OBJECTIVE INTERFACE

DMMfx
Finite Elements. Infinite Results.™

Better Simulations, Better Results

Realistic depiction of battlefield damage in military simulations has become increasingly critical to successful operations.

Simulation developers rely heavily on art swaps, or real-time substitutions of art assets, to show the deformation and fracture of simulation objects. This is an expensive and labor-intensive task that results in static object behavior.

Now a new technology, DMM*fx*™, utilizes real-time Finite Element Analysis (FEA) to dramatically improve simulation realism while reducing development time and cost.

With DMM*fx*, designers can break free from the constraints of art swaps by *simulating instead of animating* battle damage. Buildings will collapse based on the weaknesses in their actual physical structure and brick walls will crumble where impacted. Because these objects are simulated in real-time, they react dynamically in entirely new ways each time the user engages in the simulation.

Achieve amazing levels of realism with DMM*fx*. By using finite element technology to model the physical stresses that arise within physical materials, DMM*fx* calculates how the object should break, bend, or deform and renders a remarkably realistic depiction of these changes.

» **CREATE REALISTIC MATERIAL DAMAGE**

» **IMPROVE IMMERSIVE EXPERIENCE**

» **BREAK FREE FROM ART SWAPS**

» **UPGRADE EXISTING SIMULATIONS**

» **EASY INTEGRATION**

» **DELIVER FREEDOM OF DESTRUCTION**

» **PROVEN COTS TECHNOLOGY**

Illustration above compares traditional art swap method to DMM*fx* material damage simulation.
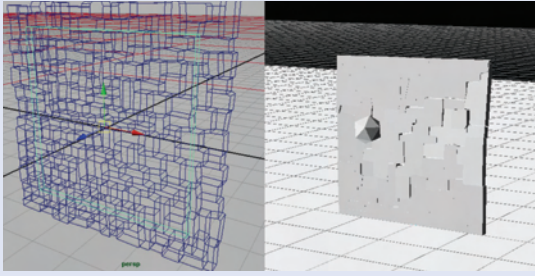
Example: Application of a surface mesh.

DMM*fx* Animator:

The DMM*fx* Animator is a Maya plug-in that utilizes techniques familiar to simulation artists. Artists start with a surface mesh for a new or existing object and use the tools in DMM*fx* Animator to easily covert the object into a breakable DMM*fx* object. The artist then applies material properties to the object. DMM*fx* includes a large library of physical materials including steel, stone, rubber, glass and many others to accelerate your development time.

Example: Modeling material properties of terrain.

DMM*fx* Engine:

The DMM*fx* engine subsystem runs independently of the primary simulation engine. DMM*fx* exchanges information about forces being applied to a scene, determining whether objects are being kinematically driven as well as other physical interactions. Force feedback is a natural result of these interactions and can be used to generate both additional visual effects and realistic sounds resulting from collisions and distortions.

Rapid design-to-delivery

Demand for increasingly realistic simulations – combined with shortened development timelines – is creating tremendous challenges for military simulation designers, developers, and managers. DMM*fx* uses physical modeling in real-time to address these challenges, producing more realistic simulations while meeting rapid design-to-delivery requirements. Save days, weeks, even months of scene authoring time by using simulation-based animation.

Break Free from Art Swaps

With DMM*fx*, designers can break free of the constraints of art swapping and provide true real-time simulation where objects break, bend, and deform based on physical forces.

Now, every choice in the simulation can change the outcome.

DMM*fx* Provides

- Finite-Element based physically accurate simulations of material physics
- The ability to have objects fracture and deform in accordance to internal stresses
- A complete tool chain to automatically convert art into DMM*fx* objects
- The ability to generate sound and particle effects from the DMM*fx* simulation force feedback
- Libraries and command-line tools to integrate into existing production pipelines
- DMM*fx* Animator for Maya for those who prefer to use a Maya-based pipeline

Easy Integration

- Support for standard Windows and Linux hardware and software
- Easy integration with existing simulation engines
- Fully multi-threaded and multi-core ready

Proven COTS Technology

DMM*fx* is based on the DMM engine being used by LucasArts in "Star Wars: The Force Unleashed" and "Indiana Jones" video games.