DSI international, inc.

eXpress™ Newsletter

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Digital Engineering's Inflection Point

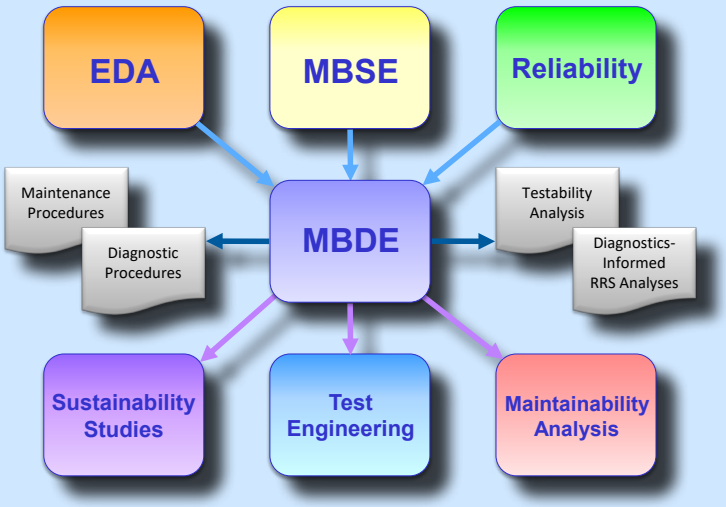
Digital engineering is no longer an aspirational concept—it has become a baseline expectation for organizations developing systems for the U.S. government. Increasingly, contracts are being awarded not to the bidder with the most elegant design or the lowest cost, but to those who can **demonstrate a fully integrated, model-centric engineering process** on a robust digital thread and preserved in an enduring, negotiable digital archive. The message from government and industry leadership is unmistakable: **if your tools and processes cannot participate in a digital thread, they will not participate in the future.**

This shift is accelerating across defense and aerospace. Recent digital engineering summits and defense initiatives highlight a consistent theme: **interoperability, transparency, and authoritative digital artifacts are now strategic imperatives**, not optional enhancements. The U.S. Department of Defense continues to emphasize digital engineering as a means to reduce lifecycle cost, improve sustainment planning, and accelerate capability delivery. Forward leaning organizations are already reorganizing their processes around these principles—and reaping the benefits.

DSI's Early Bet on Openness and Extensibility

For DSI, this moment has been decades in the making. Long before "digital thread" became a buzzword, DSI recognized that diagnostic engineering depends on **continuous, bidirectional data exchange** with other disciplines. Diagnostic models require design data, reliability data, maintenance concepts and test definitions—and in turn produce not only artifacts that feed logistics, safety, risk and sustainment planning, but also diagnostic strategies that can be directly implemented in actual production and maintenance environments.

Because of this, DSI has long prioritized **open, extensible data formats** and the ability to import and export information without friction. When DiagML (2000) and eXpressML (2018) were introduced, they were not conceived as proprietary containers for DSI tools—they were conceived as **model-centric, discipline agnostic languages** capable of serving as the backbone of a diagnostic digital thread.



The above diagram shows ways in which Model-Based Diagnostic Engineering (MBDE) has been connected digitally to other disciplines using **eXpressML** (the light blue arrows at top) and **DiagML** (the lavender arrows at bottom).

Today, organizations that have built their diagnostic engineering processes around these formats are already operating in a digitally connected environment that supports **multi-purposing, modularity, and long-term archival fidelity**. DSI's own tools—***eXpress***, STAGE, RTAT, and DSI Workbench—integrate seamlessly into this ecosystem, but the architecture is intentionally open. Multiple tools from multiple vendors can participate without forcing customers into a single vendor solution.

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Latest Software Versions

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• DSI Workbench	5.4.5	1/26
• TestDRIVE	2.5.3	8/25
• STAGE	Act III, Scene 1	10/25

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Industry Recognition—and a Quiet Irony

This approach gained broader visibility when the paper "Standards Based Digital Thread as Authoritative Source of Truth"—co-authored by DSI, Reston Software, and Spherea Technology—received the **Walter E. Peterson Best Paper on New Technology** at AUTOTESTCON 2023, the IEEE's annual conference for the automatic test industry. The paper showcased a digital thread built entirely on **existing, standards-based components**, including DSI's open formats and the IEEE's ATML family of standards.

The irony? Although the paper was celebrated as a leading "new technology," every component of the representative digital thread was already in operational use—not in laboratory pilots, but on real defense programs. The future described in the paper was already quietly underway.

The Costly Reinvention Problem

You might expect that this would have settled the matter. Yet today, tens of millions of dollars are being awarded to companies who are attempting to reinvent digital thread infrastructure from scratch. Some are unaware that mature, standards-based solutions already exist. Others are aware but choose to build proprietary ecosystems anyway—because doing so allows them to control the data, the interfaces, and the customer's long-term dependency.

There is, of course, nothing inherently wrong with innovation or proprietary tooling. But these efforts often run counter to the core goals of the digital engineering initiative:

- Reducing redundant cost
- Improving transparency and auditability
- Enabling interoperability across disciplines and vendors
- Supporting modularity and multi-purposing
- Delivering a complete archive of the engineering process

Reinventing the wheel may be profitable for some vendors, but it is rarely beneficial for the customer—or for the broader digital engineering ecosystem.

The Path Forward

The defense community is at an inflection point. The tools, standards and processes needed to implement robust digital threads already exist. What is needed now is adoption, alignment and the discipline to build on open, enduring foundations rather than siloed reinventions.

DSI will continue to champion this approach—not because it is fashionable, but because it is the only sustainable path to a future where engineering data remains authoritative, accessible and actionable across the entire lifecycle.

If the industry wants a revolution, it should stop ignoring the one already underway.

Spotlight: DSI Technology in Action

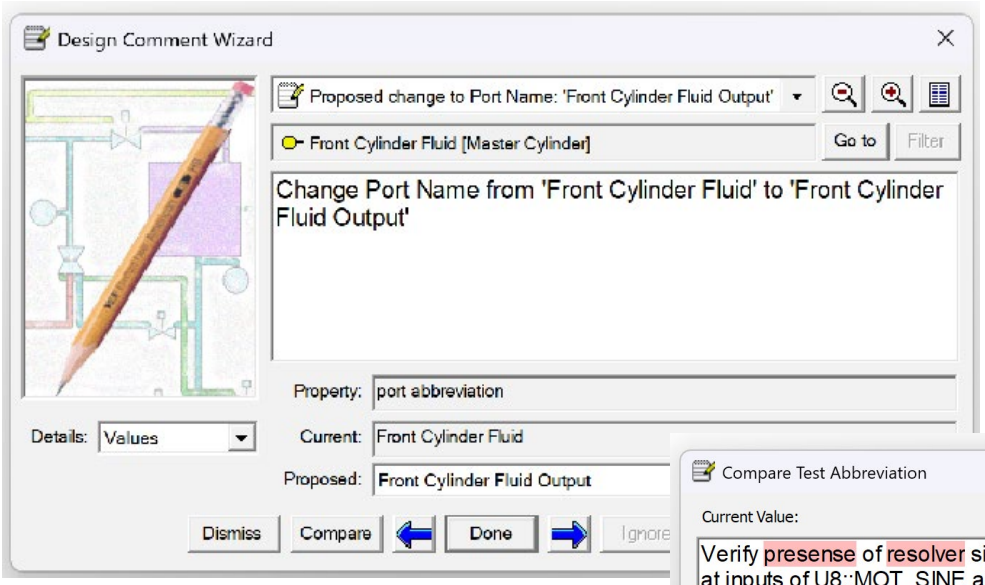
Platforms supported by DSI's industry-leading diagnostic & sustainment tools proved their value in recent global events.

From the response to the crisis in Venezuela to the protection of our allies in the Middle East, systems maintained with ISDD technology delivered dependable performance when speed and readiness mattered most. DSI continues to empower customers with solutions that enhance reliability, reduce downtime, and keep missions moving.

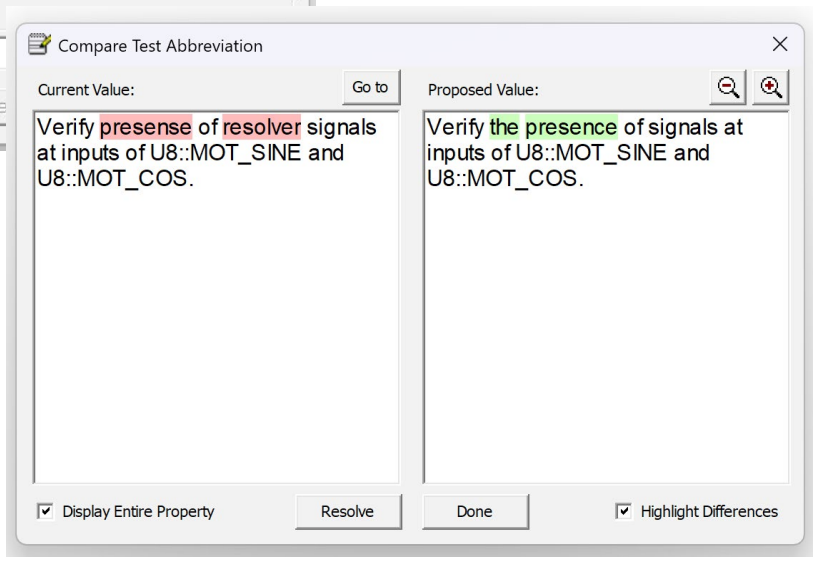
Closing the Digital Loop:

eXpressML Comments and the new Redline Module

eXpressML has been expanded to include special comments that can be linked directly to elements within an ***eXpress*** design. This enables any tool capable of writing eXpressML to generate messages for diagnostic engineers, opening the door for model feedback from every stakeholder in the project: engineers, customers, technicians, and even automated software processes. These comments can also be embedded within the eXpressML model itself, adding enduring, traceable annotations to your digital thread.

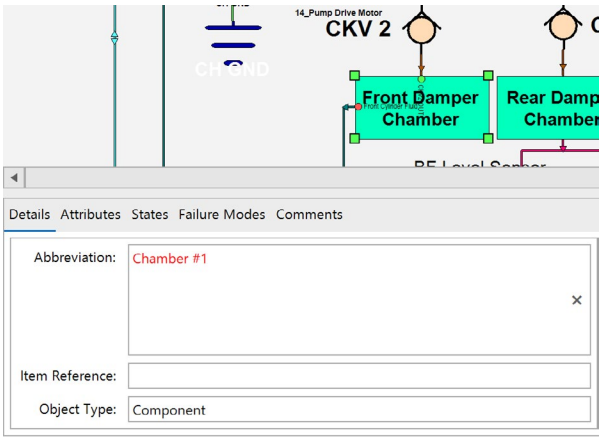


The new Design Comment Wizard (shown at left) allows you to review comments from a specified eXpressML document (similar to how you review the messages created by the ***eXpress*** Error Checker). This capability is automatically included as part of the eXpressML Module for ***eXpress*** 8.2.0 or later.



The Compare dialog allows modelers to see the results of implementing suggested changes to the model (with the existing data shown on the left and the new data shown at right).

A "Resolve" button at the bottom of this dialog allows the modeler to automatically implement the suggested change(s).



The above picture is a detail view from the ***eXpress*** Design Viewer showing a suggested change (in red) to the abbreviation of the highlighted object. This suggestion can be exported as an eXpressML comment and then reviewed within ***eXpress***.

Released concurrently with ***eXpress*** 8.2.0 is a new **Redline Module** that allows users of the ***eXpress*** Design Viewer—shareholders in the diagnostic design who may not have access to the ***eXpress*** software—to create comments for diagnostic engineers. When these comments are viewed in ***eXpress***, a simple click of a button will take you directly to the pertinent design element, let you read the comment while reviewing the model, review suggested changes and, in some cases, automatically modify the model (with your approval, of course).

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eXpress User's Group 2026

Virtual User's Group Meeting

June 9, 2026

7:00 – 11:00 a.m. PDT

We have a dynamic and informative agenda in store:

Presentations by Industry Specialists

Overview of Digital Diagnostic Engineering

Demonstrations of New Features, including

- New Redline Module
- Comment Viewer in ***eXpress***
- Mission Phases in STAGE

Discussion of Future Software Plans

Contact DSI today at info@dsiintl.com
or register online at www.dsiintl.com/EUG26

Recent Software Releases

eXpress
Version 8.2

Now with Integrated Comment Viewer

RTAT
Version 6.6.0

Now with Project Error Checking

DSI Workbench
Version 5.4.5

Now with Desktop Fault Insertion

STAGE
Act III, Scene 1

Now with Mission Phases

Coming Up...

- **New Redline Module for the *eXpress* Design Viewer**
- ***eXpress* User's Group (June 9)**
- **CE Training Course: Modular Digital Threads (June 23)**

Training Course Schedule

Course Number	Prerequisite	Description	Dates	Location	POC
CE-369	none	Continuing Education: Digital Integration with Capella2eXpress	May 12, 2026 One 90-minute session	Virtual: Webex	info@dsiintl.com
CE-370	none	Continuing Education: Modular Digital Threads using eXpressML & DiagML	June 23, 2026 One 90-minute session	Virtual: Webex	info@dsiintl.com
TLS-100	2 hours home study prior to first session (video)	System Diagnostics Concepts and Applications Basic Modeling & Introduction to Testing	Starting July 13, 2026 Eight 4-hour sessions (Mon-Thu for 2 weeks)	Virtual: Webex In Person: Anaheim Hills, California	info@dsiintl.com
CE-371	none	Continuing Education: Working with Diagnostic Studies in ***eXpress***	July 28, 2026 One 90-minute session	Virtual: Webex	info@dsiintl.com

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