# eXpress™ News

New Release Announcement: *eXpress* FTA Module!

"Turn-Key" FTA Framework from *eXpress* Diagnostic Designs – ISDD takes on "Risk Assessment"
Integrating Risk Assessment, FMECA, Fault Isolation, Prognostics & Diagnostics Solutions!

Discover if/when Critical Events are Isolated "Uniquely"
Toggle between views showing the *eXpress* FTA "Cut Sets" and the *eXpress* FMECA Plus
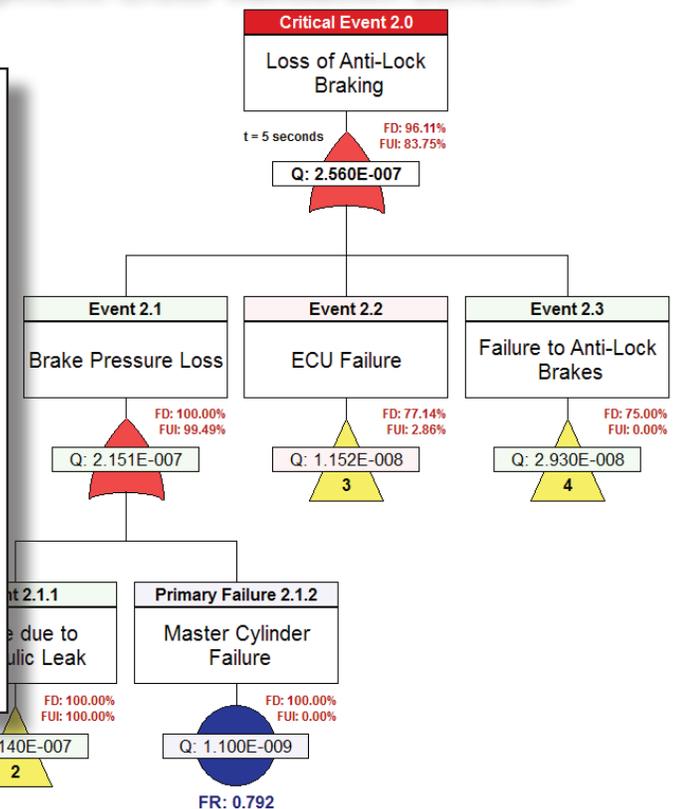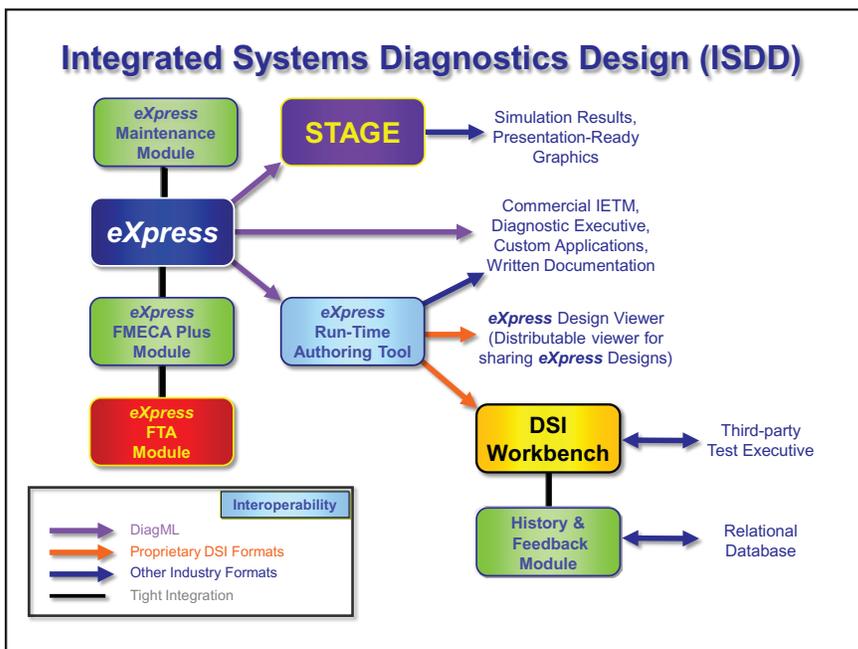Observe the "FUI" or "Failure Uniquely Isolated" status
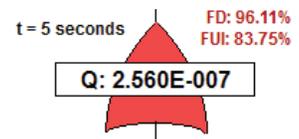
Learn if/where Critical Failures causing a Critical Event may also be isolated in another branch of the FTA
Assess its impact on the calculations of FUI or on Corrective Action(s)

Discover if/when/amount of Prognostics reduces Probability of Occurrence of Critical Events
Assess the "value" of Prognostics upon the Occurrence of Critical Events at the (Fielded Product) Integrated Systems Level

t = 5 seconds FD: 96.11% FUI: 83.75%
Q: 2.560E-007

Plus many More "Natural" Design Development Cross-Validation Benefits!

Integrated Systems Diagnostics Design (ISDD)

- *eXpress* Maintenance Module
- STAGE → Simulation Results, Presentation-Ready Graphics
- *eXpress* → Commercial IETM, Diagnostic Executive, Custom Applications, Written Documentation
- *eXpress* FMECA Plus Module
- *eXpress* Run-Time Authoring Tool → *eXpress* Design Viewer (Distributable viewer for sharing *eXpress* Designs)
- *eXpress* FTA Module
- DSI Workbench → Third-party Test Executive
- History & Feedback Module → Relational Database

Interoperability
- DiagML
- Proprietary DSI Formats
- Other Industry Formats
- Tight Integration

Critical Event 2.0
Loss of Anti-Lock Braking
t = 5 seconds FD: 96.11% FUI: 83.75%
Q: 2.560E-007

Event 2.1
Brake Pressure Loss
FD: 100.00% FUI: 99.49%
Q: 2.151E-007

Event 2.2
ECU Failure
FD: 77.14% FUI: 2.86%
Q: 1.152E-008 3

Event 2.3
Failure to Anti-Lock Brakes
FD: 75.00% FUI: 0.00%
Q: 2.930E-008 4

Event 2.1.1
...e due to ...ulic Leak
FD: 100.00% FUI: 100.00%
Q: 2.140E-007 2

Primary Failure 2.1.2
Master Cylinder Failure
FD: 100.00% FUI: 0.00%
Q: 1.100E-009
FR: 0.792

ISDD: "When it Reigns – It Pours"

DSI's Integrated Systems Diagnostics Design, or "ISDD" paradigm transcends the traditional design development "dams" by seamlessly extending and rerouting the aqueducts used to flow existing data artifacts between the design development and sustainment disciplines. As the flow of data is (re)claimed and (re)cycled in these disciplinary-shared reservoirs, the level of participation adds significantly increased depth and capacity. The data is then "auto-pumped" through tremendously powerful filters, (re)generated with many complimentary data forms – and is finally ready to be poured with incredibly fresh and new (re)usable value!

The ISDD tool suite brings a robust, interoperable functional/failure design data capture environment that embraces continuous input from multiple design disciplines beginning from the earliest phases of product design and throughout the evolving sustainment life-cycle, accommodating sustainment-driven or product variant-driven update(s). ISDD is primarily used on large and complex integrated systems ("fielded" products) for the purposes of driving and cross-validating interdisciplinary assessment output products through DSI's renown *eXpress* software application tool.

Such diagnostic assessment capability is extensive and invites many design participants internal and external to the design or system integrator. Its role of establishing an agile and inclusive environment in the design development life-cycle plays into its ability to simulate and assess diagnostic/prognostic/sustainment philosophies and then "push" the "optimal mix" (diagnostic or sustainment "balance" of methods, etc.) to the sustainment implementation(s).

ISDD provides traceability of the diagnostic design evolution for new systems, and facilitates the diagnostic integrity "base-lining" for existing "legacy" complex integrated systems. As each design entity and its related detail is captured in the *eXpress* model-based design, it becomes "consumed" into a more integrated "diagnostically-interdependent super-structure". Through means that embrace data "inclusivity", ISDD's objective is to collect, compliment, communicate and repurpose interrelated design data products and artifacts for servicing more ambitious and affordable sustainment objectives.

ISDD – Let it Reign – ISDD – Let it Reign – ISDD – Let it Reign

The ISDD Tool Suite

eXpress

Diagnostic Modeling and Analysis
eXpress creates the models used by all tools in the ISDD tool suite. It also performs standardized analyses to help engineers optimize and assess system diagnostics/prognostics, as well as the design's ability to support effective HM.

eXpress FMECA Plus Module

eXpress FMECA Plus Module
The *eXpress* **FMECA Plus** Module allows standard FMECA data (either imported from a commercial FMECA tool or developed within *eXpress*) to be enhanced with metrics derived from the *eXpress* diagnostics. This module is automatically included with each license of *eXpress*.

eXpress FTA Module

eXpress FTA Module
The *eXpress* FTA Module provides a set of features that allow *eXpress* to create and analyze reliability fault trees. Fully integrated with both **FMECA Plus** and the *eXpress* diagnostics, this module can produce diagnostic & prognostic-informed fault trees for Reliability and Safety analysis.

eXpress Maintenance Module

eXpress Maintenance Module
The *eXpress* Maintenance Module provides a set of features that allow *eXpress* to support multiple levels of diagnosis. It has been designed to facilitate the concurrent development of embedded diagnostics and troubleshooting procedures (IETMs).

STAGE

Simulation-based Analysis
Using data from *eXpress*, **STAGE** simulates failures, diagnoses and repairs that would occur in a fielded system. Calculations (represented as graphs) show changes over time, as well as the impact of maintenance upon failure.

eXpress Run-Time Authoring Tool

Enhancing Exported Diagnostics
The *eXpress* **Run-Time Authoring Tool (RTAT)** allows diagnostic procedures exported from *eXpress* to be enhanced with graphic overlays and links to external documents. Diagnostics can also be reformatted for use in a variety of tools. This tool includes the *eXpress* Design Viewer.

DSI Workbench

Run-Time Diagnostic Application
DSI Workbench allows diagnostics developed in *eXpress* to be fielded in a maintenance or production environment. DSI Workbench supports integration with a test executive, as well as guided troubleshooting and free-form test entry.