# Autodesk Maya 2011 Productivity Benchmarks

Pfeiffer Consulting
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Real World Productivity Data for 3D Professionals

# Introduction

*This document presents key findings of a benchmarking project designed to assess the impact of the Autodesk® Maya® 2011 software on the productivity of 3D professionals.*

*In order to assess how Maya 2011 compares with earlier releases, we have selected a number of key features introduced in recent releases of the program, and compared them with Maya 8.5.*

*Benchmarks were designed to measure how specific functions speed up everyday tasks. For details on the methodology used to conduct these benchmarks, see "About the Benchmarks" at the end of this report.*



Table of Contents

# Camera Sequencer

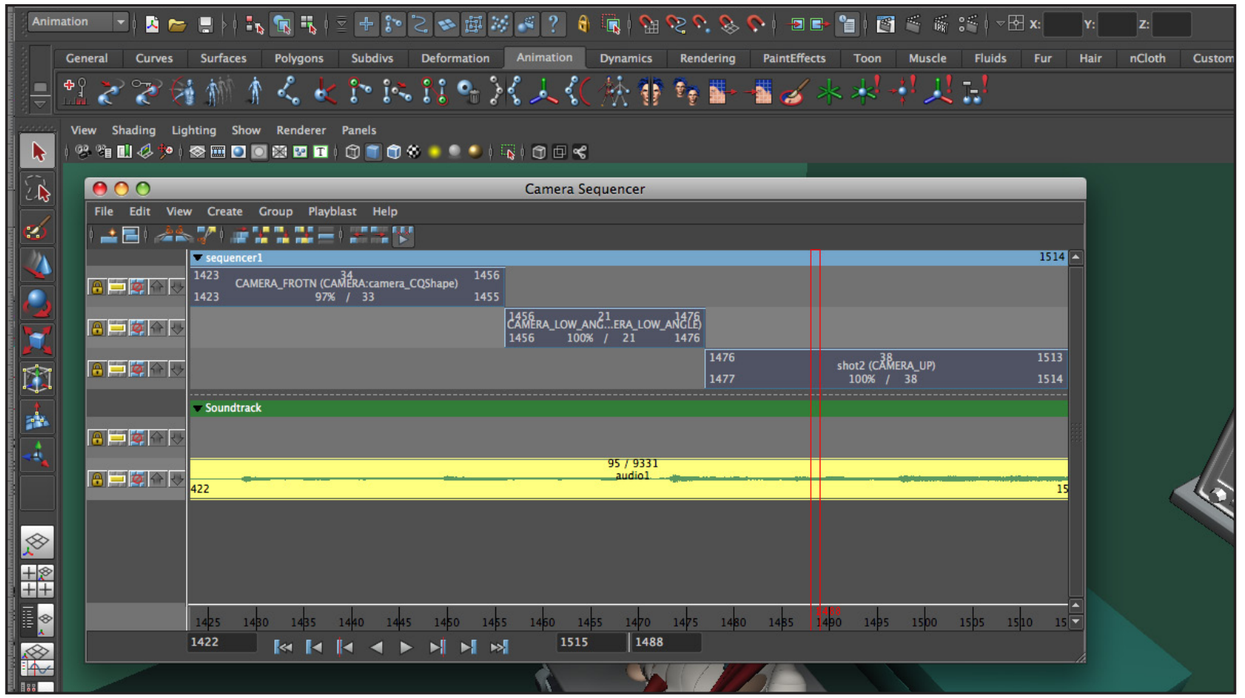
## What is it all about?

The Camera Sequencer is one of the most important innovations introduced by Maya 2011, that could not only redefine pre-production workflows, but also pave the way of a more pervasive adoption of virtual movie-making.

In a nutshell, Camera Sequencer lets you string together the different cameras placed in a 3D scene, arranging shots and switching between camera angles and views, much as one would in a real-world movie studio. In addition, Maya supports EDL import from Apple® Final Cut Pro®, and can handle multiple soundtracks. In other words, the stage is set for Maya to play an increasingly active part in the overall movie planning process...

In terms of productivity, Camera Sequencer offers ways of planning complete scenes or walkthroughs that would be very cumbersome to emulate with earlier releases. (For this benchmark, we have compared the creation of a Camera Sequencer project with four cameras with the time necessary to set up the timeline for a single camera with jumps between keyframes to emulate multiple camera positions.)

**Camera Sequencer lets the user create "shots" using a camera defined in the scene. Shots can be lined up with a soundtrack, and can be rearranged more easily.**




## The Feature

## How it works

## Productivity

**Maya 2011**
17.31% (45 sec.)

**Maya 8.5**
100% (4 min. 20 sec.)

Our benchmark compared Camera Sequencer with the time necessary to set up a single timeline emulating four different camera positions in Maya 8.5.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

**Bottom Line: Camera Sequencer can save almost 1 hour and 30 minutes a month.**
*(Based on just 2 repetitions of the average benchmarked operation per day.)*

# Auto Resize for Fluid Containers

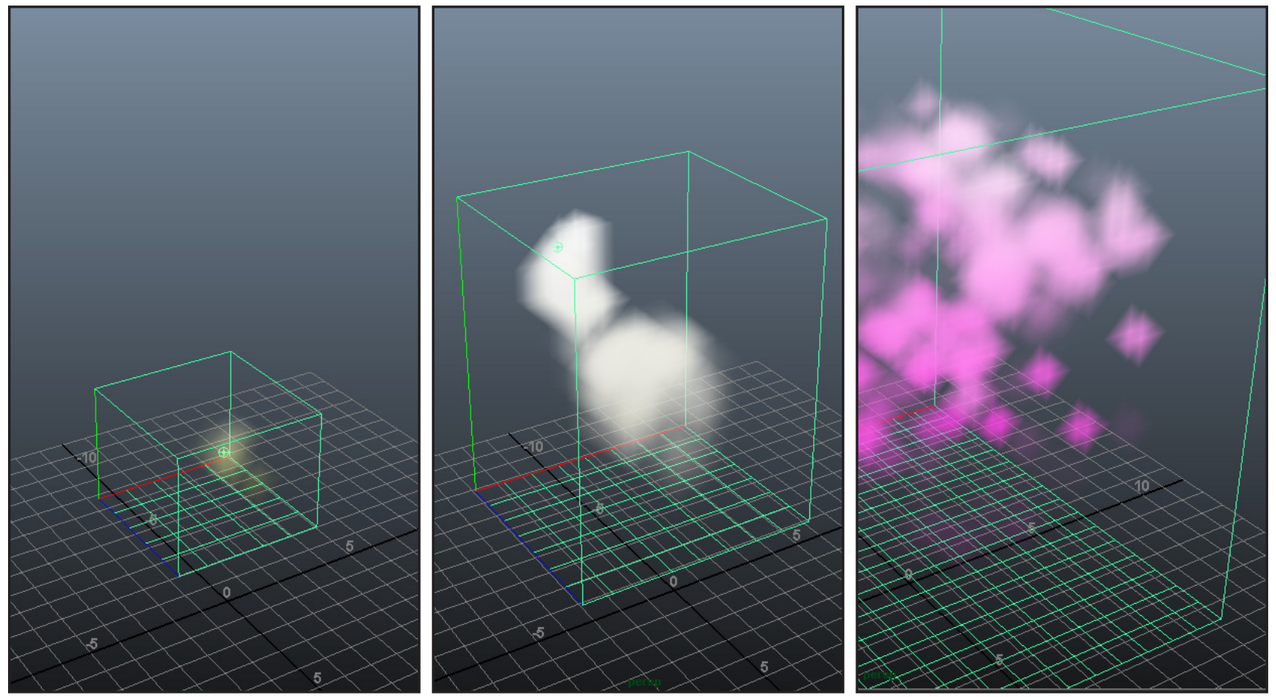
## What is it all about?

It seems so simple, that one wonders why the feature hasn't been introduced earlier; yet the Auto Resize option for fluid containers can have a dramatic impact of producing scenes that require dynamic simulations like flames, water or vapor.

Here is how the story goes: When you set up a fluid container in an older version of Maya, you needed to know how far the fluid simulation would reach — lest you wanted the rendered effect to bounce off the invisible walls of the container. Once that happened, there was no point in scaling the *box*, (since the effect would be scaled with it), you needed to scale the parameters that go with the effect, or animate the fluid container to move with the particle emitter. In addition, pre-rendering a scene with such a simulation could be very slow, even for a very simple example as in our benchmark.

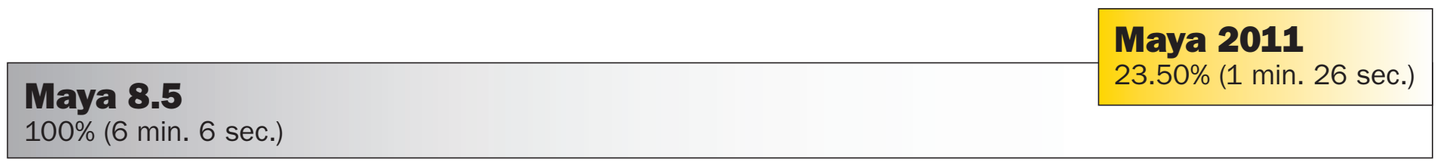
In Maya 2011, all you need to do is turn on the "Auto Resize" option. That's it. (Without mentioning the fact that the viewport performance for fluid simulations Maya 2011 is significantly better than in an older release such as Maya 8.5.)

**Checking the "Auto Resize" option in the Attribute editor is all it takes to make sure the fluid simulation never looks "boxed", even when it is part of an elaborate animation.**



## How it works

## Productivity




Our benchmark compared previewing and adapting a short sequence containing an animated fluid emitter.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

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**Bottom Line: The Auto Resize option for fluid containers in Maya 2011 can save over 3 hours a month.**
*(Based on just 2 repetitions of the average benchmarked operation per day.)*

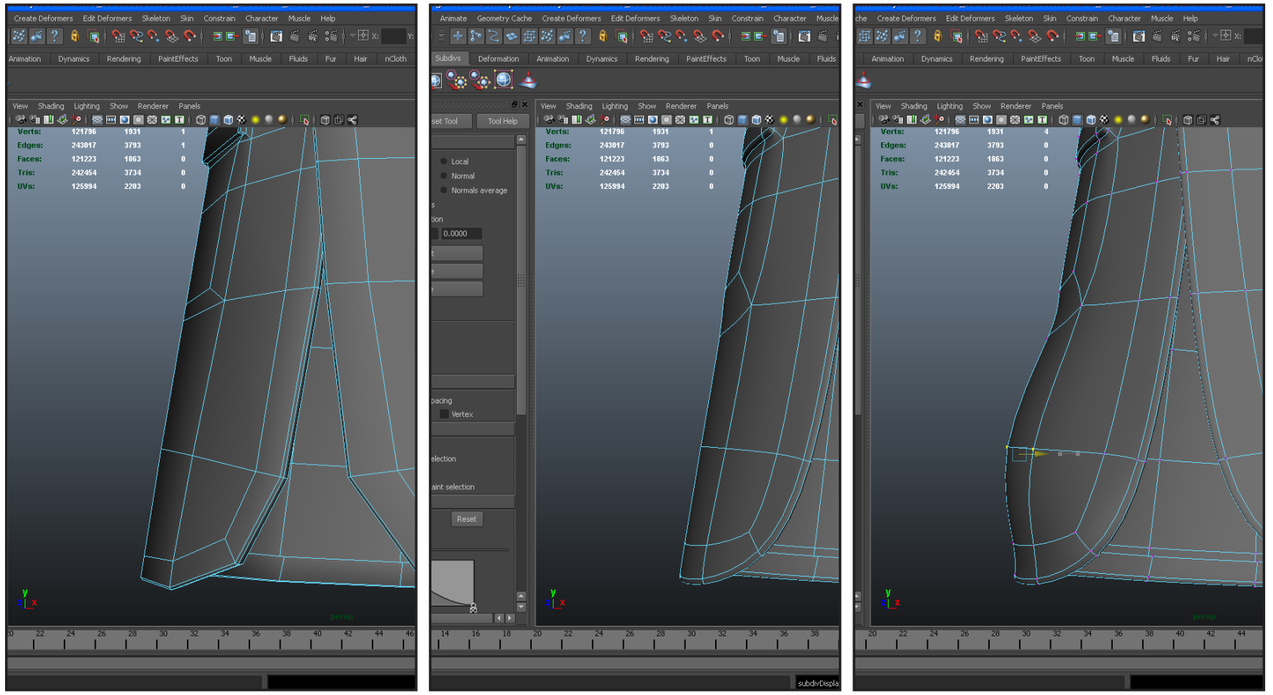
# Smooth Mesh Preview

## What is it all about?

Working with smoothed polygon meshes in older versions of Maya could be frustrating: Previewing the effect was only possible if the mesh was actually smoothed; the problem was that this rendered the mesh un-editable, unless the Smooth Node was removed again using the Attributes Editor. This means that you had to go back and forth between smoothed state, check if you liked what you had done in terms of editing, then deleted the corresponding node manually.

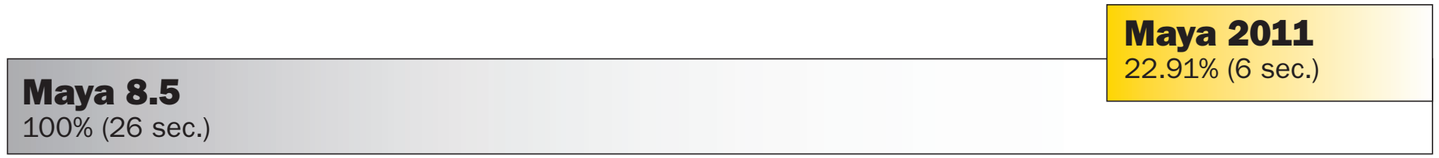
Smooth Mesh Preview is a new option that controls how Maya 2011 displays polygon meshes during the work process: smoothed, un-smoothed or a combined view of both. All it takes is a single keystroke to switch between the display mode. The model remains fully editable all the time; this makes it much more efficient to interactively edit a mesh while keeping track of what the smoothed version will look like.

**Smooth Mesh Display lets you switch between different, editable display modes for a selected mesh with a single keystroke, without interrupting the modeling process.**



## How it works

## Productivity




We benchmarked two workflow situations: a single round-trip to check the smoothed state of a mesh, and multiple editing operations with verification of the smoothed mesh. The chart shows the average value for both benchmarks.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

**Bottom Line: Smooth Mesh Preview in Maya 2011 can save over 2 hours a month.**
*(Based on 20 repetitions of the average benchmarked operation per day.)*

# Soft Selection

## What is it all about?

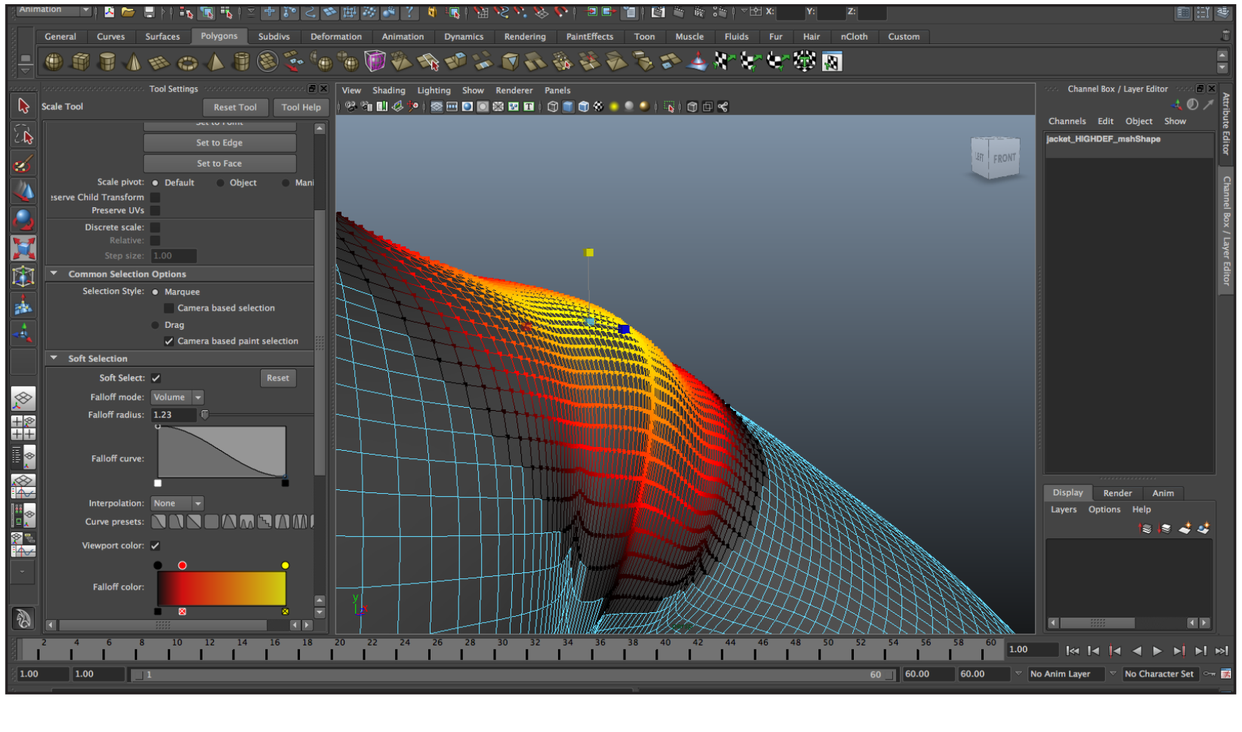
Soft Selection has been improved significantly in recent releases of Maya, helping provide a much-wanted addition to the powerful but somewhat quirky Soft Modification Tool in the Maya toolbox.

Soft Selection now exists separately from Soft Modification, and can be turned on and off for with a single click for any selection type, even a complete scene (See Object level Soft Selection in the following page).

More importantly, Soft Selection, as well as the various parameters that control it, such as the Falloff radius and curve, can be turned on and off and modified during the modeling process, allowing you to fine tune objects very rapidly without having to go back and forth between tools and dialog boxes.

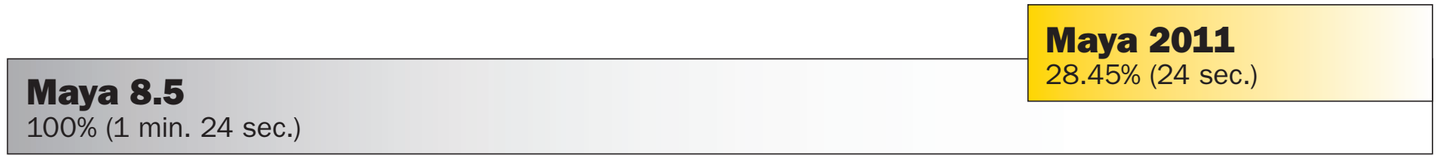
In terms of productivity, Soft Selection can help speed up modeling work significantly, as the benchmarks show.

**Soft Selection Maya 2011 can be turned on and off with a single click, and can be modified interactively during the modeling process, without the need to switch tools.**




## How it works

## Productivity




Our benchmarks compared to workflow situations between Maya 8.5 and Maya 2011: Making a single localized modification of a polygon mesh, and execute multiple modifications. For Maya 8.5, the Soft Modification Tool was used.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

**Bottom Line: Soft Selection in Maya 2011 can save almost 3 hours and 30 minutes a month.**

*(Based on 10 repetitions of the average benchmarked operation per day.)*

# Object Level Soft Selection

## What is it all about?

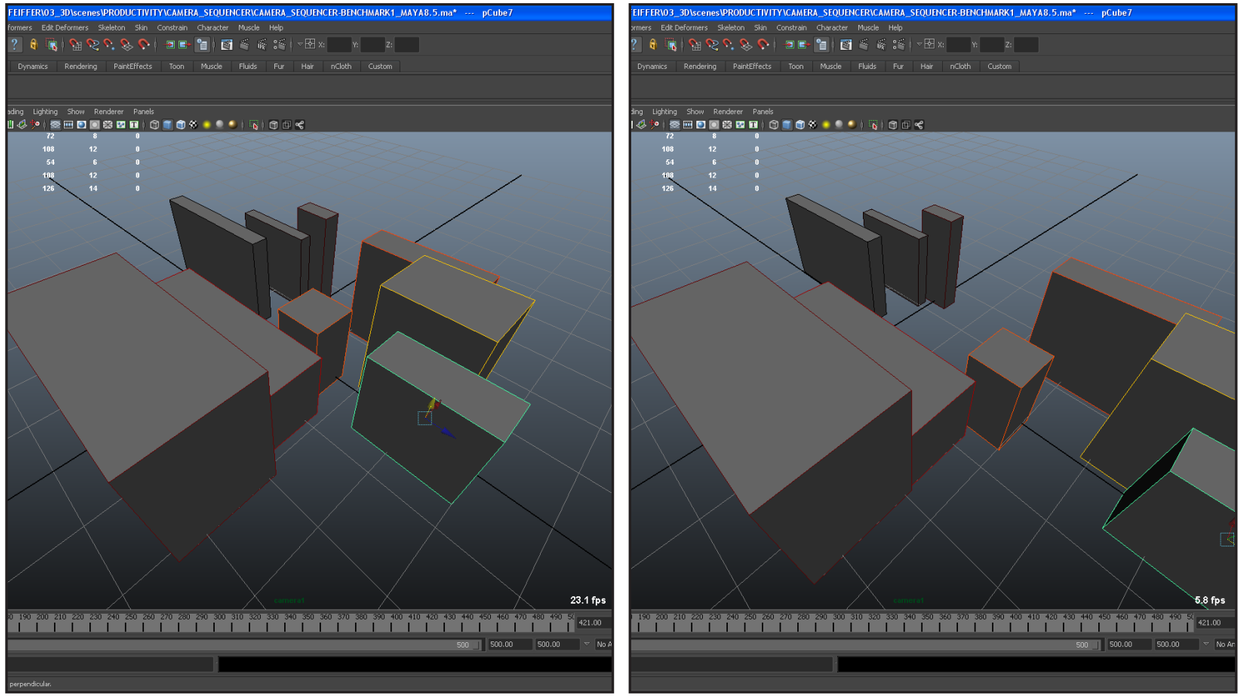
It is interesting to see what happens when you expand the reach of a powerful option beyond its original scope.

This is how Object level Soft Selection came into being: by allowing the recently introduced Soft Selection in Maya to operate beyond the confines of a single object or group of objects.

Basically, the option provides what the name implies, and works precisely in the same manner: when you set the Falloff mode for a selection to Global, Maya 2011 creates a soft selection including the surrounding objects. This group can now be modified the way a polygon mesh would under the constraints of soft selection: you can stretch, displace, scale or transform your object — and dynamically include the surrounding objects.

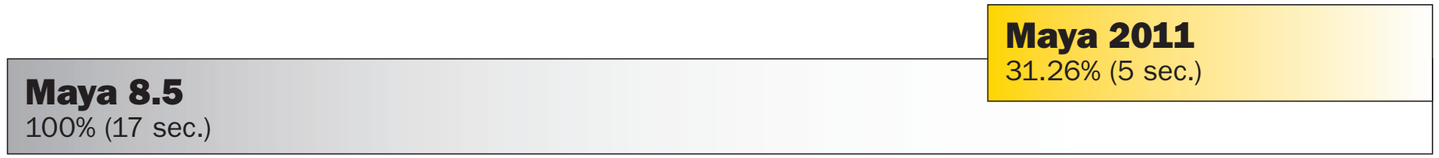
While the productivity gains are obvious, the most important aspect of Object level Soft Selection is the creative potential it provides for more quickly creating dynamic arrangements of multiple objects.

**All it takes to access Object level Soft Selection is to set the Falloff mode for a soft selection to Global in Tool Settings. Depending on the Falloff radius, more or less objects will be affected by a transformation you apply to the selected object.**




## How it works

## Productivity




Our benchmarks compared two operations using Object level Soft Selection: modifying the placement of a row of 5 object, and re-arranging a group of 15 object. The chart shows the average value for both benchmarks

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

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**Bottom Line: Object level Soft Selection in Maya 2011 can save close to an hour a month.**

*(Based on just 10 repetitions of the average benchmarked operation per day.)*

# Multi Mode Selection

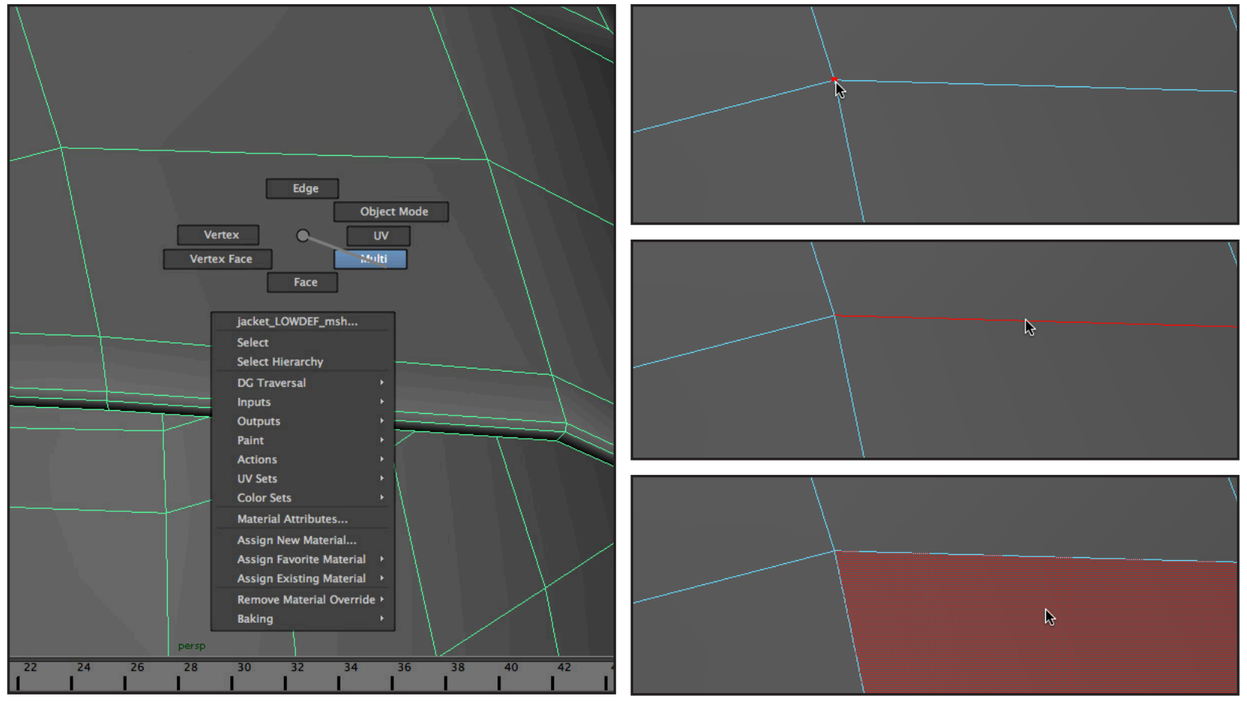
## What is it all about?

One of the first things you learn about any 3D program is how to select objects or their components, vertices, edges and faces

Switching between, say, edges and faces in Maya isn't particularly complex per se: right-click and select the component type you want to work with from the pop-up menu. The problem is, when you are in the middle of the modeling process, you tend to switch between different components a lot, and all this right-clicking and mousing around tends to get into your way over time.

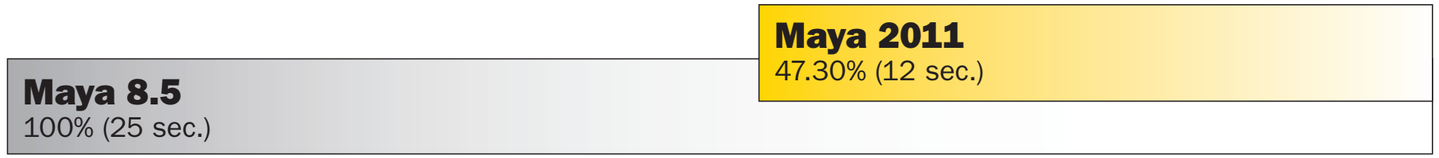
Maya 2011 helps improve this process significantly by introducing the new Multi selection mode. As soon as you activate this mode, individual components light up as you move over them with the mouse, ready to be selected. You can even work with faces, edges and vertices in the same selection, helping make the modeling process much more fluid.

**You start by selecting Multi as Selection mode from the pop-up menu Maya displays when you righ-click on an object. Once you are in Multi mode, components are displayed in red when they can be selected.**




## How it works

## Productivity




We benchmarked two distinct operations: Modifying a face, vertex and edge of a simple object, and modfying three different objects in the same fashion. The chart shows the average value for both benchmarks.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

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**Bottom Line: Multi Mode Selection in Maya 2011 can save almost one hour and 30 minutes a month.**
*(Based on 20 repetitions of the average benchmarked operation per day.)*

# Spin Edge/Merge Vertex

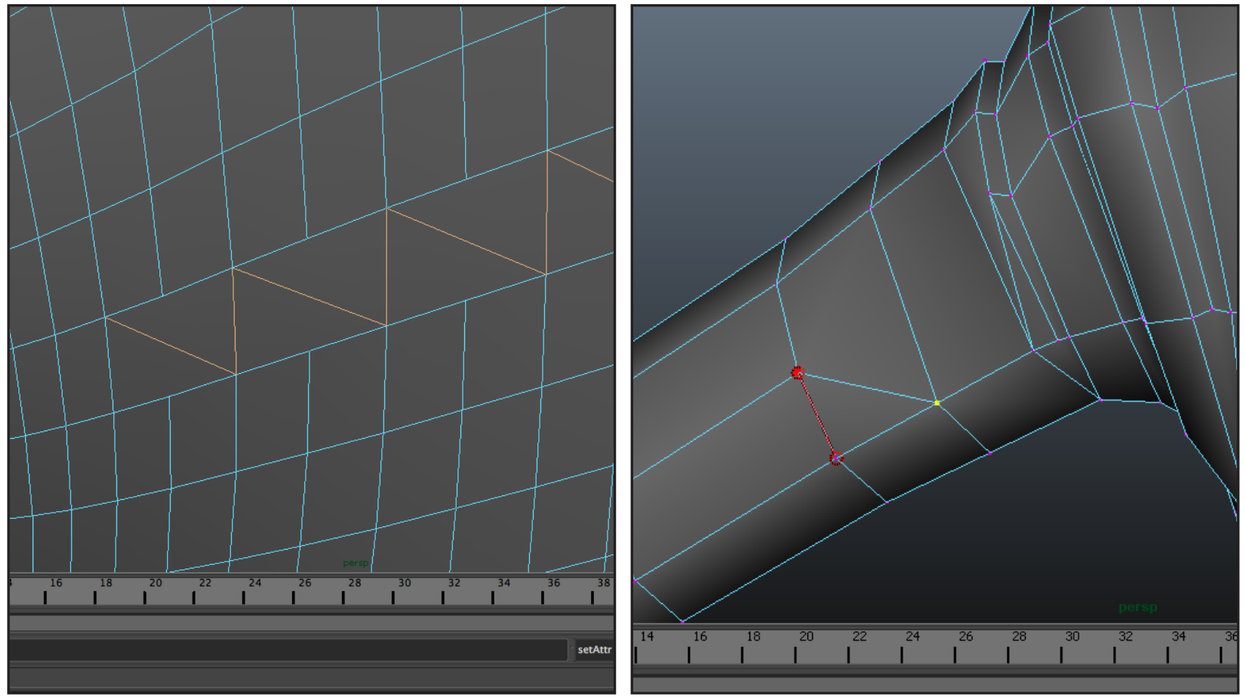
## What is it all about?

In terms of polygonal modeling, Maya 2011 offers two simple, yet extremely efficient improvements that can save a lot of time in repetitive modeling tasks.

In older releases of Maya, changing the direction of an edge was a cumbersome process, requiring you to select the edge, erase it and re-draw a new edge in the right direction — very time-consuming, especially when many edges had to be changed. The Spin Edge tool in Maya 2011 allows you to spin selected edges with a simple keystroke, and can of course be used on complex selections in a single operation.

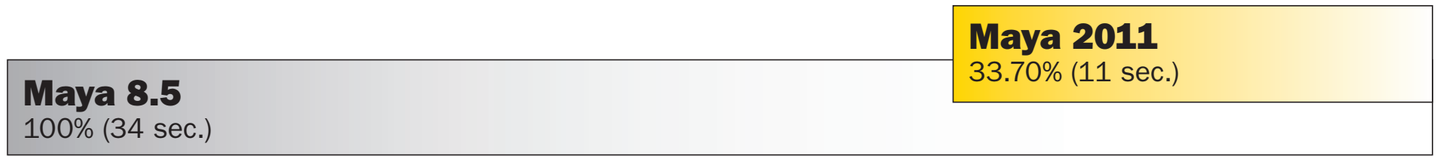
Likewise, merging vertices used to be a multi-step process that could take a lot of time for repetitive operations. The Merge Vertex Tool in Maya 2011 helps reduce this operation to a simple drag-and-drop process with the mouse.

**Changing the direction of multiple edges can now be achieved with a single keyboard command. The Merge Vertex Tool allows you to complete this operation by drag-and-drop with the mouse.**




## How it works

## Productivity




We benchmarked several operations for the Spin Edge and Merge Vertex tools. This chart shows the average productivity gain of all benchmarks.

*Reference value: Result for Maya 8.5.* ***Shorter is better.***

## The Feature

**Bottom Line: Spin Edge and Merge Vertex in Maya 2011 can save almost 2 hours and 30 minutes a month.**
*(Based on 20 repetitions of the average benchmarked operation per day.)*

# Methodology

This benchmark project was commissioned by Autodesk and independently executed by Pfeiffer Consulting.

All the productivity measures presented in this document are based on **real-world workflow examples designed and executed by professionals**.

**No scripting or programming of any kind was used** during the execution of the benchmarks.

For an in-depth description of the benchmark methodology, complete list of benchmarks and detailed results, please download the complete **Autodesk Maya 2011 Productivity Benchmark Report** at www.pfeifferreport.com



## How We Measure Productivity

### About the Autodesk Maya 2011 Productivity Benchmarks

The productivity figures in this report are part of an extensive productivity benchmarking project commissioned by Autodesk, in order to independently assess the productivity gains that the latest release of Autodesk Maya can provide to 3D professionals.

Pfeiffer Consulting independently developed and executed the benchmarks presented here, by analyzing workflows in 3D production. The benchmarks were designed and executed by experienced 3D professionals.

### How we design the benchmarks

The basic approach is simple: in order to assess productivity gains that a new release or a different product may (or may not) bring, we start by analyzing the minimum number of steps necessary to achieve a given result in each of the applications that have to be compared.

Once this list of actions has been clearly established, we start to execute the operation or workflow in each program, with the help of seasoned professionals who have long-standing experience in the field and with the programs that are tested.

In order to be certain that no lag or operator-induced delays are included in the productivity measures, each benchmarked example is cut down into small segments of three or four steps each. After an initial training phase, each segment is executed three times, and the average time is used as a result. The cumulative times for all segments that form a complete workflow example are then used as benchmark results.

### How we prepare hardware for testing

We use factory-standard configuration hardware, that has been completely re-initialized prior to benchmarking. Only the system software and application software necessary for tests, as well as all required updates at the time of testing, are installed on the benchmark system. No peripherals other than the ones required for the benchmarks are connected. Network access is only enabled when required by the benchmark protocol, or for software activation.

### Hardware

Benchmarks were conducted on two identical Dell™ Precision™ T7400 workstations equipped with 2.83GHz quad-core Intel® Xeon® processors and with 4 to 32 GB of RAM, factory-configured respectively for 32-bit and 64-bit Windows® operating systems.

### About Pfeiffer Consulting

Pfeiffer Consulting is an independent technology research institute and benchmarking operation focused on the needs of publishing, digital content production, and new media professionals.

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