DfR Solutions

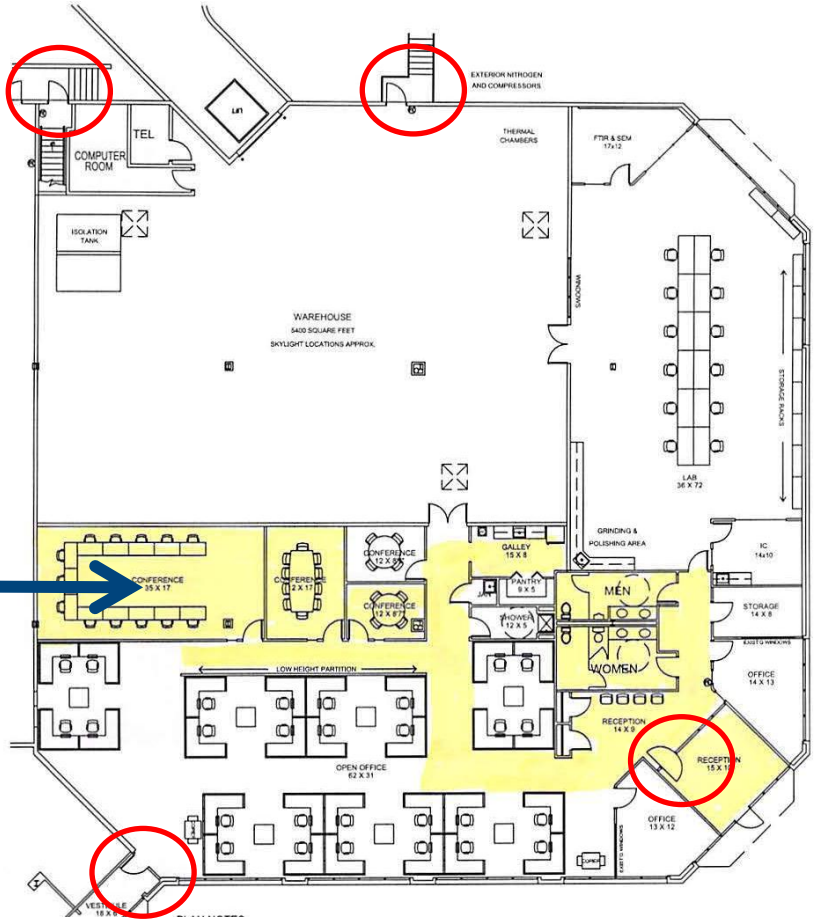
reliability designed, reliability delivered

Your Partner Throughout the Product Life Cycle

March 7, 2013

No Escort Area and Emergency exits

- Emergency Exits
  - Follow DfR Employee
- No Escort Area
- We are Here



Who is DfR Solutions?

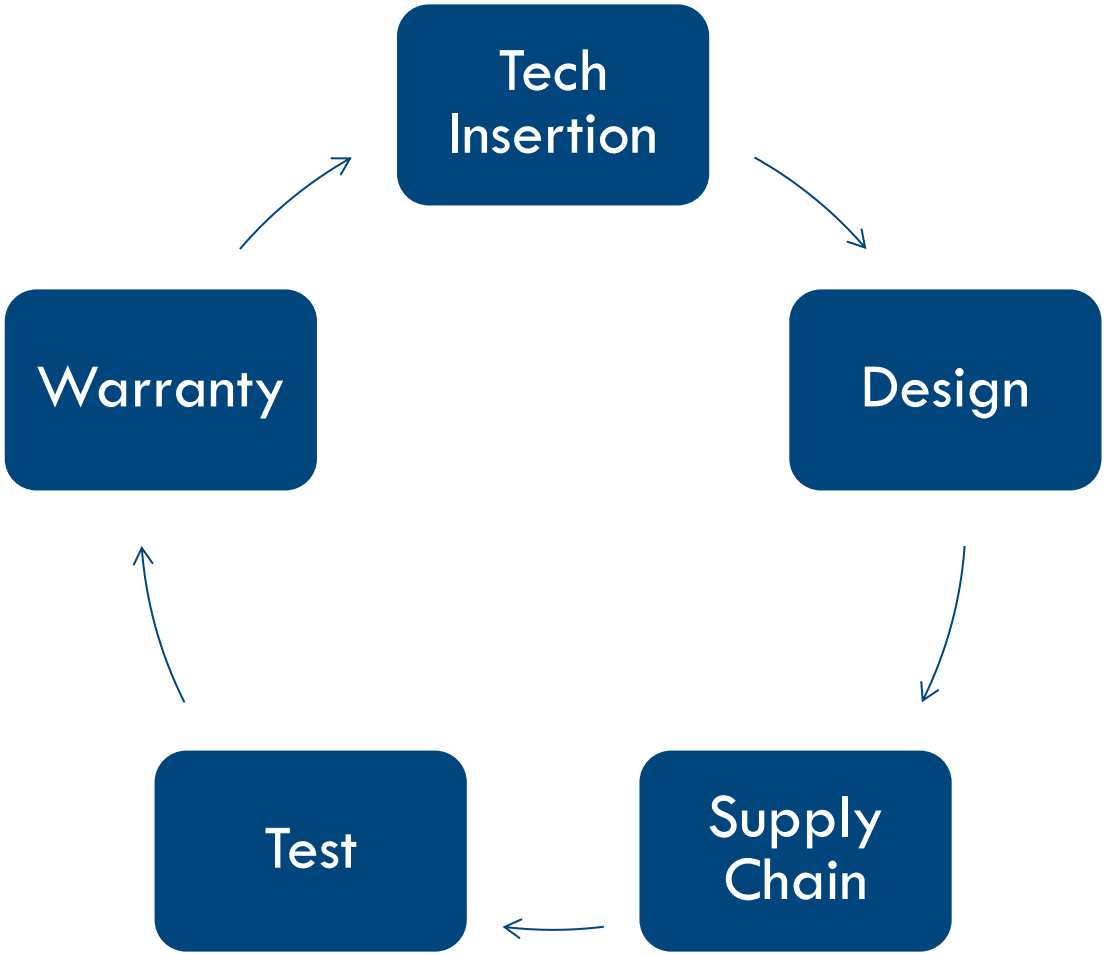
The Industry Leader in Quality-Reliability-Durability of Electronics

Fastest Growing Companies in the Electronics Industry
- Inc Magazine

Best Design Verification Tool
- Printed Circuit Design

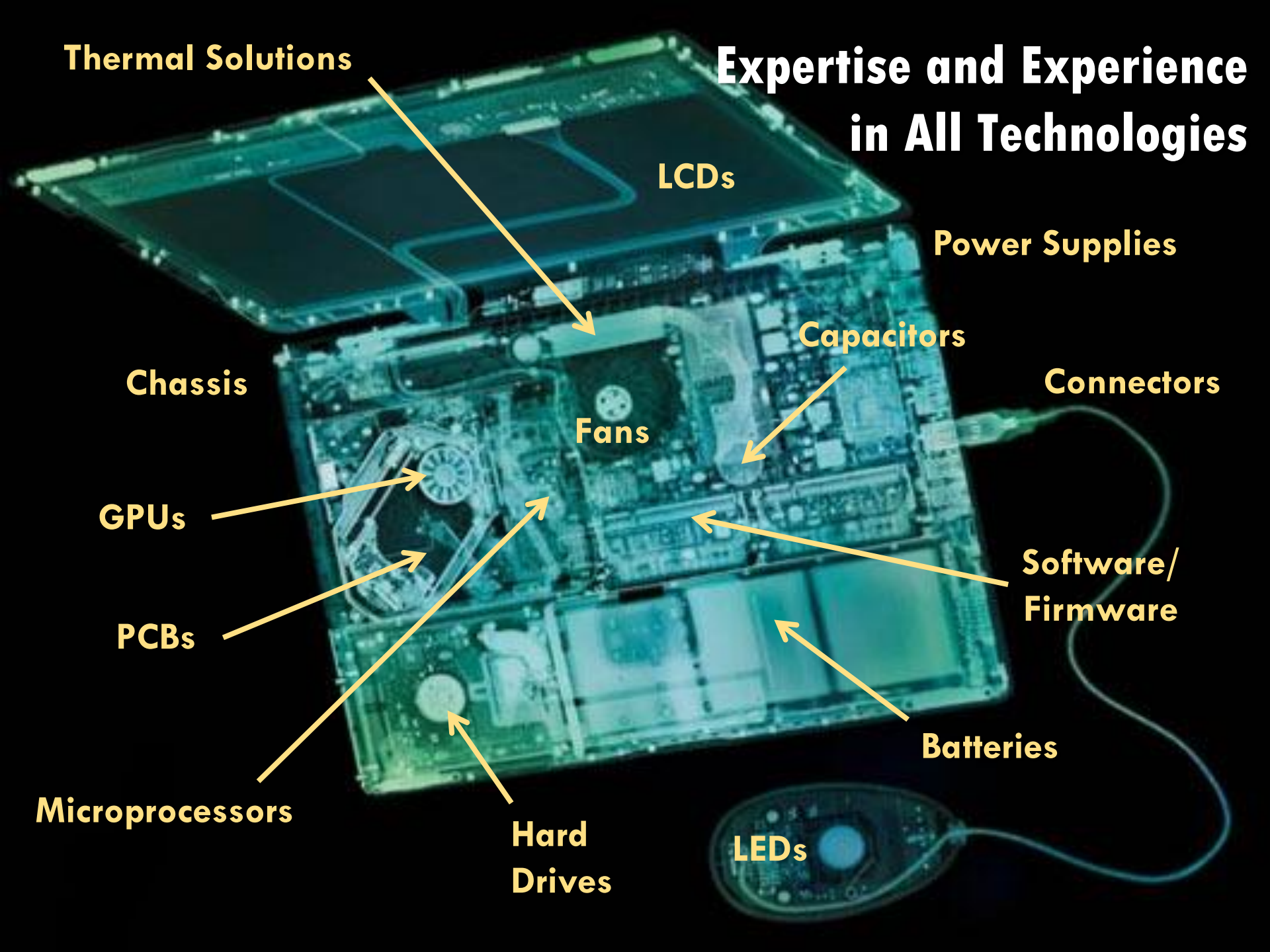
2012 Global Technology Award Winner

Working with Customers Throughout the Product Life Cycle



- Applied Research
- Simulation and Modeling
- 'ilities' (DfR, DfM, DfT, … DfX)
- Supplier Audits
- Qualification
- Test Plan Development
- Root-Cause Analysis

DfR Solutions


Expertise and Experience in All Technologies
Thermal Solutions
LCDs
Power Supplies
Capacitors
Chassis
Connectors
Fans
GPUs
Software/ Firmware
PCBs
Batteries
Microprocessors
Hard Drives
LEDs

Unique and Powerful Combination

Reliability Physics

+

Commercial Experience

+

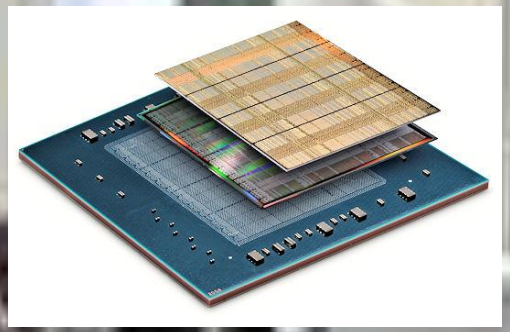
Onsite Laboratory

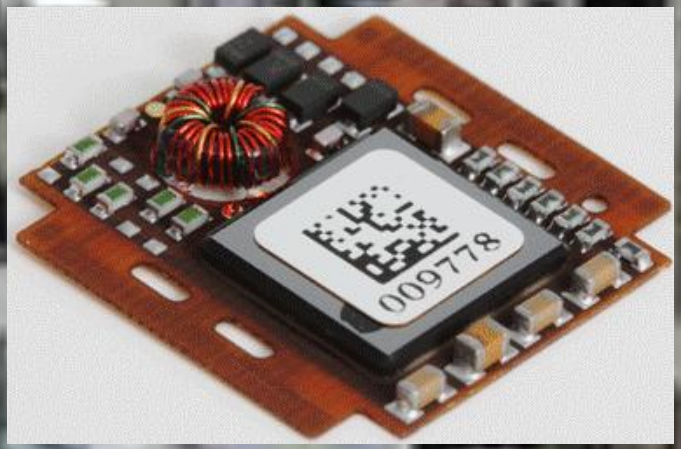
=

Unparalleled Results

DfR Solutions

Engaged with All Levels of the Supply Chain





Subject Matter Experts in Many Areas…

- DfR / DfM / DfT / DfS….. DfX
- Finite Element / Fluid Dynamics
- Physics of Failure Modeling
- FMEA / FTA
- Failure Analysis and Root Cause (8D, 5 Why, Red X)
- Circuit Analysis
- High Speed Digital, Analog and Power Supply Design
- Material Characterization
- PCB / PCBA Onsite Audits
- Pottings and Coatings
- Software Risk Mitigation
- …and much more!

Lab and Test Capability

Over 25 environmental chambers

- Temp Cycling, Temp/Humidity
- Walk In
- -200C to 1500C
- Vibration + Temperature
- Mech Shock / Drop
- Bend Testing (Cyclic & Overstress)

Material and Failure Analysis

- Microscopy (Stereo, Optical, Electron)
- NDE (X-ray, Acoustic, Infrared)
- Surface Analysis (XRF, EDS, FTIR)
- Ion Chromatography
- Mechanical Testing (Tension, Compression, Shear, etc.)
- Cross-Sectioning
- Delidding
- Decapsulation
- SQUID Microscopy

Component Testing

- Capacitors (Electrolytic, Ceramic, Tantalum)
- Optocouplers
- Fan
- Power Supplies
- CPU
- Memory
- Drives (Disk and Solid State)

Results = 600 Satisfied Customers Over Eight Years

Agenda

8:30 AM	Registration/Breakfast	
9:00 AM	Introduction to DfR Solutions	Craig Hillman
9:15 AM	Part Quality: How to Test, When to Test, and What Does It All Mean?	Greg Caswell / Ed Wyrwas
10:00 AM	Break/Facility Tours	
10:30 AM	How to Develop an Accelerated Life Test: Using Physics of Failure	Cheryl Tulkoff / Randy Schueller
11:15 AM	Break/Facility Tours	
11:45	Lunch	
12:30 PM	Sherlock Automated Design Analysis: How It Fits Into Your Design Process	Tom O'Connor / Ed Dodd
1:30-3:30 PM	Breakout Sessions with DfR Senior Staff to Demonstrate Sherlock	

Who Knows What

- **Nathan Blattau:** Mechanical and Thermal Design, Stress Analysis, and Testing
- **Greg Caswell:** LED Packaging, Potting and Conformal Coating Selection, PCB and PCBA manufacturing, MEMS Packaging
- **Craig Hillman:** Passive Component Technology, Tin Whiskers, Contamination, Nanocoatings, Design for Reliability, Physics of Failure
- **Jim McLeish:** Automotive and Severe Environment Electronic Lifecycle (Design, Test, Use), PCB and PCBA manufacturing, Physics of Failure, Root-Cause Analysis, DFMEA
- **Petri Savolainen:** Mobile Electronic Lifecycle (Design, Test, Use), Display Technology, Solder and Adhesive Technology, Electronics Manufacturing
- **Randy Schueller:** Consumer Electronic Lifecycle (Design, Test, Use), Electronic Materials, PCB Manufacturing, Connectors, Corrosion, Environmental Legislation, MEMS Fabrication
- **Gil Sharon:** Semiconductor Packaging, Mechanical and Thermal Design, Stress Analysis, and Testing
- **Walt Tomczykowski:** Reliability at System Level, Reliability Management, Avionics Lifecycle (Design, Test, Use), Government Requirements and Specifications
- **Cheryl Tulkoff:** Design for Manufacturability, PCB and PCBA manufacturing, Root-Cause Analysis, Semiconductor Manufacturing
- **Ron Wunderlich:** Power and Analog Designs, Power Components, EMI/EMC
- **Ed Wyrwas:** Software Security, Complex Integrated Circuits, Solid State Drives