Client:	**Autodesk**
Project:	**Autodesk 3ds Max 2011 Benchmarks**

Complete Benchmark Report

Pfeiffer Consulting
01001011

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About the Benchmark Project

Aim of the benchmark project

This benchmark project was defined to measure the productivity and efficiency increases linked to features and user interface improvements introduced in recent releases of Autodesk 3ds Max, as compared with Autodesk 3ds Max 2008..

Technical Details

Computer Models Used for Benchmarking

- **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.
  The workstations were factory-configured respectively for 32-bit and 64-bit Windows® operating systems.

- **System Software**

  Benchmarks were conducted using standard installations of Windows 7 (3ds Max 2011) and Windows XP (3ds Max 2008)

- **Memory**

  - The 64-bit workstation was equipped with 32GB of RAM.
  - The 32-bit workstation was equipped with 4GB of RAM.

- **Configuration**

  - All benchmarks were conducted on standard configuration workstations completely re-initialized for the benchmarks.

Application Software

The benchmarks were conducted using a default installation of Autodesk 3ds Max 2008 and 3ds Max 2011.

Default settings were used for memory allocation and other settings unless otherwise stated.

Benchmark Methodology

The Pfeiffer Consulting Methodology for Productivity Benchmarks

The Pfeiffer Consulting Methodology for Productivity Benchmarks is based on real world tasks and assignments executed by operators, rather than relying on computer scripting. These highly perfected measures provide a reliable way to document the impact of technology on productivity in a way no simple performance benchmark can. More importantly, these productivity measures document the impact of user interface efficiency as well as hardware performance.

The basic aim of the methodology is simple: to emulate the real-world productivity achieved by an experienced operator. Benchmarks are defined and executed in such a way that only the actual time necessary to achieve a given result is measured.

The Pfeiffer Consulting Methodology for Productivity Benchmarks is extremely flexible, and has been used over the last decade to measure aspects as diverse as workflow productivity of creative software; the impact of screen-size on operator efficiency; real-world productivity increases linked to different computing platforms; or hard to quantify aspects such as menu latency and user interface friction. Please visit www.pfeifferreport.com for more information and a wide variety of benchmark reports.

Benchmark Definition and Execution

All benchmarks conducted were specifically defined for this project by experienced professionals with a deep understanding of the workflows in question.

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 3 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.

No scripting was used for the execution of the benchmarks.

The use of common keyboard shortcuts and contextual menus was authorized.

Complete List of Benchmarks

Introduction

The benchmarks compared the productivity impact four important feature groups of 3ds Max: Graphite Modeling Tools, Model Optimization, the recently introduced Slate Editor, and the Character Animation Toolkit, or CAT.

For each group of features, several frequently occurring operations were defined by professional users of 3ds Max, and were executed on both releases of the software.

- For any additional questions regarding the benchmarks or the methodology, please contact research@pfeifferreport.com
- For any question regarding the features of Autodesk 3ds Max please visit www.autodesk.com

3ds Max Productivity Benchmarks

- **Graphite Modeling Tools**

  The Graphite modeling Tools benchmarks compared frequently occurring operations in polygonal modeling.

  ▹ **Selection tools:** Select Vertex Ring

  ▹ **Selection tools:** Select Face Loop

  ▹ **Selection tools:** Make complex Loop/Ring Selection

  ▹ **Selection Preview Mode:** Tweaking simple model

  ▹ **Swift Loop Tool**

  ▹ **Dot Loops/Dot Rings**

  ▹ **Shift Brush:** Create simple terrain

- **Model Optimization**

  The benchmarks focusing on model optimization measured the productivity impact of several recently introduced features: the Quadrify function, the Optimize mode for fine-tuning polygonal models, and the ProOptimizer feature.

  ▹ **Quadrify:** Remove excess vertices from polygon model

  ▹ **Optimize mode:** Manually rework simple polygon model

  ▹ **ProOptimizer:** Reduce polygon count

- **Slate Editor and Map Browser**

  The productivity impact of recently introduced Slate Editor in 3ds Max 2011 has been benchmarked through the creation and modification of complex materials.

  ▹ **Slate Editor:** Locate/change 4 parameters in complex shader

  ▹ **Slate Editor:** Locate/change maps and colors complex shader

  ▹ **Map Browser:** Create material (placement of several maps)

- **CAT**

  The Character Animation Toolkit (CAT) of 3ds Max has been benchmarked through tow different kinds of rigging operations: the creation of a simple rig of a limb, and the creation of a complete character.

  ▹ **CAT:** Simple rig - rig basic leg

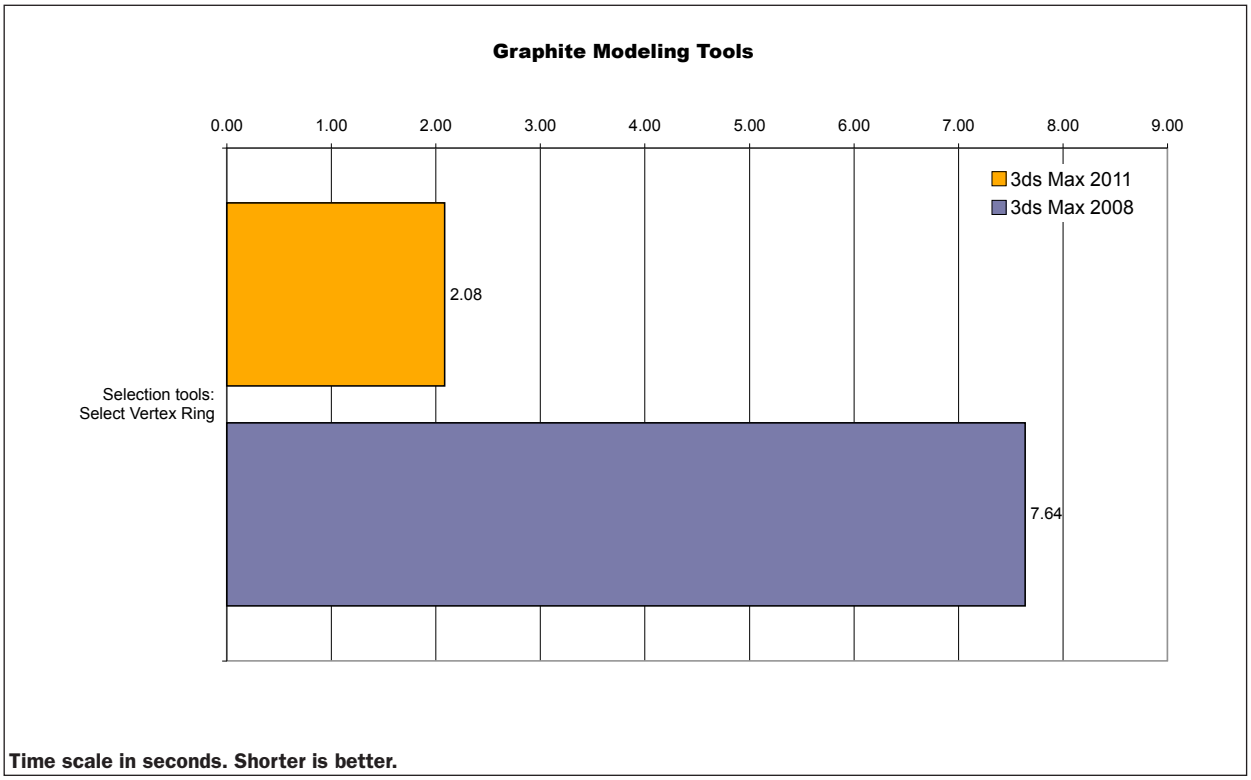
  ▹ **CAT:** Rig a simple character

Complete Results: Tables

Time in seconds. Shorter is better	3ds Max 2008	3ds Max 2011
Graphite Modeling Tools		
▹ **Selection tools**: *Select Vertex Ring*	7.64	**2.08**
▹ **Selection tools**: *Select Face Loop*	5.61	**2.96**
▹ **Selection tools**: *Make complex Loop/Ring Selection*	9.88	**3.84**
▹ **Selection Preview Mode**: *Tweaking simple model*	16.21	**9.58**
▹ **Swift Loop Tool**	29.51	**6.10**
▹ **Dot Loops/Dot Rings**	43.11	**9.10**
▹ **Shift Brush**: *Create simple terrain*	32.23	**8.00**
Model Optimization		
▹ **Quadrify**: *Remove excess vertices from polygon model*	589.00	**2.67**
▹ **Optimize mode**: *Manually rework simple polygon model*	11.09	**4.07**
▹ **ProOptimizer**: *Reduce polygon count*	66.67	**13.04**
Slate Editor and Map Browser		
▹ **Slate Editor**: *Locate/change 4 parameters in complex shader*	24.66	**9.09**
▹ **Slate Editor**: *Locate/change maps and colors complex shader*	32.79	**20.30**
▹ **Map Browser**: *Create material* (placement of several maps)	24.07	**14.31**
CAT		
▹ **CAT**: *Simple rig - rig basic leg*	75.00	**4.12**
▹ **CAT**: *Rig a simple character*	899.00	**255.00**

Time scale in seconds. Shorter is better.

Complete Results: Charts



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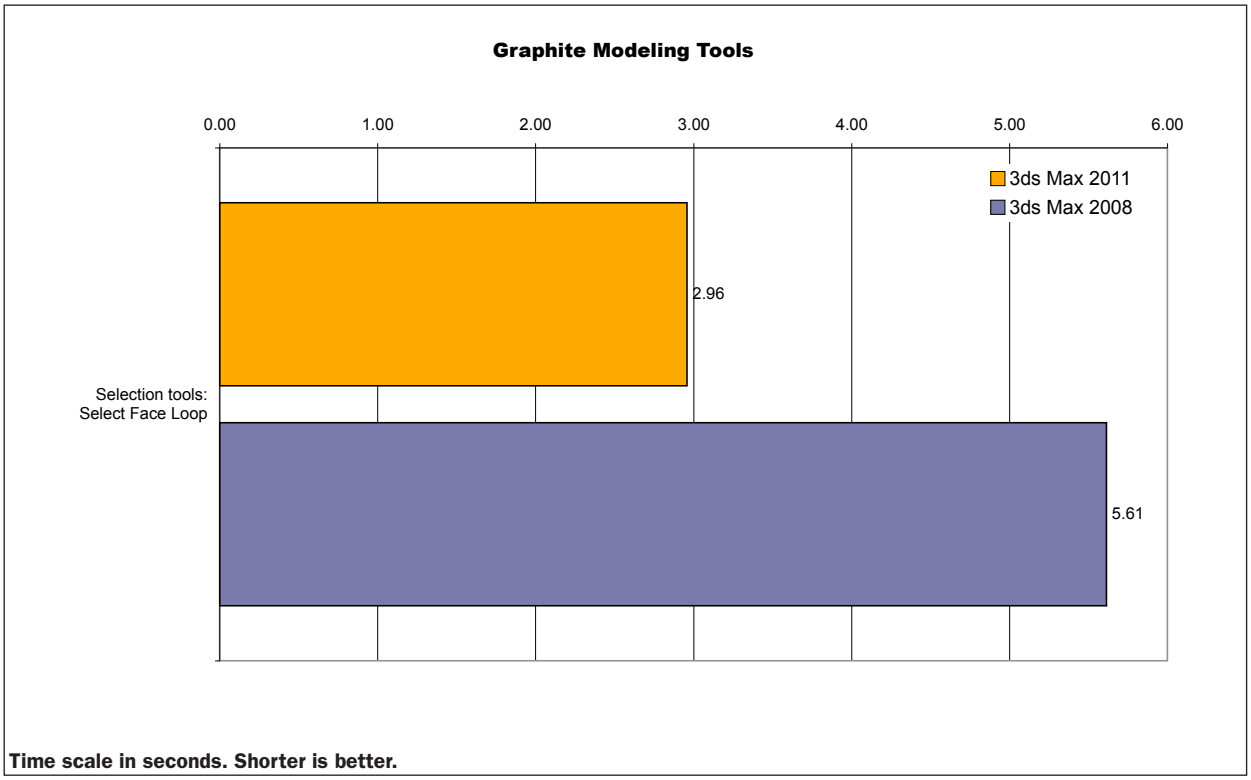

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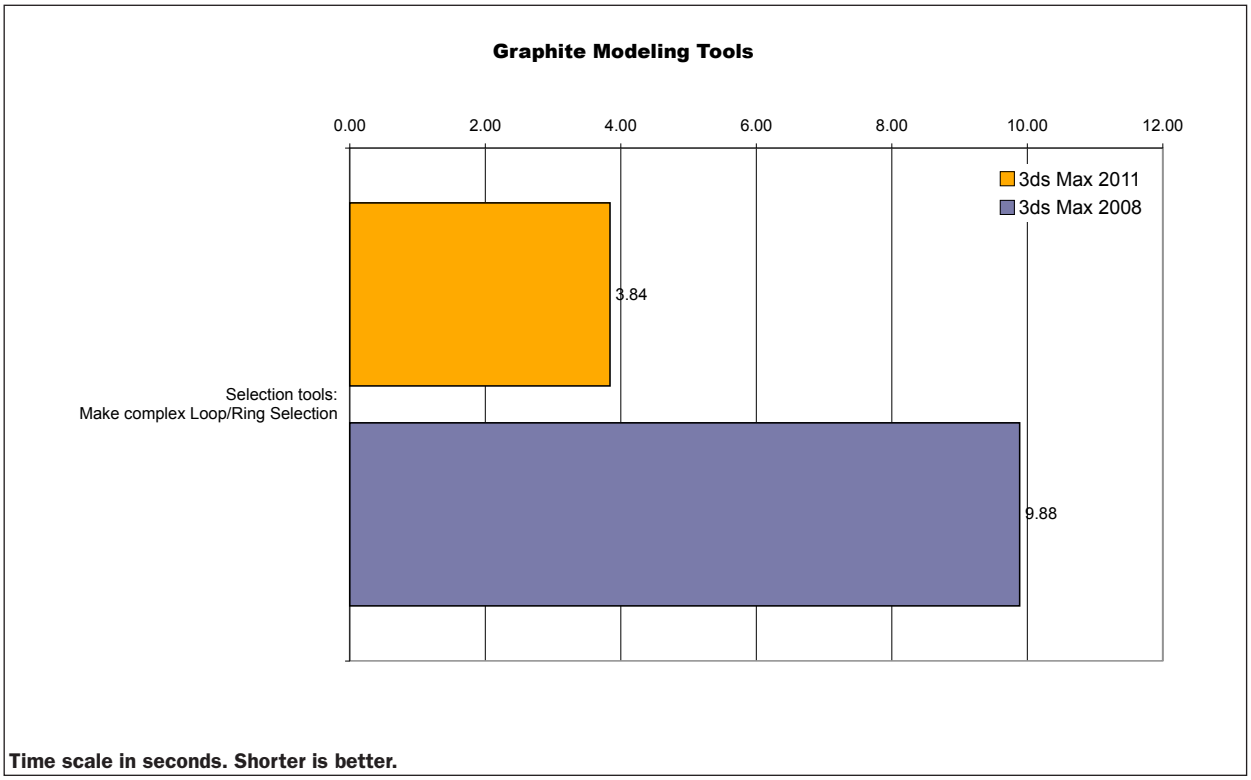

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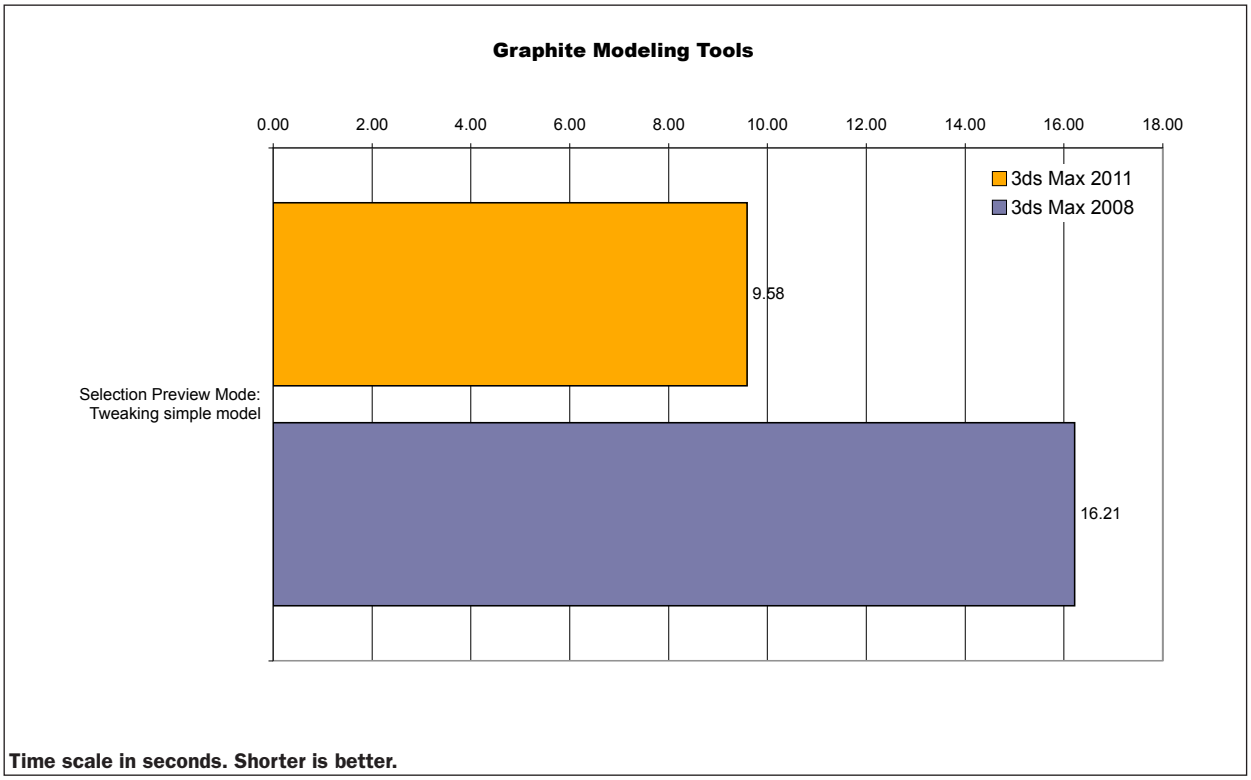

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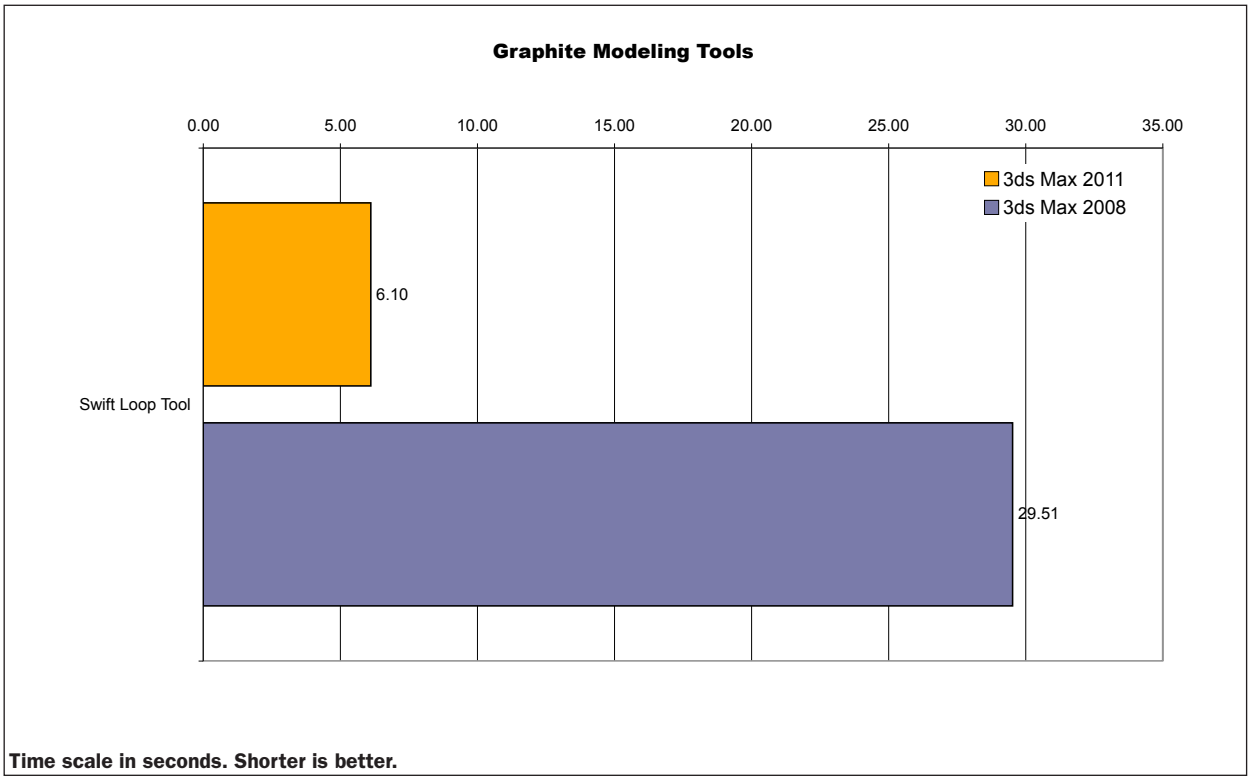

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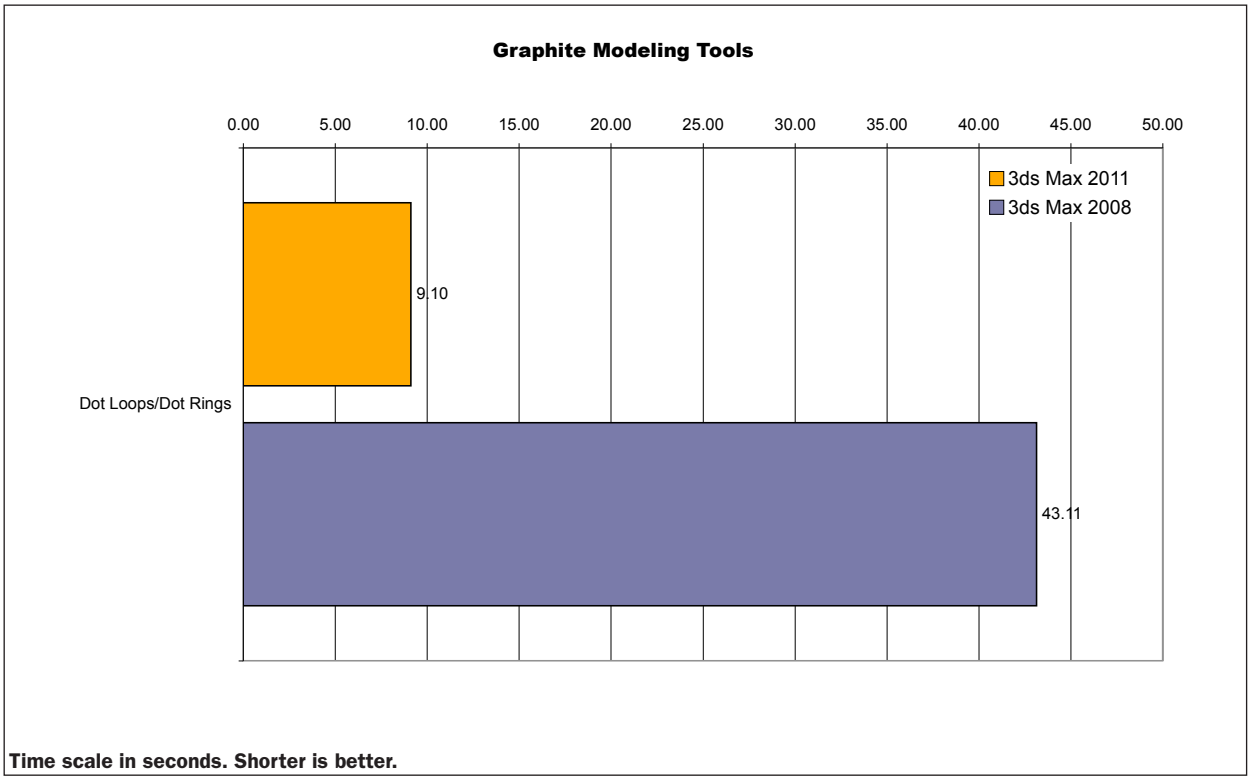

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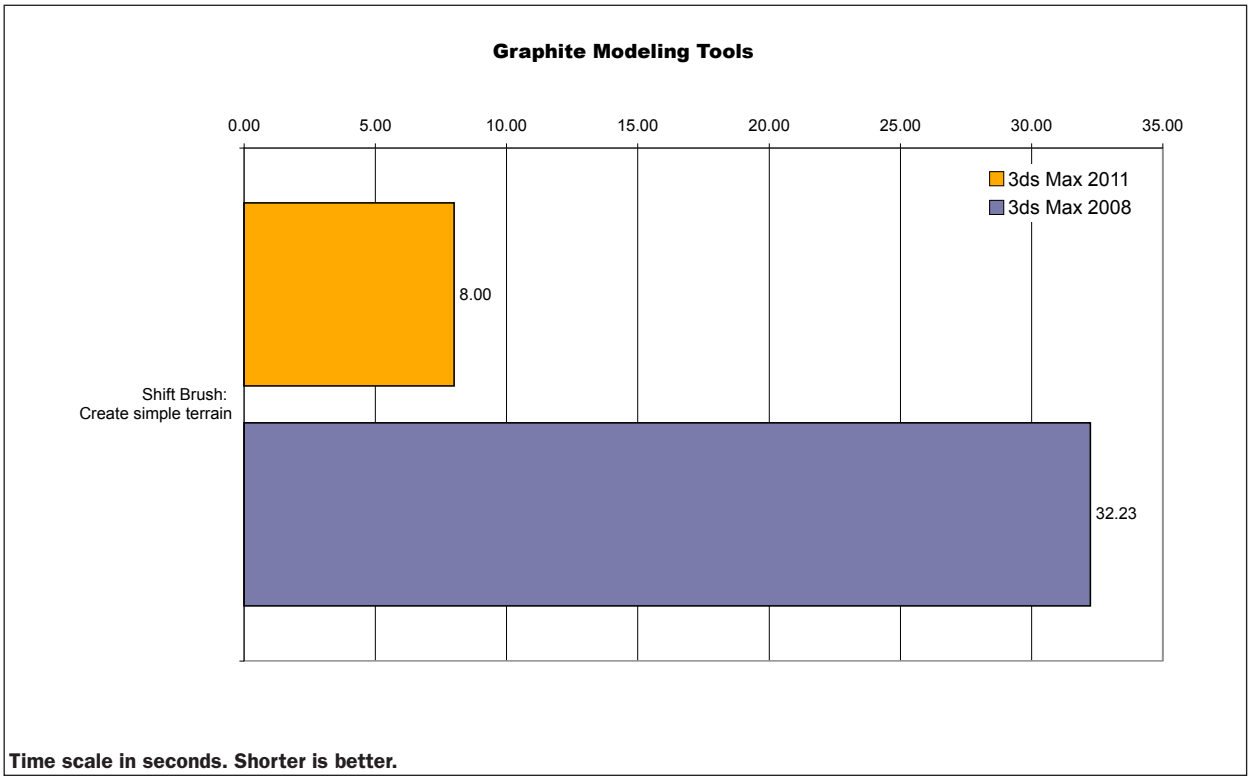

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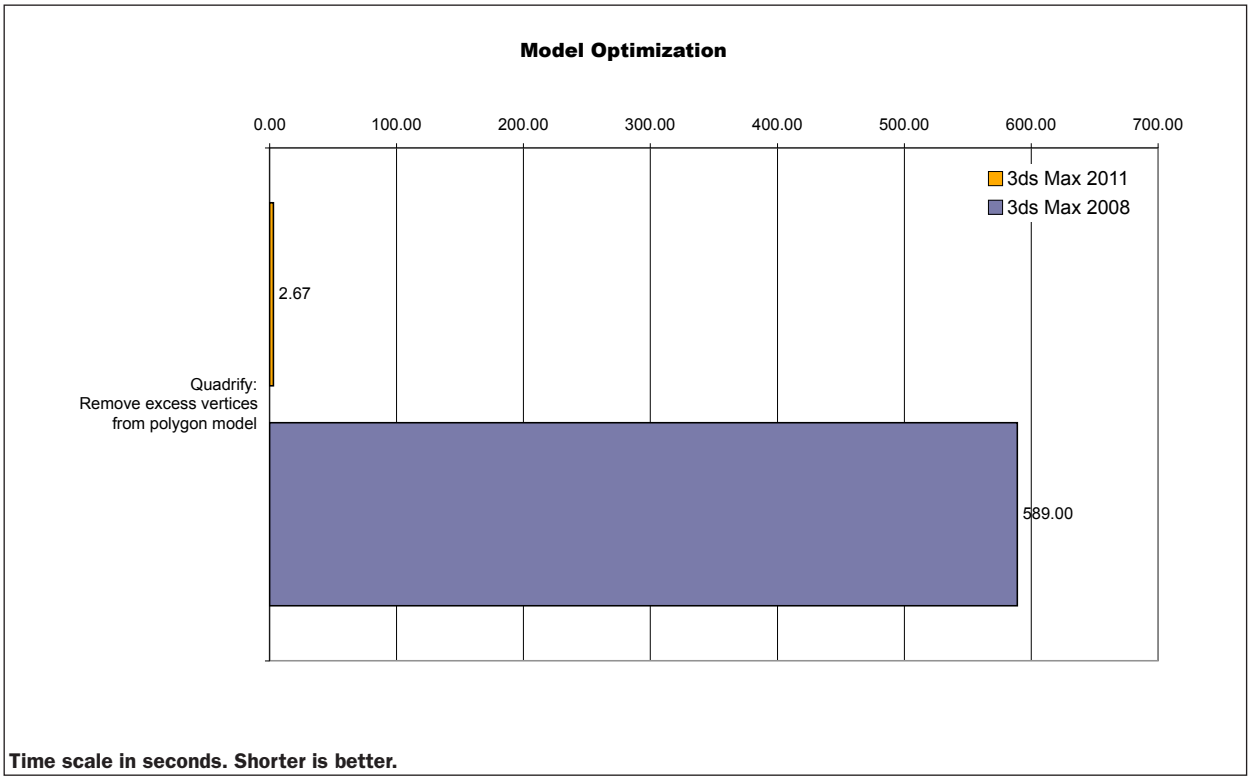

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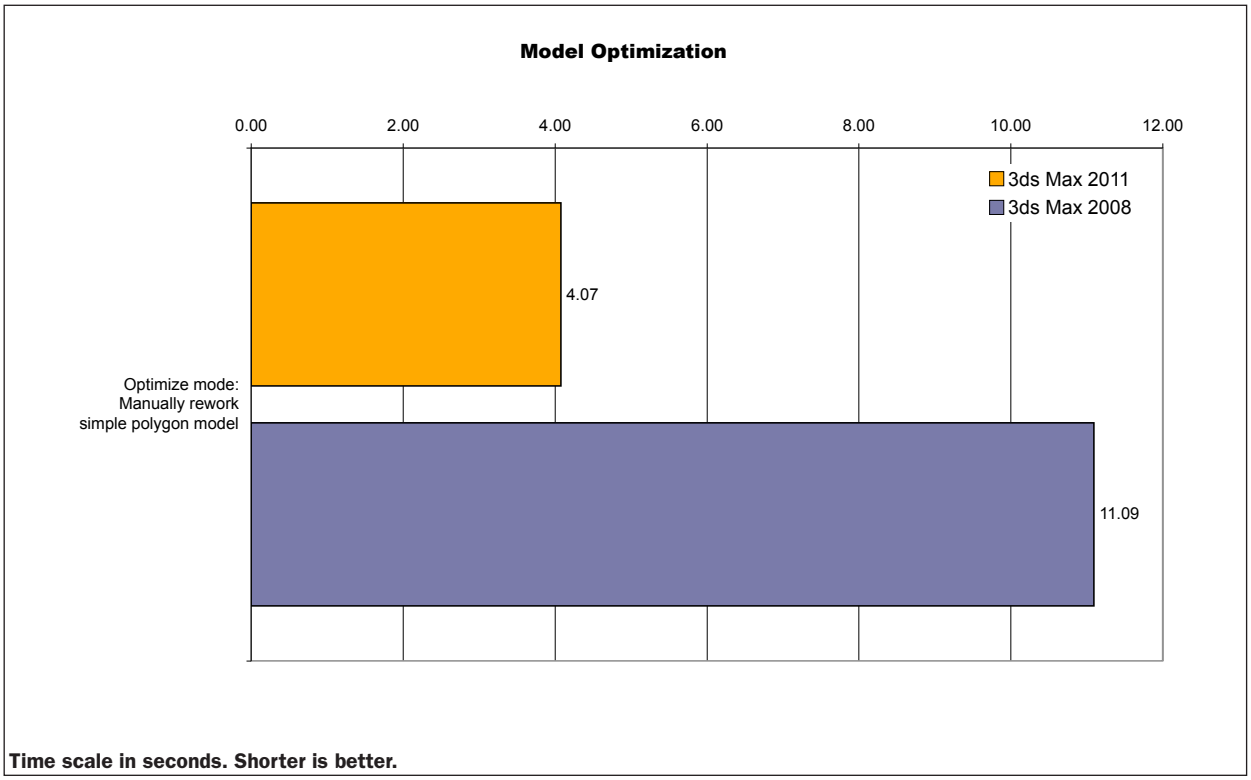

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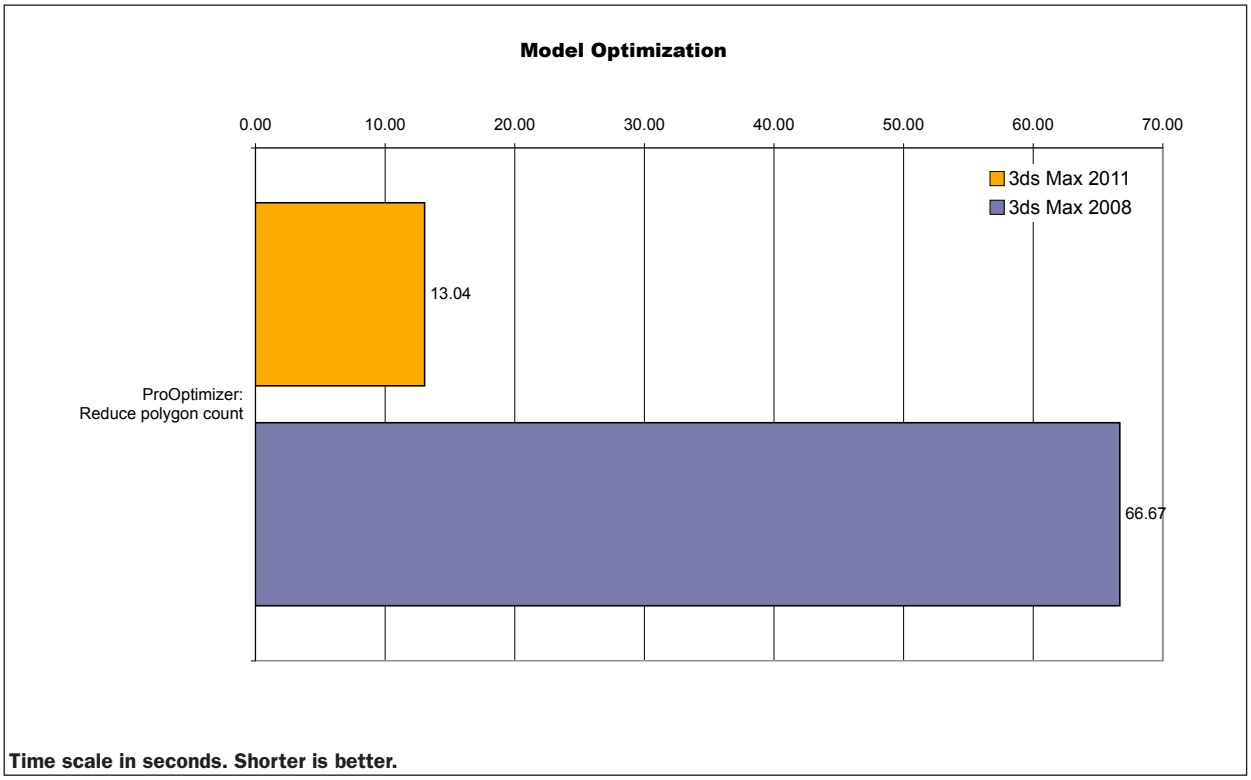

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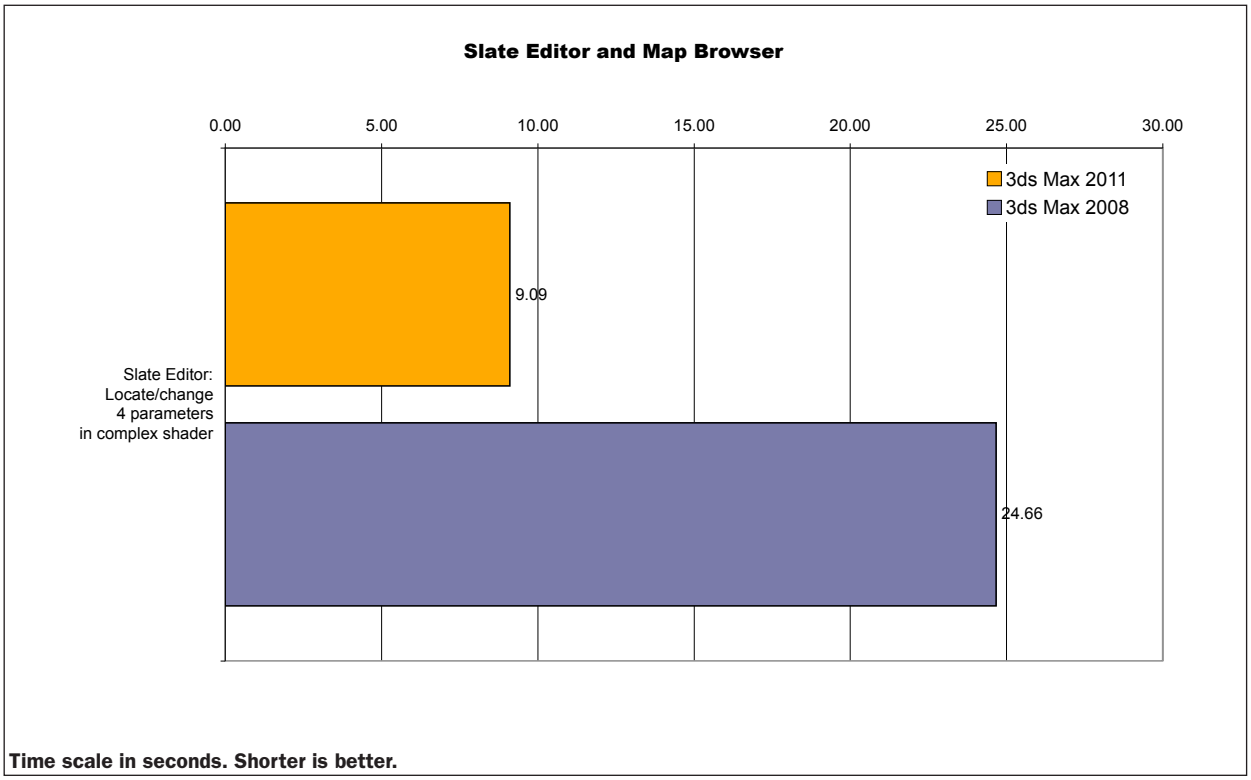

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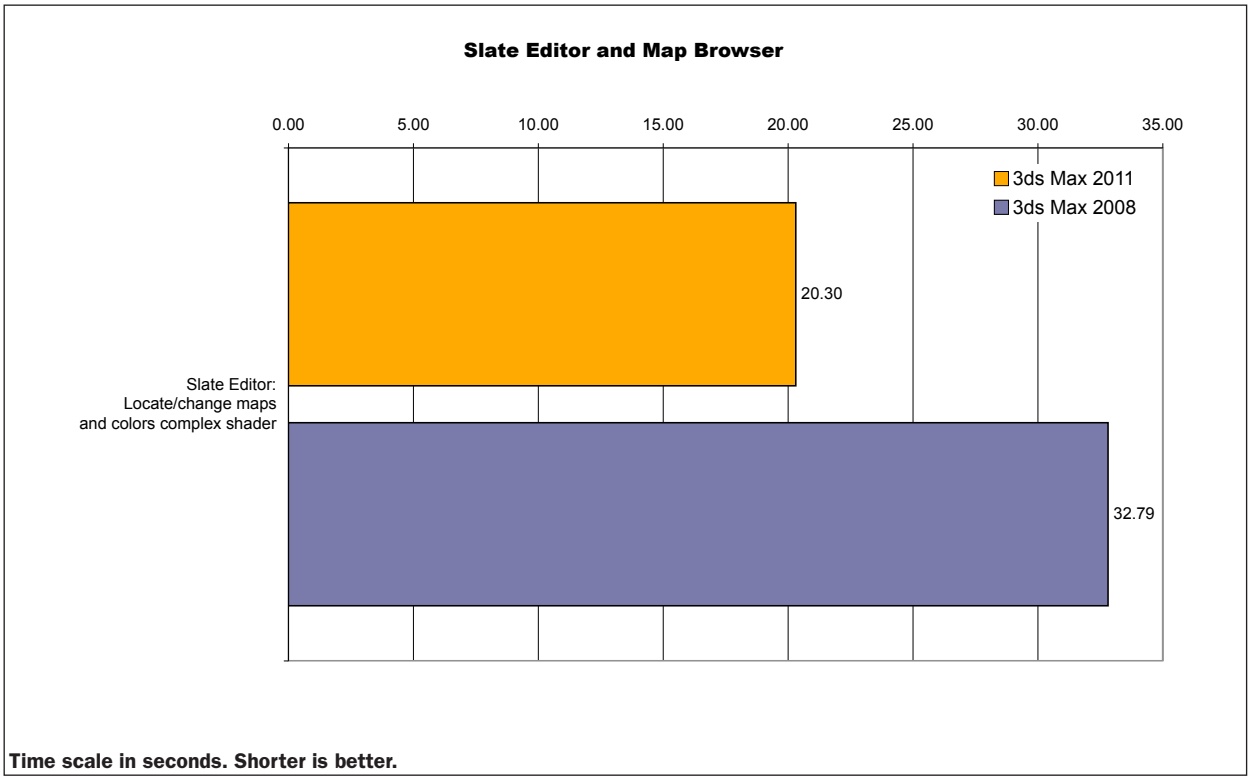

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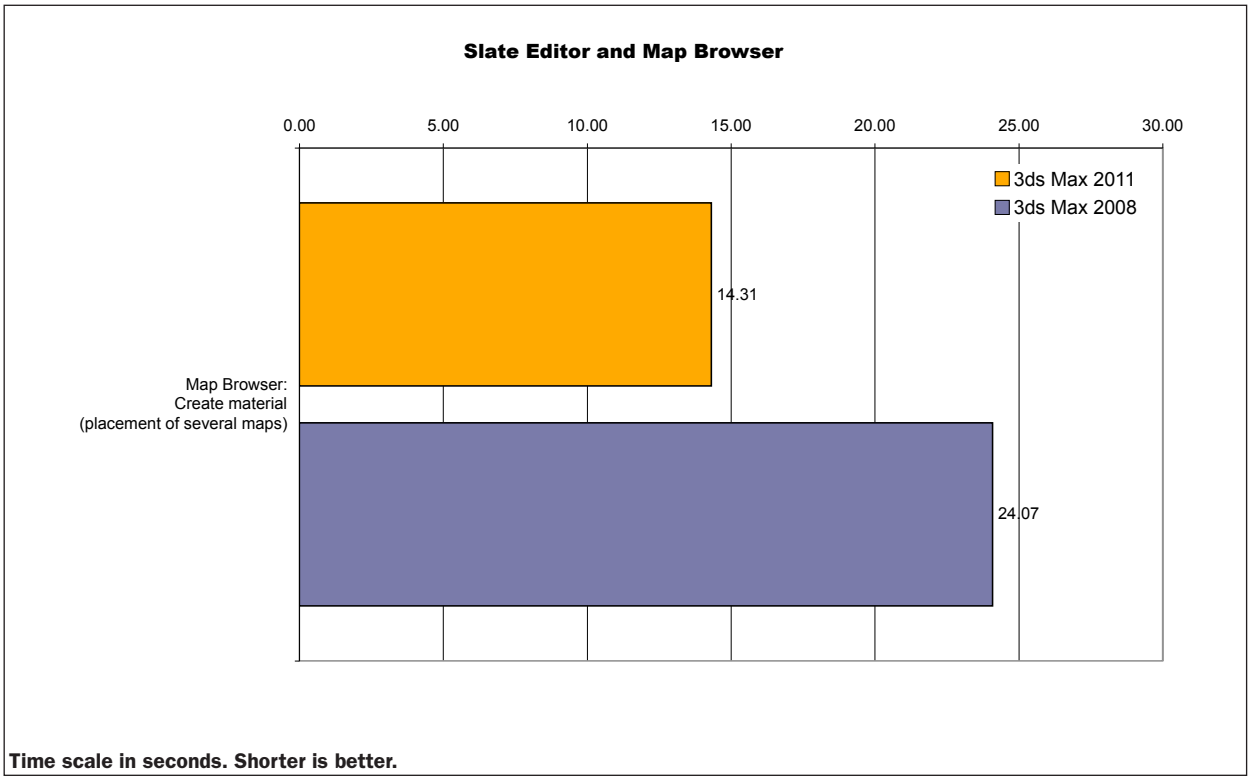

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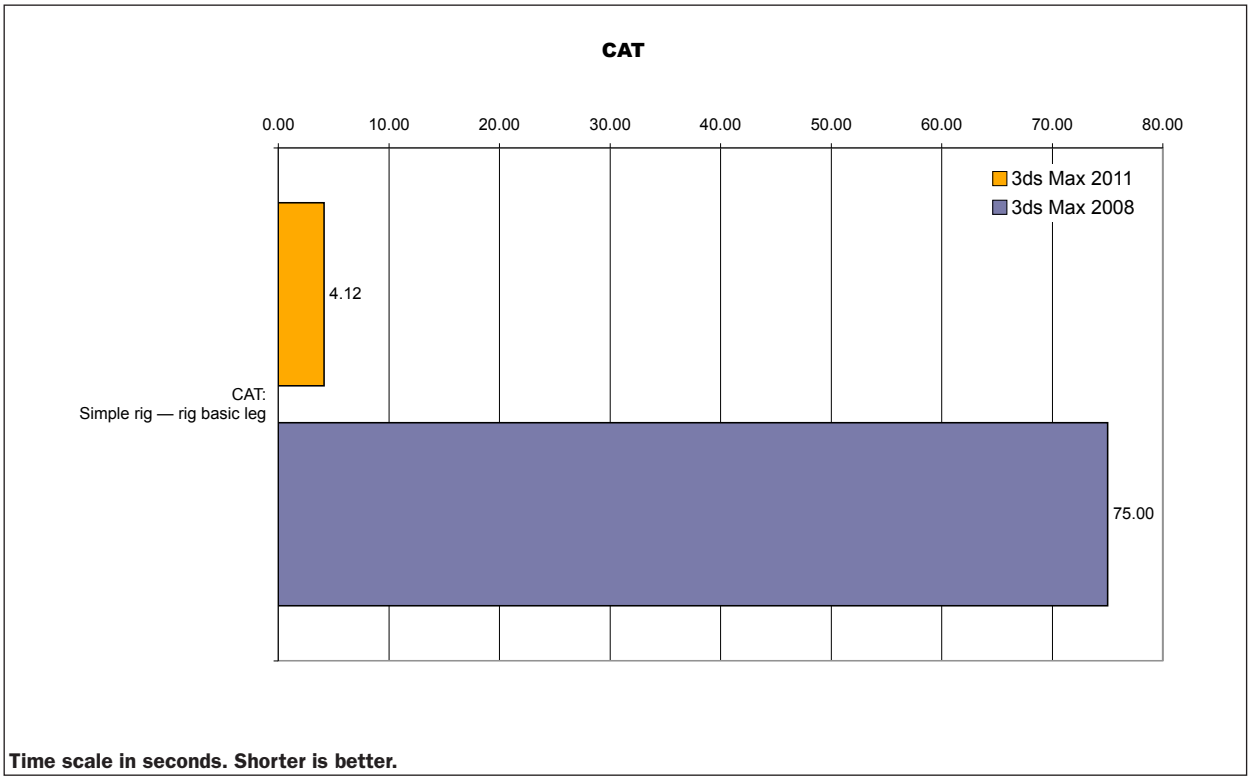

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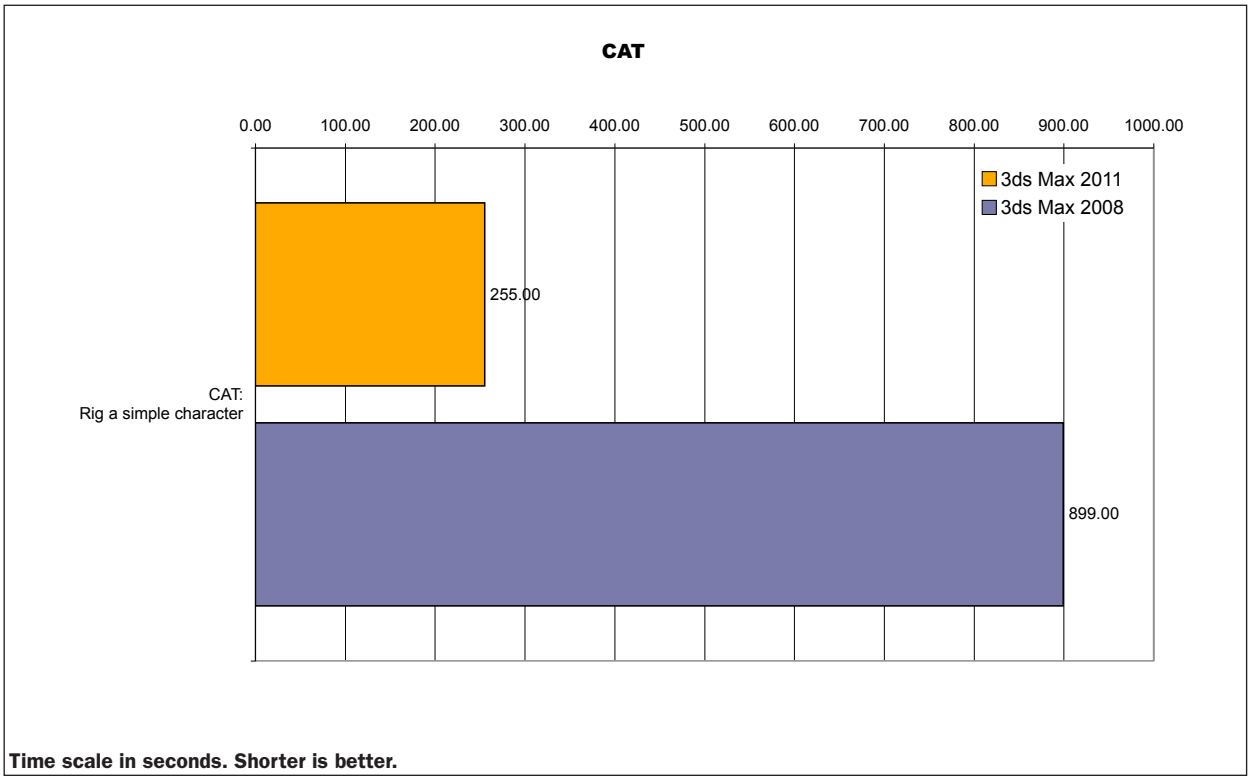

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