrangement.

Pro’s and cons of ATE / Testracks

LOGIC TECHNOLOGY
There’s always a Logic Solution!

Good

- Small
- Modular
- Wide variety of modules
- Rapid Test development
- Reduce Overall Cost

Reality

- Big
- Expensive Capital invest
- Require adaptation (Fixtures) for each UUT.
- Costs on HW and SW Program development.

TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

What Test ?

Why Test ?

Test at any Cost ?

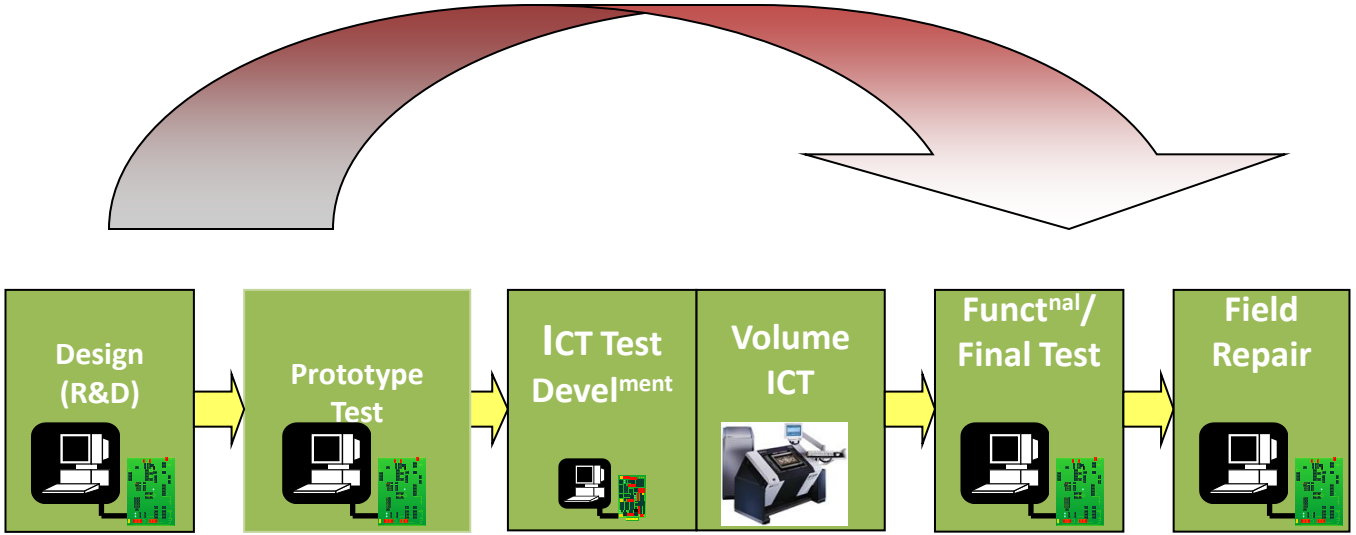
How to Test ?

Challenge ?

Solution ?

Challenge

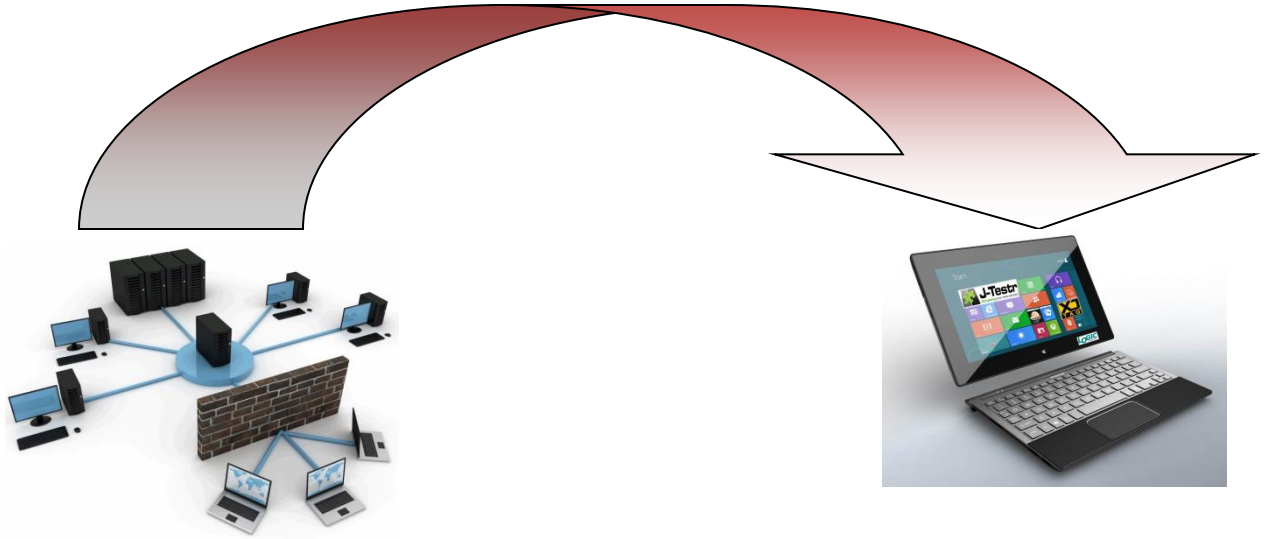
LOGIC TECHNOLOGY
There's always a Logic Solution!



Create a highly integrated Test concept in terms of being portable throughout the lifecycle

Challenge

LOGIC TECHNOLOGY
There's always a Logic Solution!



Remove software Overhead to simplify the development and reduce deployment costs

TEST

LOGIC TECHNOLOGY
There's always a Logic Solution!

What Test ?

Why Test ?

Test at any Cost ?

How to Test ?

Challenge ?

Solution ?

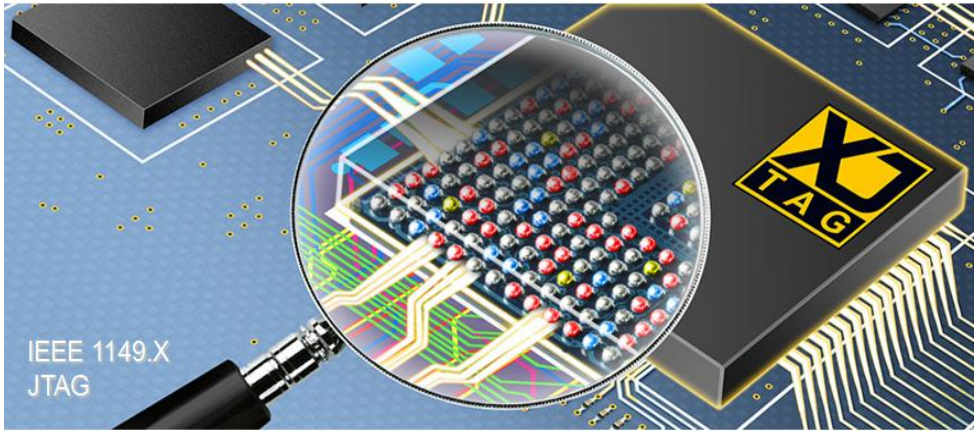
JTAG compatible Functional Tester

JTAG

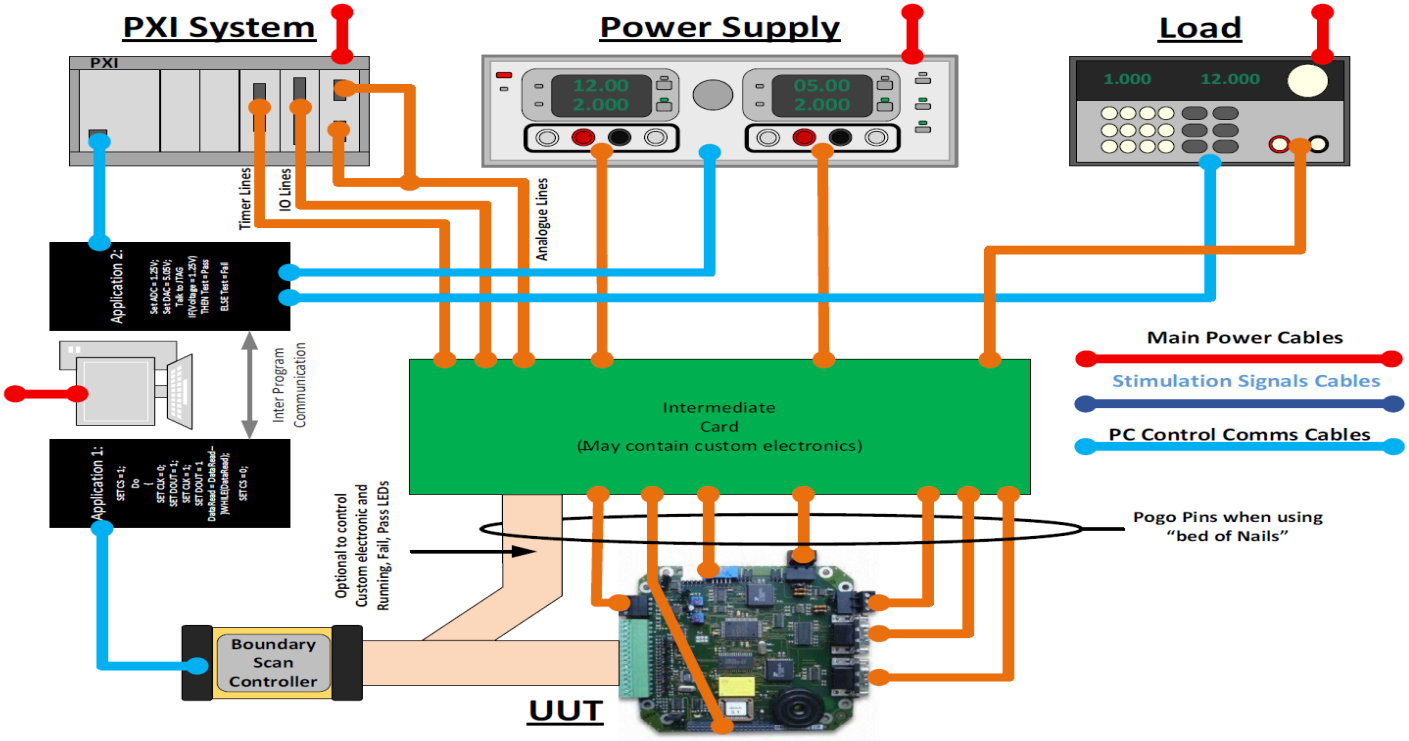
Boundary Scan IEEE 1149.1

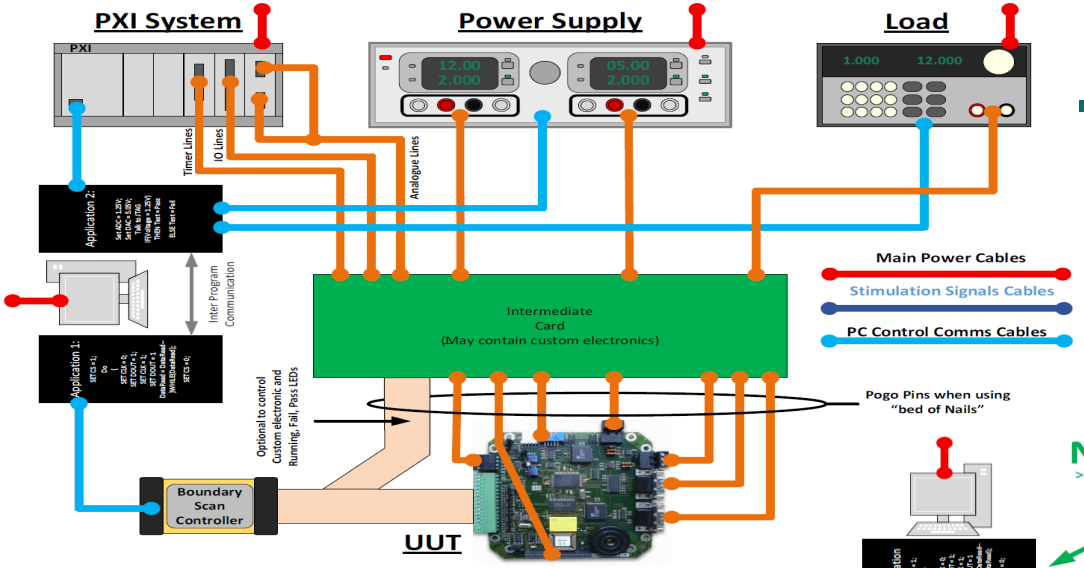
- Std= interface description
- vendor lock you in
- SW development requires expertise
- Digital only
  - Test Extensions (I/O modules)
- Manufacturing Test
- Program Devices

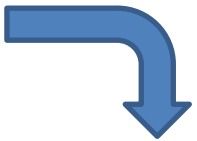
- Still Requires FUNCTIONAL TEST

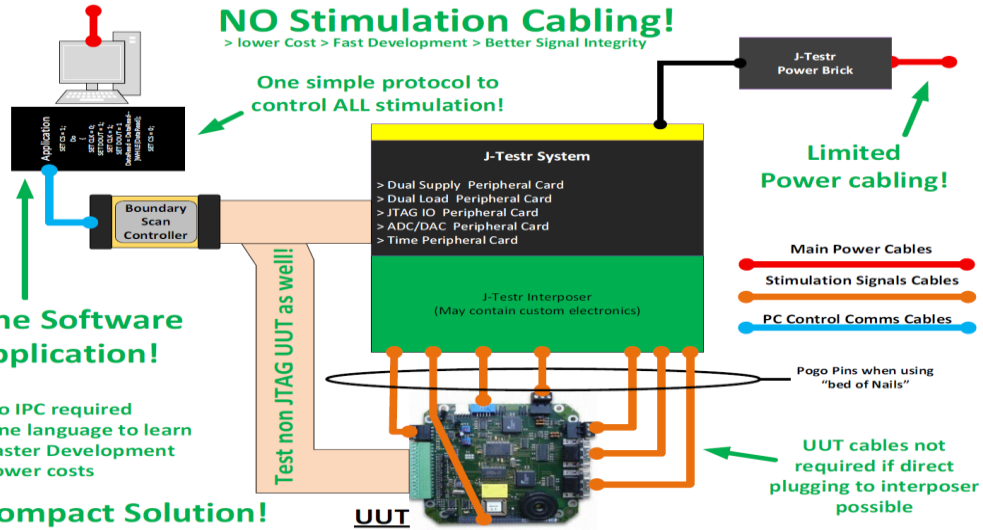


Block Diagram









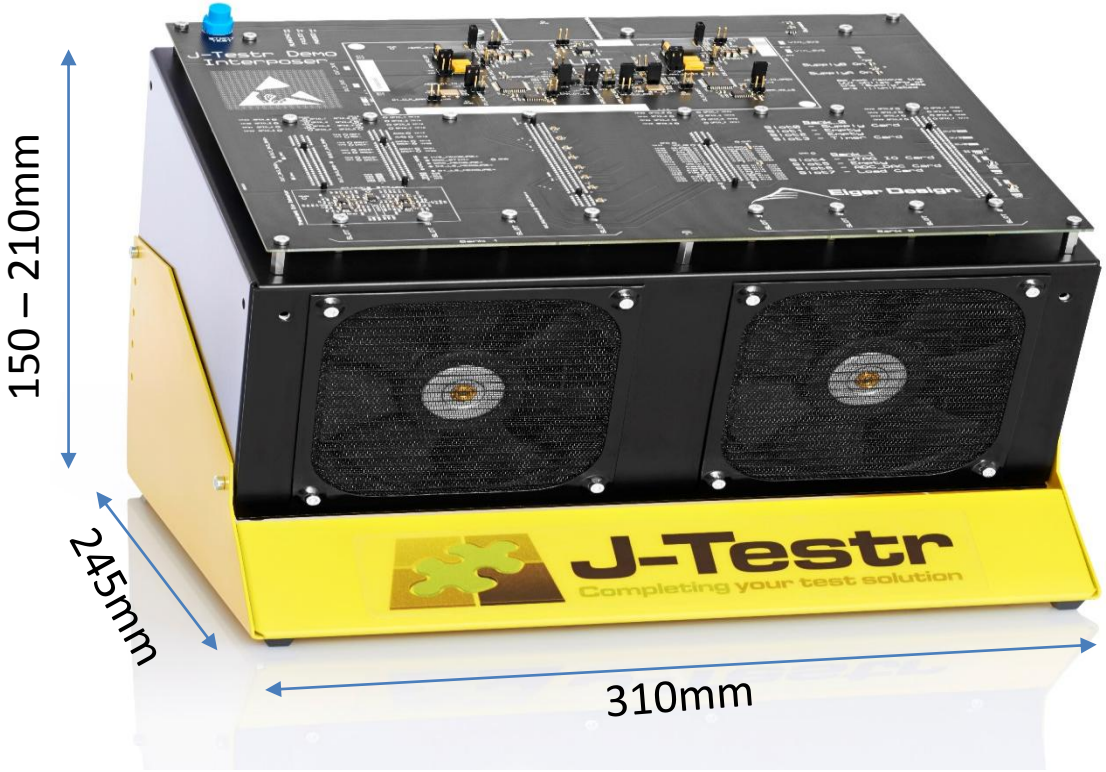
- **Save Time!**
- **Save Money!**
- **Reduce Complication!**
- **Reduce Frustration!**

J-Testr
By Eiger Design

Solution

LOGIC TECHNOLOGY
There's always a Logic Solution!

- Very compact mechanical solution
- Easily reconfigurable/customisable
  - Simple to remove interposer (personality card)
- Simple and cheap Interconnection between test elements and UUT
  - Limited and in some cases NO cabling required
- Quick and Easy Interchangeable test elements (peripherals cards)
  - Easily expandable
- Easy to design special custom test elements (peripherals cards)
  - Open hardware peripheral front end with development board
- Integrated flexible power system
- Integrated cooling and advanced UUT power safety considerations
  - Protects untested UUT and equipment from power faults (rail shorts, OV conditions)
  - Maintains test environment
- Single simple test software
  - One language to learn
  - Faster Development
  - Lower costs
  - NO IPC required
- Provide a common test environment – Even for non JTAG UUTs!!!!
  - Maximise the JTAG Boundary tool investment
  - Common test platform
- Fast and simple memory mapped interface
  - Compared to IO bit bashing communications (SPI, I2C, etc) over JTAG
  - Instantly familiar to any engineer with Microprocessor/Microcontroller experience


150 – 210mm
245mm
310mm
J-Testr
Completing your test solution
Eiger Design

UUT Mounting Options

- Direct Mounting to Interposer
  - If UUT connections and size allows
  - Cheapest/fastest option
- UUT mounted to the UUT attachment plate
  - Connected via short cables from interposer
  - UUT mounting plate is a very simple four sided sheet metal design
    - Easy and cheaply customisable for the UUT
    - Simple UUT mounting can be done drilling standard blank UUT attachment plate
    - Low Cost
  - Attachment plate height (distance from interposer card)
- Bed of Nails (J-Testr Integrated to 'Bed of Nails' rig)
  - Higher volume testing
  - Easy of user connection

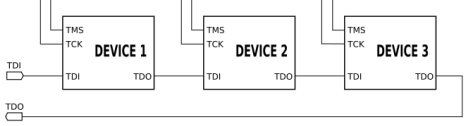
J-Testr

Making Development Easier

Breakout Cards

- Every peripheral card comes with a breakout card to allow the user to get up and running immediately without a Interposer.
  - Access to all the cards features
  - Easily fitted in minutes
  - Speeds learning and development times

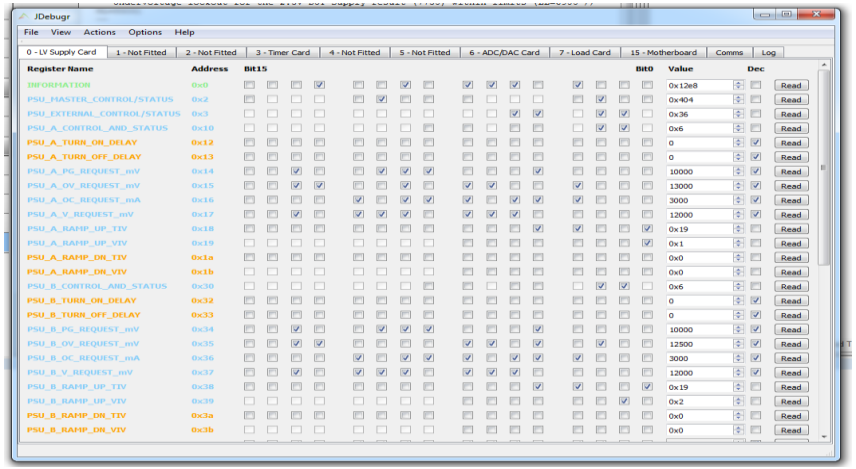
Remove Software Overhead

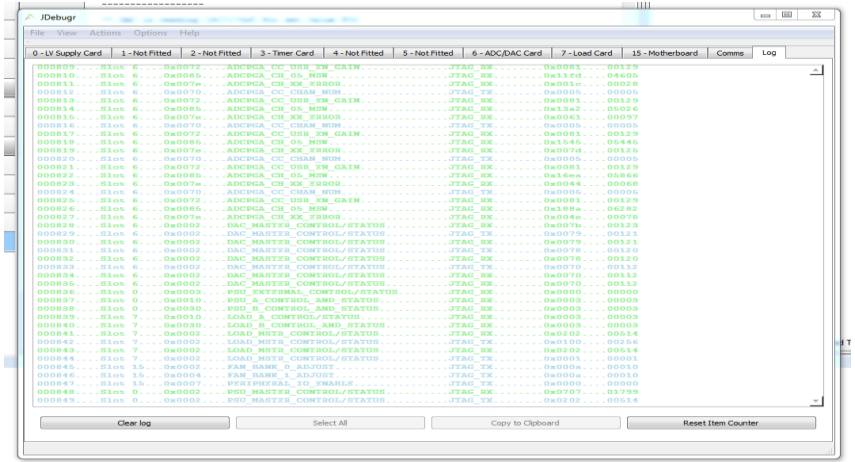


- Marvin "ATEasy"
- Native Python
- Native C++ <requires Ethernet option> (in development)
- All Driver are open Source!!!!!

Improve Diagnostics

LOGIC TECHNOLOGY
There's always a Logic Solution!





- Software let you see inside each peripheral card
  - See what has been Read and Written
  - Read and Write registers directly
- Activity Log
  - See the sequential activity
- Debug like a microcontroller!

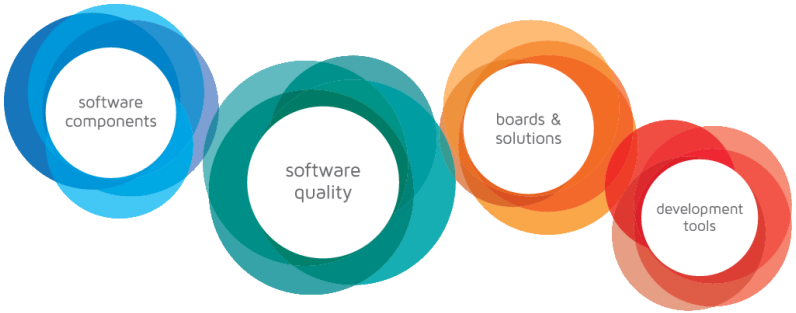
J-SAFE TECHNOLOGY

Key Benefits

LOGIC TECHNOLOGY
There's always a Logic Solution!

- **Complete** 'All-in-One' Test solution.
- Control via **JTAG** or **Ethernet** interfaces, with native JTAG controllable IO peripherals available.
- Super flexible, customizable, 'Bed of Nails' compatible.
- Fully **integrated** system power and thermal management.
- Advanced power up safety features (protects UUT).
- Very **easy** reconfiguration, within minutes (for re-use on multiple projects).
- One software environment to control both the 'UUT' and the 'Test Stimulus' when using a JTAG environment.
- Easy-to-use and **fast** programming .
- Software language independent (works with all common test software systems.
- Simple/Low-cost personalization card ('Interposer') easily and quickly designed.
- Custom stimulation peripherals possible with 'open hardware' interface circuitry.
- Highly compact, portable, and easy to store solution.

Whether you think you can, or you think you can't – you're right.
(Henry Ford)


software components
software quality
boards & solutions
development tools