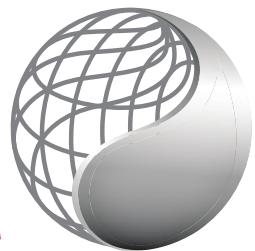




Modeling & Simulation
Backed by the Power of
High Performance Computing

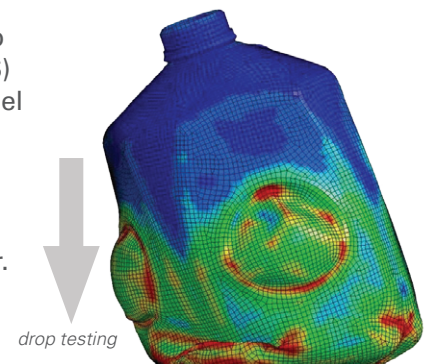
AWE**SIM**

Virtual Designs. Real Benefits.



WHY MODELING AND SIMULATION WITH HIGH PERFORMANCE COMPUTING?

Designers and engineers utilizing common CAD or CAE software on desktop computers often encounter limitations in the modeling and simulation (M&S) they can efficiently perform. Examples of these limits are (1) low virtual model fidelity compared to the physical reality and (2) long design cycles that depend on overnight computational processing. High Performance Computing (HPC) provides an improvement in computational capacity compared to typical general-purpose computers. The increased power and speed that HPC provides allows more detailed models to be simulated faster.



WHAT ARE THE BOTTOM-LINE BENEFITS?



Simulation-driven design with M&S on HPC replaces physical product prototyping with less expensive computer simulations, reducing the time to take products to market, while improving quality and cutting costs.

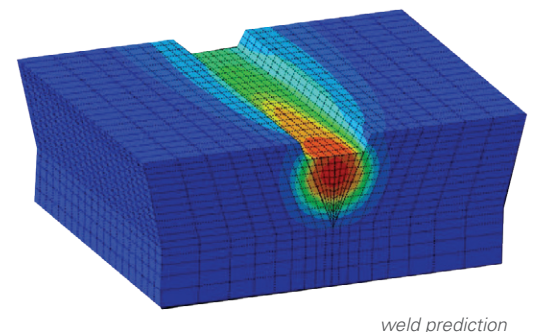
Manufacturing Time Savings

- Reduce the number of design make-break cycles
- Analyze 3D models in minutes instead of hours
- Produce better products more cost-effectively

HOW DOES INDUSTRY USE M&S WITH HIGH PERFORMANCE COMPUTING?

Manufacturers can model and simulate issues related to many areas of concern:

MANUFACTURING CHALLENGE	M&S SOLUTION
Air flow	Dust minimization
Device life cycle	Tool wear prediction
Electrical efficiency	Circuit modeling
Ergonomics	Product usability evaluation
Fuel economy	Drag force computation
Welding distortion	Fixture design
Liquid flow	Container filling visualization
Machining forces	Forming die design
Machining speed	Tool path calculation
Packaging design	Material properties analysis
Plant layout	Workflow assessment
Product strength	Drop/crush test
Shipping costs	Logistics optimization



WHAT IS AWESIM?

AweSim provides manufacturers with competitive solutions for simulation-driven design. We are helping to automate the manual prototyping process and provide affordable, accessible and scalable M&S on HPC via:

- Online modeling and simulation apps and tools
- Educational materials and training courses
- Industry-specific expertise and consultants

It is a public/private partnership including the Ohio Supercomputer Center (OSC) and M&S industry experts, who are pioneering the field of M&S as a service.

MAKING MODELING & SIMULATION ACCESSIBLE

Some manufacturers have embraced simulation-driven design, but many manufacturers are largely missing out on this competitive advantage because they cannot afford to leverage such solutions. We aim to level the playing field, giving more companies easy-to-use access to technology, knowledge and expertise. AweSim services allow for the rapid development of customized M&S applications and solutions, which in turn enable companies to more quickly address emerging customer requirements.

You don't have to become a modeling expert for your business to understand and leverage the power of simulation-driven design.



drag analysis

PARTNERS:

kineticvision



P&G

TOTALSIM^{US}

Nimbis Services

OUR SERVICES

EXPERTS	A community of experts that can coach you on using products
SOFTWARE	Pre-installed commercial and open source parallel solvers
HPC	High performance computing hardware
M&S APPS	Easy-to-use M&S apps created by a community of experts
APPKIT	Web-based M&S app developer tools

EXAMPLE CLIENT ENGAGEMENTS

The AweSim team has engaged clients with a variety of levels of M&S usage, such as:

WE DON'T KNOW WHERE TO START!

Solution: Pilot feasibility study for startup company's product concept

Cost: ~\$5K (Experts) + ~\$1K (HPC)

WE NEED A LITTLE EXTRA HELP!

Solution: Ongoing access for multiphysics analysis of device design iterations

Cost: ~\$400/month (HPC) + \$100/hour (Software)

WE DO THIS FOR A LIVING!

Solution: Sophisticated 4 month aerodynamic analysis project

Cost: ~\$85K (HPC)

POWERING INNOVATION ACROSS INDUSTRIES

AweSim helps businesses in a wide range of industries leverage the power of modeling and simulation, as shown in these available case studies:



AUTOMOTIVE
NASCAR



**ADVANCED
MANUFACTURING**
BWAY



BIOHEALTH
Greenlight
Optics



**FOOD PROCESSING
& AGRIBUSINESS**
P&G



**INFORMATION
TECHNOLOGY**
Rescale



**ENERGY &
PETROCHEMICALS**
LG Fuel Cell Systems



**AEROSPACE
& AVIATION**
AltaSim



LOGISTICS
Jeco



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a partnership led by

Ohio Supercomputer Center
An OH•TECH Consortium Member