

Automating The Transition Of Product Model Data

SBIR N091-052
Contract N65538-09-M-0079
November 4, 2009

Kurt Knutson (858) 480.2009

kurt.knutson@ata-e.com

Greg Antal (858) 480.2072

greg.antal@ata-e.com

Ronan Cunningham (858) 480.2015

ronan.cunningham@ata-e.com

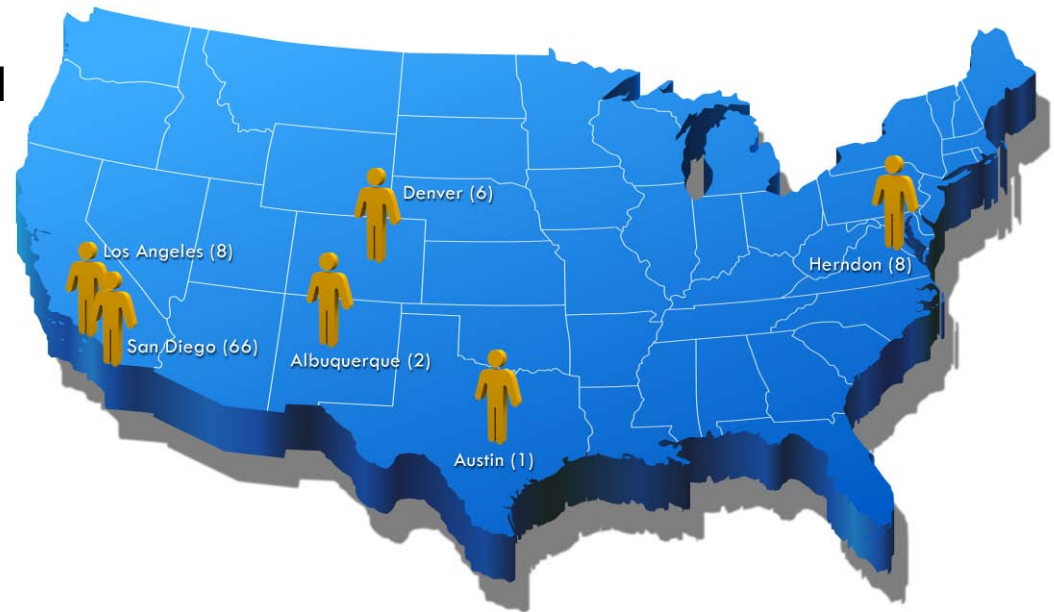
ATA Has More Than 30 Years Experience Providing High-Value Engineering Services



ATA Has More Than 90 Staff in Six Offices Nationwide



- ATA has a full-time staff of 91 people, 78 of whom are degreed engineers
 - 11 B.S. degrees
 - 46 M.S. degrees
 - 21 Ph.D. degrees
 - 8 staff are registered Professional Engineers
- Average experience is 12 years
- Supplement full-time staff with interns and consultants
 - 8-12 co-op and intern students
 - 4-6 consultants



2008 Winner
Innovations
in Employee Ownership Award
Sponsored by TEOCO

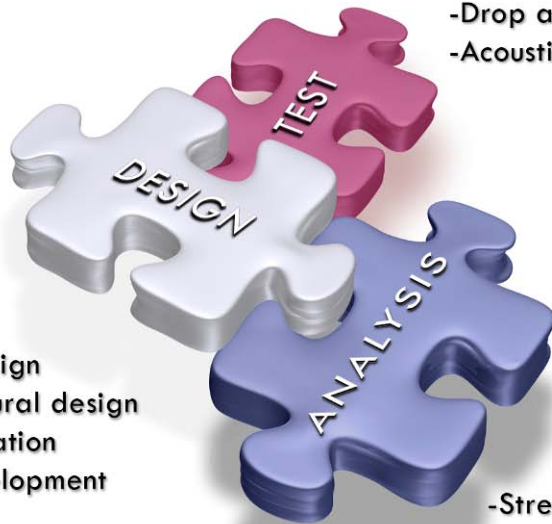


WINNER

*As named by
The Wall Street Journal
and
Winning Workplaces*



We Assist Customers in a Single Discipline or Across Several For Complete Solutions



- Conceptual design
- Detailed structural design
- Design optimization
- Prototype development

- Modal
- Operational
- Dynamic/static strain
- Drop and shock
- Acoustic

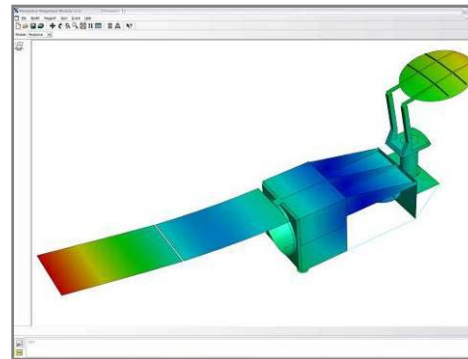
- Stress/strength
- Random, sine, shock
- Durability and fatigue
- Structural acoustics
- Aeroelasticity
- Thermal
- Nonlinear and contact
- Kinematics/mechanisms

- Effective integration of disciplines achieved through
 - Engineering process analysis and improvement
 - Best-in-class tools
 - Custom CAE software development and integration
 - Methods development
- We help our clients achieve tight integration through
 - Custom process development
 - Implementation services for CAE software
 - Technology transfer on all projects performed by ATA

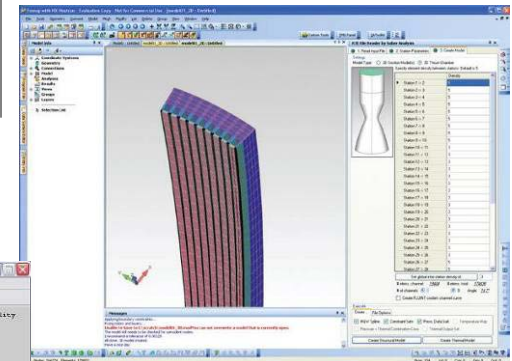
Software Services Complement Our Core Capabilities to Offer Complete Solutions



- Custom software development and integration for specific clients
- CAE software implementation
- Advanced methods development and technology transfer
- Software developed as consulting tools now sold commercially
 - IMAT, Attune, rotate
- Key ATA staff have extensive PLM exposure and experience



ATA Suite



Attune

Test Data

Analysis Data

Design Variables State Variables Match Rules

Constr. algorithm Optimization History

Test Modes Analysis Modes

Param Name	FE Mode	Obj	Target	Current	Diff (%)	Continuation
freq_1	0	1	14.92	13.45	-9.81	1
freq_2	0	1	14.84	13.33	-9.19	1
freq_3	10	1	23.08	14.87	-35.14	1
freq_4	11	1	23.76	14.73	-38.41	1
freq_5	10	1	30.71	16.89	-44.86	1
freq_6	10	1	88.00	90.89	3.28	1
freq_7	10	1	97.27	98.17	0.90	1
freq_8	7	1	2.00	0.89	-55.50	1
freq_9	8	1	1.00	0.91	-9.00	1
freq_10	10	1	1.00	0.98	-2.00	1
freq_11	11	1	1.00	0.74	-25.99	1

Attune™

rotate™

Goal of the SBIR is to Develop a Bidirectional Translation Tool for LEAPS



- Navy needs access to ship design data throughout lifecycle
 - Analysis based on conceptual and preliminary design
 - Logistical support of as-built design
 - Navy has added this as a requirement to its shipbuilding contracts
- Navy has had limited success getting that data
 - Data transfer is manual, time consuming, error prone
 - So, data requirements currently result in enormous cost to shipbuilders and Navy
- For Phase I we focused on getting data to the Navy

ATA's Demonstration Code Produces Real LEAPS Data Today



- Creates and modifies LEAPS database today with:
 - Compartments
 - Connections (joints, transfer functions) and Diagrams
 - Components
 - Materials
- Reads a text file that defines non-geometric design data.
 - Intended to represent typical export from a typical ship design tool.
- Can assemble the LEAPS database incrementally
- Gets geometry from STEP AP214/AP203 in addition to IGES

ATA Is Looking for Shipbuilding Partners for Phase II of this SBIR.



- We would like to work with ship building organizations who:
 - Need a viable method for delivering contractually required data to the Navy
 - Need to exchange data from multiple ship design tools with LEAPS.
 - Can work with ATA to test our automated data exchange codes against real data from design tools

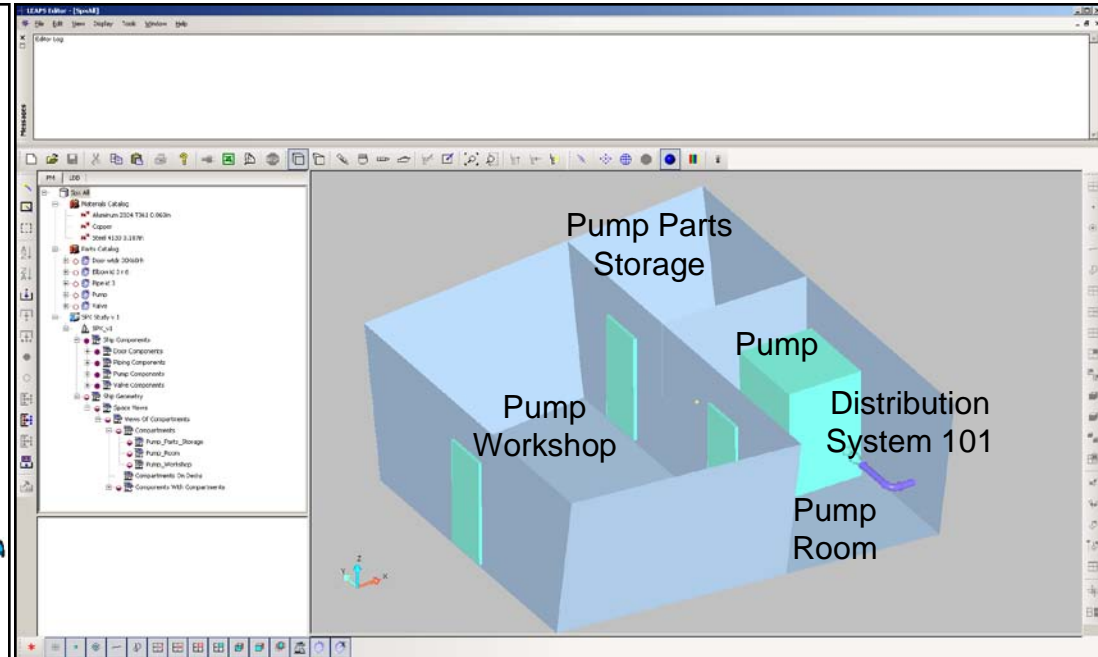
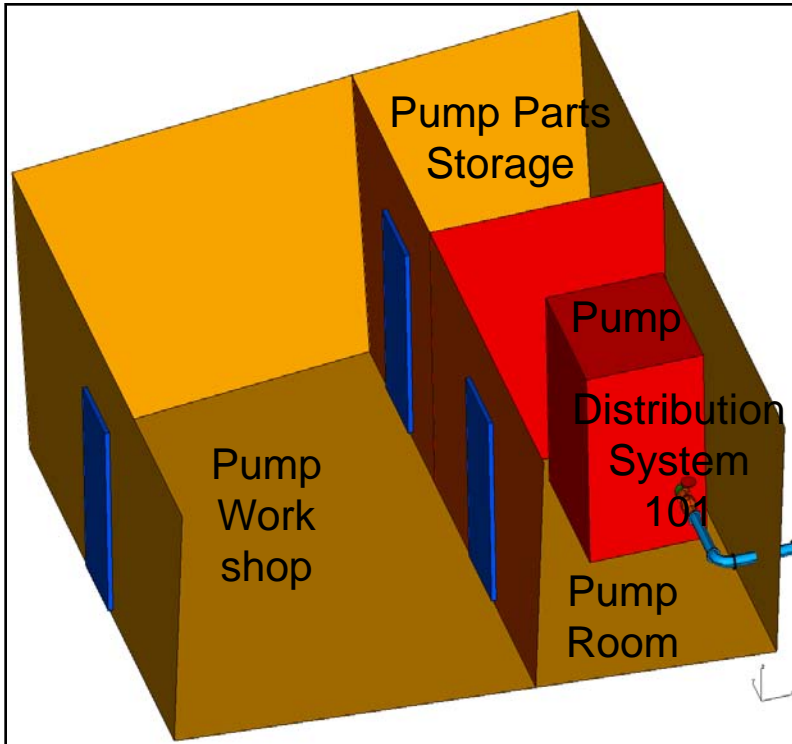
We Created a Generic 3-Compartment Example to Test Our Concepts

3 compartment example:
STEP geometry and
simple text definitions
from design / PLM tools

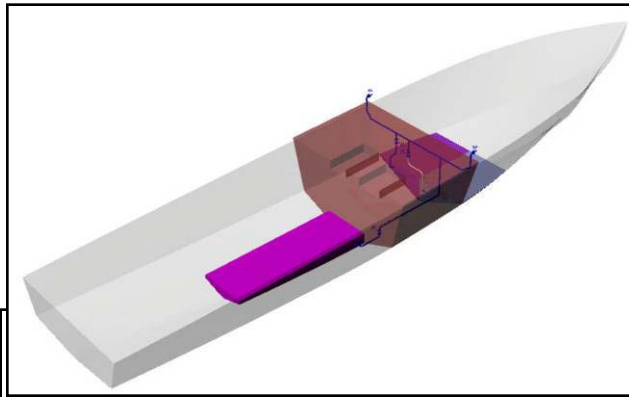


Batch Process

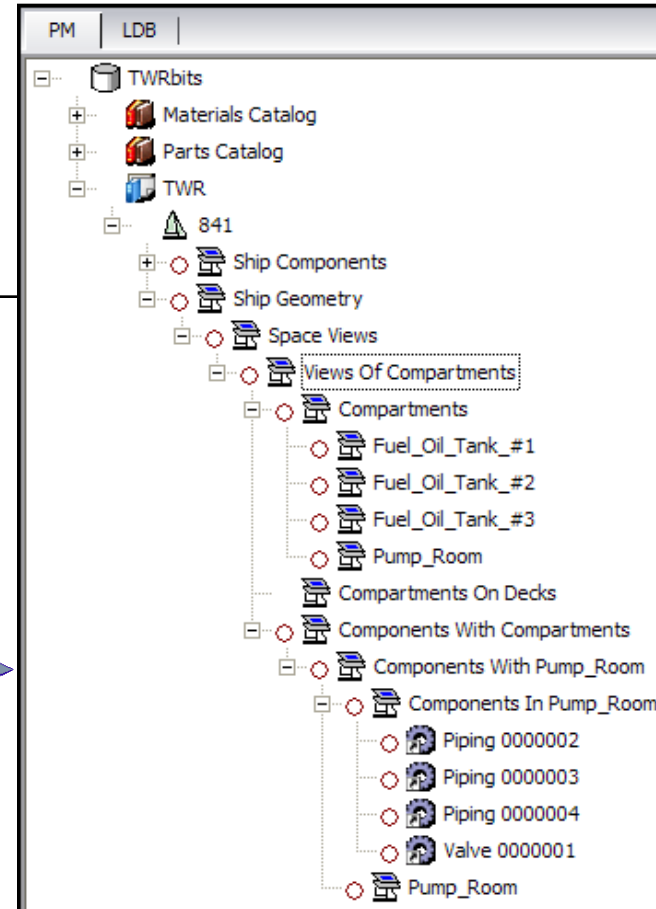
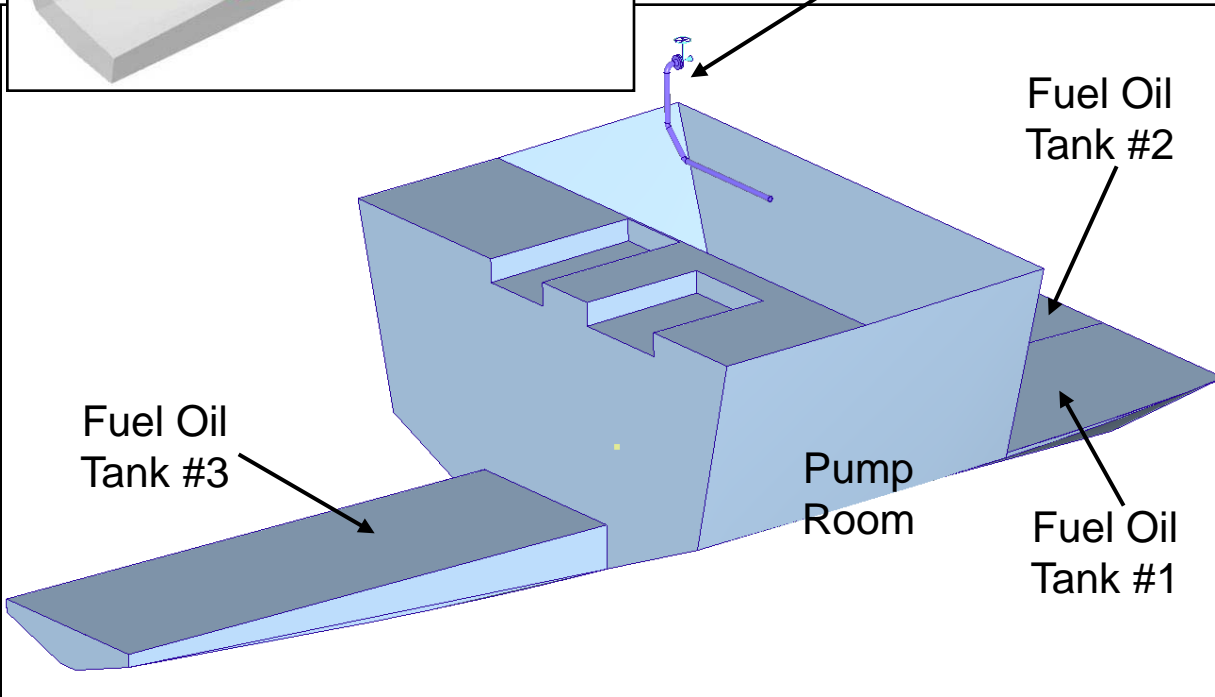
LEAPS Database



Successfully Demonstrated the Code on Example From TWR 841 As Well



Fuel Oil
Piping
System





ATA

ENGINEERING, INC.

.....
*High-Value Test- and Analysis-Driven Mechanical Engineering
Design Solutions*

Visit us at www.ata-e.com to see how we can help you meet your specific needs.