

AutoTestCon & the eXpress User's Group



The 2002 AutoTestCon conference will be held in Huntsville, Alabama on Oct 15th—17th, 2002. The conference provides opportunities to gain insight into current diagnostic and test technologies.

In conjunction with the AutoTestCon conference,

DSI will be hosting the annual **eXpress** User's Group meeting. DSI is in the process of making arrangements for meeting facilities and invites interested parties to join us the morning of Oct. 18th. You will have the opportunity to hear from our customers as they present useful information about their experiences and expertise with **eXpress**. This forum provides a tremendous opportunity to gain insight directly from users of the tool and how they effectively and efficiently use **eXpress** to perform diagnostics.

Please contact DSI, if you would like to attend or make a presentation at the **eXpress** User's Group. As meeting arrangements are firmed up, more specific information will be provided in the upcoming months. Space is limited, so please call or contact us at your earliest convenience.

CALL FOR PAPERS

Licensees: If you are interested in presenting a paper at the **eXpress** User's Group, please contact

Denise Aguinaga at DSI (714/637-9325)

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What's New for 2002?

◆ eXpress Version 5.5!

- Customizable FMECA Generation and Reporting
- Interoperability / Extensibility Features utilizing XML scripting, COM interfaces providing data exchange between other tools (RELEX, MS Excel, etc), User capability to create custom plug-ins, and much more.
- Enhanced Model Validation Capabilities with improved model integrity checks and more customizable report generation
- Diagnostic Run Time Integration with TestBase from TYX Systems providing real time health management solutions
- Speed Enhancements
- Extensive On-Line Help with search engine
- Network-able Configurations

◆ New User Quick Start Guide!

- ◆ Increased Number of Customer Support Representatives



Run-Time Diagnostics Becomes a Reality

DSI has teamed with TYX to fully implement a runtime health management solution using both companies premier tool set (**eXpress** and TestBase). Utilizing the diagnostic strategy generation capabilities of **eXpress**, models can be linked directly to TestBase to provide real time monitoring, detection and isolation. Demonstrations of this exciting technology are available. Both TYX and DSI have developed a new fully extensible schema for data interchange. From more information or to schedule a demonstration, please contact Craig De Paul at DSI (714) 637-9325 or Dave Tyler at TYX Corporation (315) 336-6579. You can also visit the TYX website at: www.tyx.com

United Defense Presents DSI with Crusader Award



Left to Right: Doug Forrey, Vern Fox, Jim Unterseher, Craig De Paul, Bonnie Key-Bowling, Bill Mengert, Ted Kuriata

With the successful completion of Phase 1 of the Crusader Diagnostics System, the prime contractor, United Defense, took the opportunity to award the DSI team with an Outstanding Supplier Award. The award was presented in Minneapolis in March of 2001. DSI is very pleased and proud of not only the award, but the effort and uncompromised appreciation by the people at UDLP. While the future of any DoD program is always an uncertainty, we will always treasure this special award. Appreciation is granted out of first-hand knowledge and understanding, and it has always been DSI's crusade to dispel highest level decisions to be based on anything less - whether it's designing a complex system or determining the future of a program. Thanks again to the great people at UDLP!

New Customer Specific Website

DSI has developed a secure website to support specific customer needs. The new website is **openExpression.net**. This website can provide each customer with a source for custom plug-ins, program specific data exchange files, etc. Each participating customer has access via user identification & password to their own secure support site. This is just another facet of the many ways in which DSI is expanding capabilities to assist and enhance in their customers productivity.



openExpression.net



"Dedicated to Enhancing eXpress Productivity"

New eXpress Capability—FMECA Generation

ID	Item	Failure	Failure Effect Causes	Effects (Local + Next Higher + End Item)			Compensating Provisions	Severity
				Local	Next Higher	End Item		
1	X1.A.c.c	X1.A.Ripple on output C	X1.A.C open c.c.	X1.A.BT Failure S1 1 at 0u1	X1.BT S1 1	BE One	Abort mission	Loss of Oper
2	X1.A	X1.A.No voltage on output c	X1.A.C short c.c.	X1.A.BT Failure S2 0 at 0u1	X1.BT S2 0	BE Zero	Eject Crew	Loss of Equip
3	X1.A.d1	X1.A.Failure transmission 1 on d1	X1.A.Output Port d1 from b1.c1 short c.c.	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
4	X1.A	X1.A.Failure transmission 0 on dt	X1.A.input port dt from b1 open c.c.	X1.A.New Effect		<NO END EFFECT>		
5	X1.A	X1.A.Failure transmission 0 on dt	X1.A.input port d2 from c1 open c.c.	X1.A.New Effect		<NO END EFFECT>		
6	X1.A.led_c1	X1.A.Failure transmission 1 on c1	X1.A.Led_C1 open c.c.	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
7	X1.A	X1.A.Failure transmission 0 on c1	X1.A.Led_C1 short c.c.	X1.A.New Effect		<NO END EFFECT>		
8	X1.A.opt_e1	X1.A.Failure transmission 0 on e1	X1.A.input port e1 from d1 open c.c.	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
9	X1.A	X1.A.Failure transmission 1 on e1	X1.A.Output Port e1 Stuck-at-0	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
10	X1.A	X1.A.Failure transmission 1 on e1	X1.A.Output Port e1 Stuck-at-1	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
11	X1.A	X1.A.Failure transmission 0 on e1	X1.A.input port e1 from l3 open c.c.	X1.A.New Effect		<NO END EFFECT>		
12	X1.A.rv_b1	X1.A.Failure transmission 1 on b1	X1.A.Rv_B1 short c.c.	X1.A.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
13	X1.A	X1.A.Failure transmission 0 on b1	X1.A.Rv_B1 open c.c.	X1.A.New Effect		<NO END EFFECT>		
14	X1.A.r_a	X1.A.No voltage on output A	X1.A.R_a open c.c.	X1.A.BT Failure S2 0 at 0u1	X1.BT S2 0	BE Zero	Eject Crew	Loss of Equip
15	X1.A	X1.A.Too high voltage on output A	X1.A.R_a short c.c.	X1.A.BT Failure S1 1 at 0u1	X1.BT S1 1	BE One	Abort mission	Loss of Oper
16	X1.A.r_a1	X1.A.Failure transmission 0 on a1	X1.A.R_A1 open c.c.	X1.A.New Effect		<NO END EFFECT>		
17	X1.A	X1.A.Failure transmission 1 on a1	X1.A.R_A1 short c.c.	X1.A.BT Failure S2 0 at 0u2	X1.BT S2 0	BE Zero	Eject Crew	Loss of Equip
18	X1.A.vin_d	X1.A.Failure transmission 1 on d	X1.A.Cool Vin_D short c.c.	X1.A.BT Failure S1 0 at 0u1	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
19	X1.A	X1.A.Failure transmission 0 on d	X1.A.input port Vin_D open c.c.	X1.A.BT Failure S1 1 at 0u1	X1.BT S1 1	BE One	Abort mission	Loss of Oper
20	X1.A.rv_b	X1.A.Too high voltage on output b	X1.A.Rv_B short c.c.	X1.A.BT Failure S1 1 at 0u1	X1.BT S1 1	BE One	Abort mission	Loss of Oper
21	X1.A	X1.A.No voltage on output b	X1.A.Rv_B open c.c.	X1.A.BT Failure S2 0 at 0u1	X1.BT S2 0	BE Zero	Eject Crew	Loss of Equip
22	X1.B.c.c	X1.B.No voltage on output c	X1.B.C short c.c.	X1.B.BT Failure S1 0 at 0u1	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
23	X1.B	X1.B.Ripple on output C	X1.B.C open c.c.	X1.B.BT Failure S1 1 at 0u1	X1.BT S1 1	BE One	Abort mission	Loss of Oper
24	X1.B.d1	X1.B.Failure transmission 1 on d1	X1.B.Output Port dt from b1.c1 short c.c.	X1.B.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
25	X1.B	X1.B.Failure transmission 0 on dt	X1.B.input port dt from b1 open c.c.	X1.B.New Effect		<NO END EFFECT>		
26	X1.B	X1.B.Failure transmission 0 on dt	X1.B.input port d2 from c1 open c.c.	X1.B.New Effect		<NO END EFFECT>		
27	X1.B.led_c1	X1.B.Failure transmission 1 on c1	X1.B.Led_C1 open c.c.	X1.B.BT Failure S1 0 at 0u2	X1.BT S1 0	BE Zero	Eject Crew	Loss of Equip
28	X1.B	X1.B.Failure transmission 0 on c1	X1.B.Led_C1 short c.c.	X1.B.New Effect		<NO END EFFECT>		

An extensive Failure Mode Effect and Criticality Analysis (FMECA) has been added to **eXpress**. This capability goes beyond what most would expect enabling the user to perform hazard and safety analysis by associated failure effects with their respective functions. FMECA reports typically only address failure effects which are caused by one or more failure modes. In **eXpress**, the user has the choice of automatically generating FMECA reports based on the functional dependencies or the failure modes as defined in the model. FMECAs can be generated across varying levels of model hierarchy providing significant trade-off criteria for design influence.

If you'd like further information regarding this exciting new feature, please contact us at DSI.

"The ability to customize FMECA reports goes far beyond capabilities we've previously seen"

Interoperability



The ability to re-use data has moved beyond a catch phrase and is now often a requirement. Buyers now demand that data created in one tool or environment be available in other tools and environments. It is not time or cost efficient for engineers to be reduced to manually re-entering data simply to support multiple un-integrated activities.

Enter DSI with new interoperability solutions in **eXpress 2001**. Interoperability refers to the ability of a tool to exchange and use data from another tool. As an example; Suppose a diagnostic engineer has access to several large database from which engineering data is available, if he/she only had the means to access it. **eXpress 2001** truly represents a diagnostic platform, and engineers should expect that it should be able to capture exactly this type of information. To satisfy this interoperability requirement, **eXpress 2001** incorporates several extensibility features.

First, **eXpress 2001** supports a new data importing plug-in. DSI now provides the ability for COM-based plug-ins, which operate much in the same way as a plug-in to Internet Explorer that extends IE's ability to view new types of data. In **eXpress**, however,

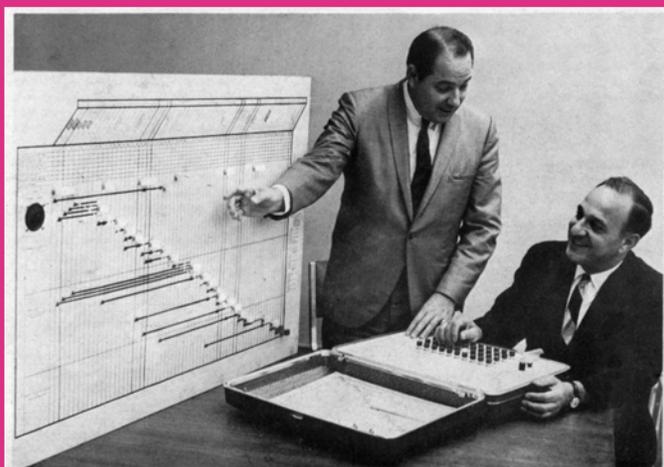
these plug-ins provide complete import functionality, including support of an options panel that seamlessly integrates into the Data Source Administration screen.

Second, **eXpress 2001** also now supports context-sensitive panel plug-ins. These plug-ins provide the ability to "snap" in extra features just as any of the other context sensitive panels found at the bottom of the design.

And third, **eXpress 2001** is now an open-architecture diagnostic server. COM interfaces can be used to access much of the information in **eXpress**, and can even be used to automate a fully dynamic diagnostic session.

The industry in general is truly at the tip of the iceberg when it comes to interoperability, and we are likely to see increasing support for better integration between tools. Just beneath the surface are technologies like XML, SOAP, COM and other technologies that DSI is ensuring will all become available to each new generation of **eXpress** user. Many of these technologies are already in use with **eXpress** under programs like NASA's second generation re-usable launch vehicle. Rest assured, DSI is committed to bringing better integration across the full spectrum of diagnostics, reliability, maintainability and safety engineering.

Founder of DSI, Ralph De Paul...a True Visionary



LOGIC MODEL — Ralph De Paul (standing) and Gus Daskalakis display logic model for the XM140 gun, which assists in equipment maintenance. A model also has been constructed for Chaparral weapon system.
April, 1969

Ralph A. De Paul, Jr. began illustrating his concept by constructing diagnostic logic models using paper and pencil. By 1969, when computers were a rare piece of equipment and desktop computers were still a long way off, Ralph had already instituted his logic modeling concept. Ralph predicted that the use of such a "tool" for engineering design would some day be facilitated by a six foot by four foot flat computer screen mounted on a wall. As technology advanced, the paper and pencil found itself replaced with the highly advanced computer cards, which became ubiquitous in the mid to late 1970's.

Ralph founded DSI in 1975 and by 1979, the Logic Model, (LOGMOD) was already applied to some of the most advanced U.S. Defense Programs, including the A-10 MATE System, the turret system for the AH-1 Cobra Helicopter, the Polaris Missile Check-Out System and the TOMAHAWK Cruise Missile. During this same time period LOGMOD, the undisputed forerunner to ALL Dependency Model Based Diagnostic tools, was being tuned up for complex state-of-the-art programs that included Lockheed's F117 and even Northrop's B-2 Bomber. However, due to the extremely extensive requirements for computer processing punch, DSI was forced to seek the off-site time-shared use of much more powerful main frame computers. Much of this comput-

ing power during this era was split between NASA Ames Research Center in California for Army programs and at Medicon, a Medical Research Organization in Southern California for various U.S. Air Force programs.

Ralph declared that this modeling process would have an unlimited applicability and could even work for the human body at some point in the future. In 1994, Ralph A. De Paul, Jr. was posthumously awarded the John Slattery Award by IEEE as the "Father of Testability".

New Training Courses and New Documentation!

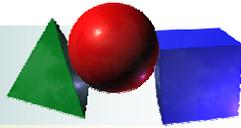
The **eXpress** training courses are being updated to incorporate many of the new aspects of the **eXpress** software and to address the needs of our customers. Due to the enhancements being made to the training program, schedules were in the process of being revised at press time. Please contact DSI for the latest schedule or visit the website at www.dsiintl.com.

To compliment the new training courses and to assist the users in becoming familiar with the new **eXpress** interface, a **Quick Start Guide** has been published. This guide provides the user with a high level overview of features and capabilities of the **eXpress** version 5 series. If you would like a copy of the **eXpress Quick Start Guide**, please contact us at DSI and we will be happy to get one sent out to you.

"Not too far in the future, the logic model approach will permit imagery devices to be used in conjunction with a computer to diagnose malfunctions as they occur, provide 'hard copy' readout of several logistic parameters affected by singular, multiple and cumulative malfunctions, and issue instructions to correct deficiencies."

Ralph De Paul (1969)

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DSI Welcomes Bob Hickman!

Bob Hickman is our new DSI Team member providing his vast experience in the dynamic world of state-of-the-art diagnostics and systems engineering processes. Prior to joining DSI, Bob Hickman was employed for 2 years by Teledyne Brown Engineering in Huntsville, Alabama, as the Director of Systems Support. He was employed at SCI Systems, Inc. for 19 years and was the Department Manager of Systems Support for 6 years. He brings extensive experience in the design and development of Aerospace, Avionics and Ground Electronics hardware with specific focus in the areas of RAM, Diagnostics, Logistics, and Configuration Management. Bob is also retired from the U. S. Navy, with 22 years of honorable service. Bob will reside in Huntsville, Alabama as the local DSI Representative in support of the 2nd Generation RLV program as well as provide necessary support to our East Coast customers. We welcome Bob as our new Southeast U.S. Representative.



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DSI, At Your Service

As the leading seller of Diagnostic Software, DSI understands the importance of quality service and support. To meet the needs of our customers, we offer a wide array of technical support and service programs developed to address the time-critical issues and stringent diagnostic requirements prevalent on many of today's programs. DSI is ready to help with specialized software development, diagnostic modeling and analysis, advanced mentoring, and a host of customizable support services to address specific customer needs.