This is all about creating the best experience for our customers. The performance of AMD FirePro™ professional graphics hardware combined with a fully open source Bullet plug-in for Autodesk® Maya® software helps accomplish that goal.

—Bahman Dara
 Director, Product Marketing
 AMD

Bullet Physics, Autodesk style.

AMD and Autodesk Consulting collaborate to create custom plug-ins and bring Bullet middleware to Autodesk® Maya® software.
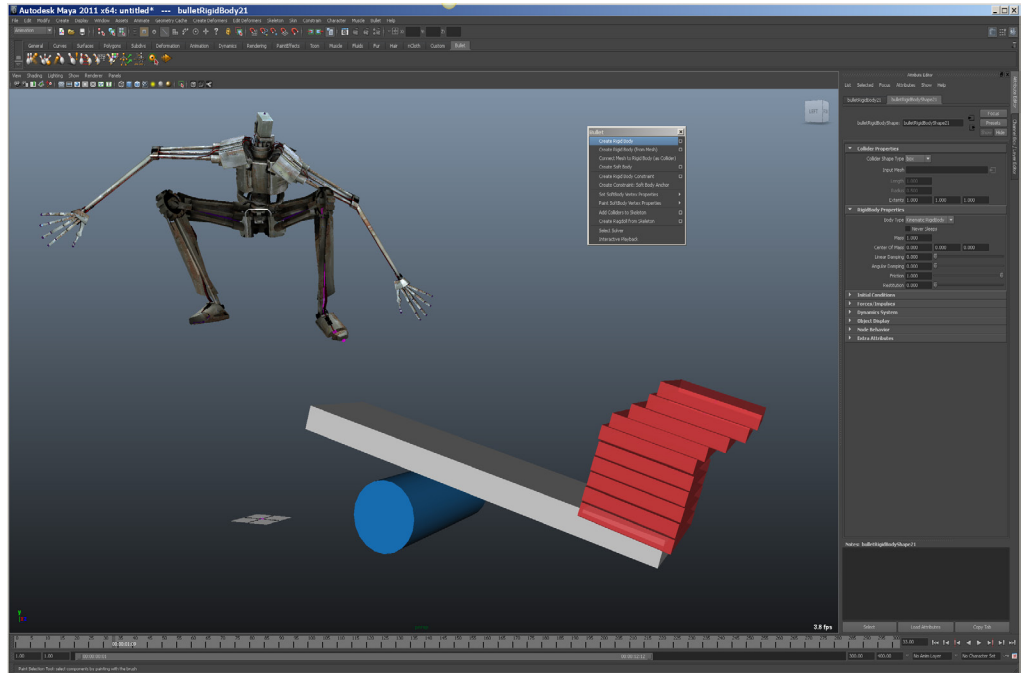
Project Summary

This is definitely a bullet you'll want to get in front of. The Bullet Physics Library is an open source physics engine being used in several of today's hyperrealistic video games and feature film visual effects. Offering powerful 3D collision detection, soft and rigid body dynamics, and more, Bullet is an increasingly popular choice among game developers, and Bullet creator and founder Erwin Coumans is now working with AMD to further develop and optimize the technology.

AMD (Advanced Micro Devices), a global supplier of semiconductors, microprocessors, computer processors, and graphics processing units, recently extended Bullet to support OpenCL™ (Open Computer Language), a nonproprietary, open source programming language. This enables users to create programs on any platform and any hardware they choose, and run them on multicore central processing units (CPUs) and graphics processing units (GPUs) such as AMD FirePro™ professional graphics for workstations.

To develop tools for games and visual effects artists that take full advantage of Bullet physics and OpenCL, AMD worked with Autodesk to create custom plug-ins for Autodesk® Maya® software.

The Challenge

The often astonishing realism of today's video games and visual effects seems only to have prompted consumers to demand more. Ever more complex physics engines are being developed to quickly and realistically simulate physical actions in game characters, rather than having artists spend valuable creative time tweaking parameters and polishing simulations.

To achieve lifelike simulations in their games and movies, studios have been turning to GPU-based physics and to physics engines such as Bullet.

"One of the great things about Bullet is that it is completely nonproprietary," says Allen Bourgoyne, Director, ISV Alliances, Professional Graphics at AMD. "By integrating Bullet into Autodesk® Maya® software, we're offering this technology to customers, who will then have the opportunity to run it on any platform and any hardware they want. The choice is up to them."

Autodesk®

AMD and Autodesk Consulting are in lockstep as they develop the Bullet plug-in to ensure the best experience for customers.

Working closely with Erwin Coumans, AMD extended the cloth simulation capabilities of Bullet to support OpenCL. While AMD FirePro professional graphics hardware could provide the technology and processing power for a truly blazing user experience, they needed some sophisticated artist tools and authoring workflows to demonstrate it.

"The AMD CPU and GPU technologies can really make the integration of Bullet physics and Maya artistry into a whiz-bang experience," says Bourgoyne. "That was how we decided to collaborate with Autodesk and work with Autodesk Consulting."

The Solution
The Bullet plug-in is the latest in a long line of collaborations between AMD and Autodesk. The two companies have been strategic partners for many years. After preliminary discussions with the Autodesk® Maya® software and games product teams at Autodesk, AMD decided to work with the Autodesk Consulting team for the first time.

"We got together with the Autodesk product teams to determine what they wanted to do with Maya in the near future," says Bahman Dara, Director, Product Marketing at AMD. "When the discussions turned excitedly to physics and physics engines, we started talking about how AMD could help accelerate the efforts. With their level of expertise and professional proximity to the product groups, it was clearly in our best interest to work with Autodesk Consulting on the implementation and development work. It has since proven to be the best path to faster and less expensive development."

The Result
Having a team of highly skilled and trained developers and artists is a good thing on any project, but one that is directly associated with the product development team is even better.

Working closely with AMD developers, the Autodesk Consulting team has brought the two companies into lockstep as they develop the Bullet plug-in.

"Autodesk Consulting has been great about having weekly calls and providing excellent demonstrations of where they're at with the plug-in," says Dara. "They've even gone above and beyond our expectations, consulting with end-customers to test and validate the Bullet plug-in. It's been a very tight, cost-efficient relationship."

"The Autodesk Consulting team has been extremely proactive and professional," agrees Bourgoyne. "Their deep knowledge of the Bullet application has been a huge benefit and has given us 100 percent confidence that we can accomplish the smoothest integration of an excellent Bullet plug-in for Autodesk® Maya® software."

"This is all about creating the best experience for our customers," says Dara. "The performance of AMD FirePro professional graphics hardware combined with a fully open source Bullet plug-in for Autodesk Maya software helps accomplish that goal.

To learn more about Autodesk Consulting, visit, **www.autodesk.com/consulting**.

To learn more about Autodesk Maya software, visit, **www.autodesk.com/maya**.
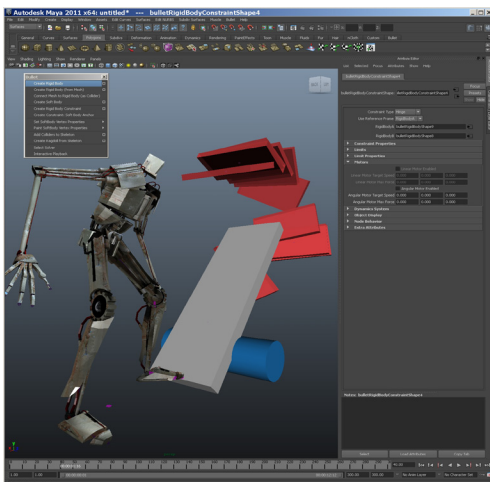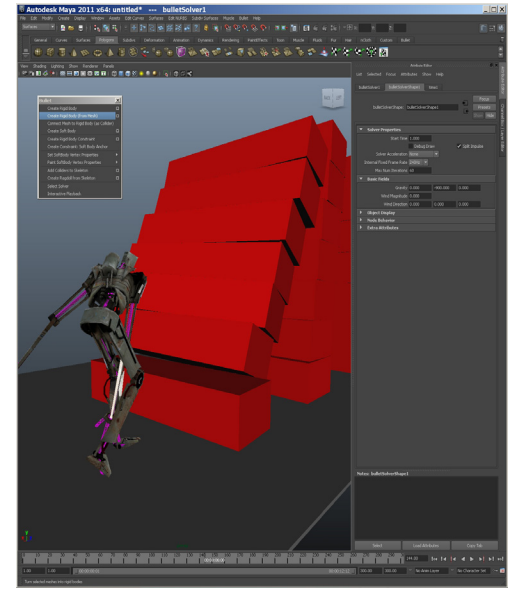
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