

NSRP Panel Project 25-23
***Integrate MAESTRO Ship Structural Design and Optimization
Software with the Femap/Nastran Software***

**Project Update
for the
Electrical Technologies and Ship Design & Material
Technologies Joint Panel Meeting**

05 May 2026

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MAESTRO-Femap/Nastran Integration Team Member Roles and Tasking

- **MAESTRO Marine** performed the bulk of the software integration work.
- **Siemens** provided guidance, tools, and procedures for the integration.
- **Ingalls Shipbuilding** structural engineers tested the integrated software and provide feedback and comments to ensure the resulting tools are accurate and effective for the user.
- Project comprised of 3 Tasks:
 - Task 1. Define Software Integration Methods and Tools
 - Task 2. Integrate MAESTRO Software with Femap/Nastran
 - Task 3. Test and Revise the Developed Tools

NSRP Panel Project 25 MAESTRO-Femap Integration SOW Tasking Schedule												
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Task 1. Define Software Integration Methods and Tools												
Deliver Integration Method Report	▲	▲										
Task 2. Integrate MAESTRO Software with Femap/Nastran												
Deliver Monthly Updated Software to Team		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Task 3. Test and Revise the Developed Tools												
Conduct Monthly Code Review Cycle		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Deliver Final Version of Integrated Software Tools												▲

March 2026

MAESTRO-Femap/Nastran Integration Follow-on NSRP Research Announcement Project

- Panel Project 25-23 completed in March 2026
- Result: MAESTRO-Femap/Nastran Plugin Alpha Version
- Follow-on NSRP RA 26 proposal submitted and selected for award
- NSRP RA 26-11 Project Kicked-off April 2026
- Goal to reach 100% integration

Prime Contractor:
MAESTRO Marine LLC
25056 East Cherry Lane
Greensboro, MD 21639

MAESTRO-Femap/Nastran Full Integration

Summary Proposal

Submitted Under NSRP Research Announcement 26

Submitted in Cooperation with:

HII Ingalls Shipbuilding Division (Team Member)
Fincantieri Marinette Marine (Team Member)
General Dynamics/Bath Iron Works (Team Member)
NSWC Carderock Division Code 651 (Government Participant)
U.S. Coast Guard Surface Forces Logistics Center (SFLC) (Government Participant)
Siemens Government Technologies, Inc. (Subcontractor)
Robert Keane - Ship Design USA, Inc. (Subcontractor)

Follow-on NSRP Research Announcement Project

MAESTRO-Femap/Nastran Plugin Alpha Version

NSRP Panel Project 25-23 Update

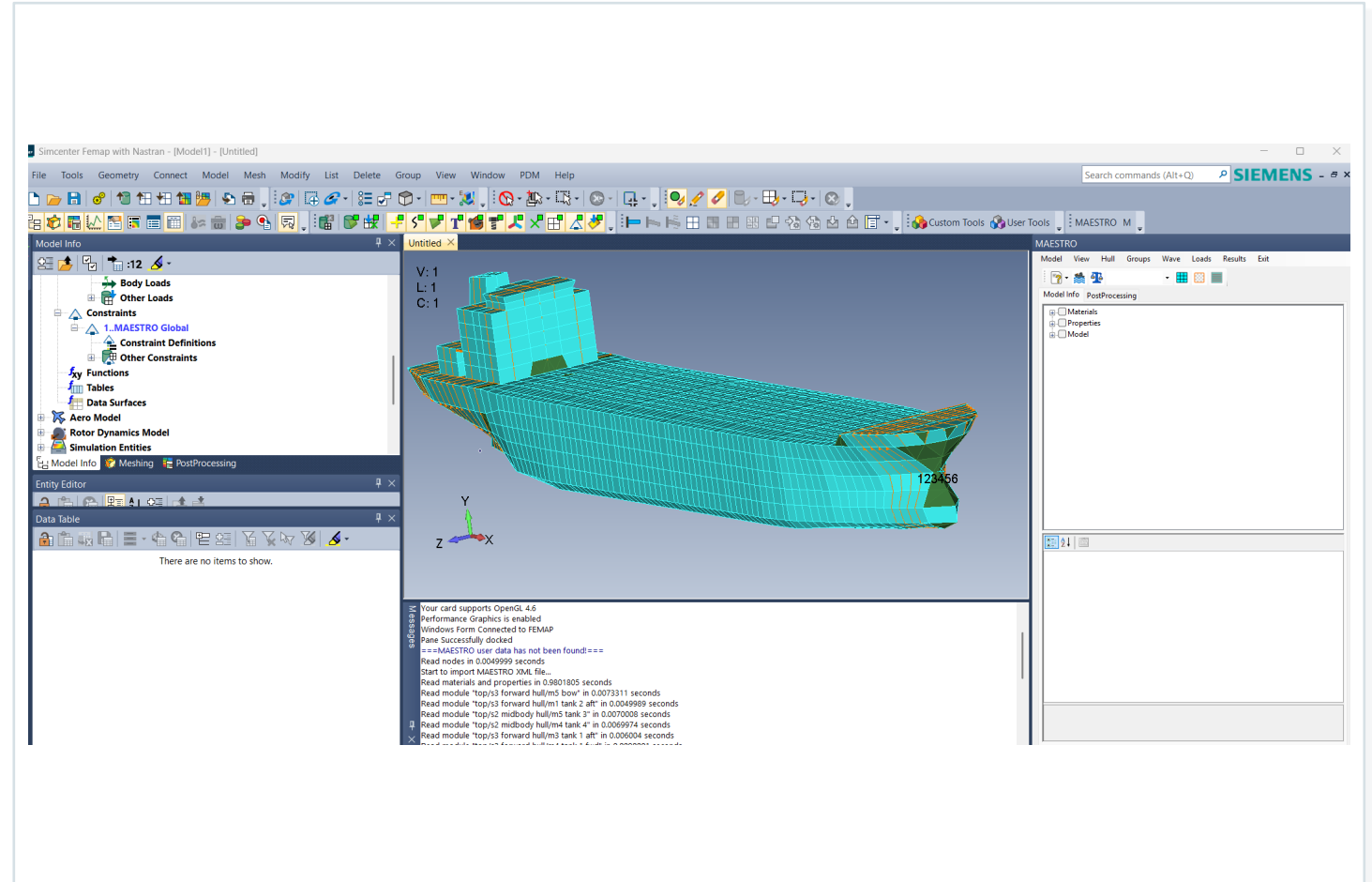
05 May 2026

Overview

How the MAESTRO plug-in sits inside FEMAP and what it manages.

What the plug-in does

- Runs as a docked MAESTRO panel inside FEMAP.
- Launches from C:\Program Files\MAESTRO\MAESTRO Extensions\MAESTROFemap.exe.
- Links the MAESTRO FE model with the FEMAP model.
- Supports two-way exchange through MAESTRO XML.
- Manages loads, analyses, and results.



Docked panel view showing the MAESTRO tree, data, output, and menu areas inside FEMAP.

Capabilities at a glance

Setup, model exchange, and load / hull-girder functions currently available in the alpha release.

Setup and data exchange

- Built on the v2512 API and expected to work on v2412.
- Uses the same licensing approach as MAESTRO software.
- Current coordinate system is Y-up; future option is user-defined Y or Z.
- Imports MAESTRO XML and FEMAP models, with rotation when needed.
- Exchanges FEMAP ↔ MAESTRO models, groups, and load cases.

Loads and hull-girder functions

- Maps MAESTRO modules to FEMAP layers and preserves group hierarchy.
- Performs 2D hull-girder calculations and section-property reporting.
- Generates VBM / VSF / HBM / HSF / LTM tables and plots.
- Produces self-weight and gross-weight tables.
- Handles hydrostatics, balance, wave surface display, tank loads, and hull-girder load envelopes.

This slide consolidates the original table of contents into larger, easier-to-scan sections.

Capabilities at a glance

3D solving, limit-state evaluation, and results workflows highlighted in the original deck.

Solver support

- Supports both FEMAP and MAESTRO solvers.
- Can display coarse-mesh models with stiffener traces similar to regular MAESTRO.
- Includes integrated load conversion for FEMAP-based FEA workflows.

Limit states and checks

- Patch search and display.
- DPC100-4 evaluation.
- ABS-HLSC / ABS-SVR-DLA checks.

Results and reporting

- Result reports and targeted query workflows.
- Stress display and adequacy-parameter review.
- Primary stress and fatigue stress-range checks called out elsewhere in the deck.