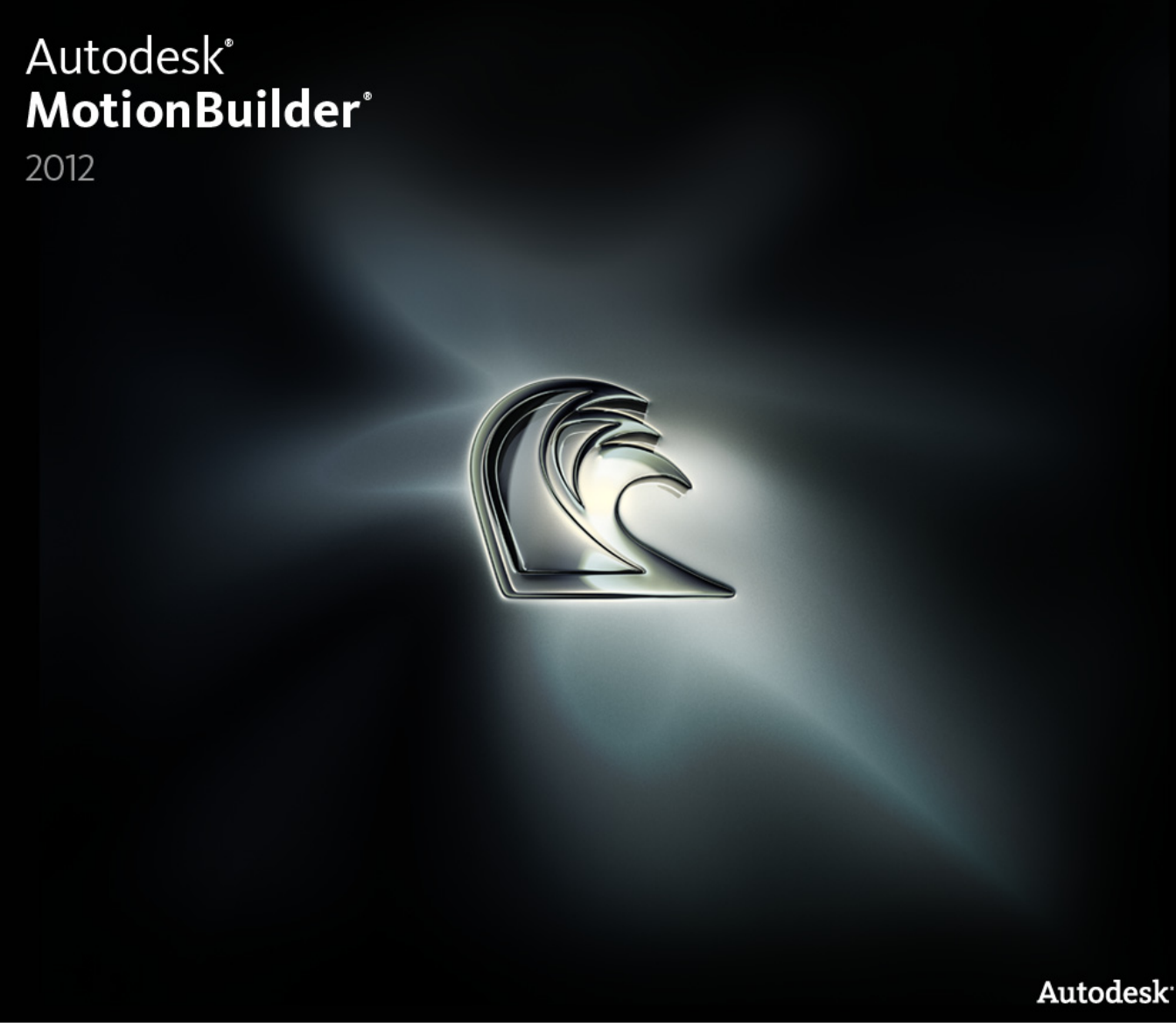
Autodesk®
MotionBuilder®
2012



Autodesk

What's New

Autodesk® MotionBuilder® 2012

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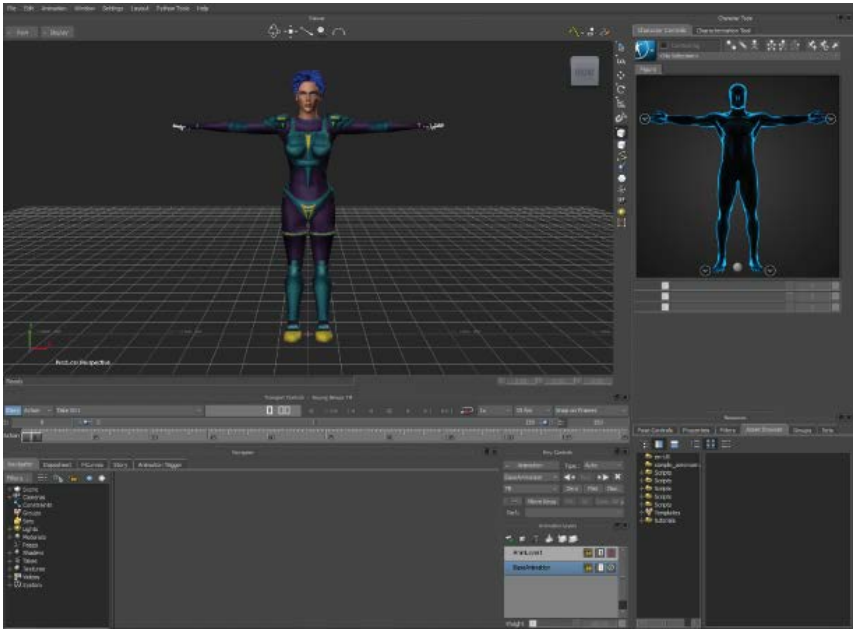
Contents

What's New

What's New in General

Updated Interface



MotionBuilder's interface has now been enhanced with a new color scheme and functionality.

These enhancements include:

Dark Look

To be consistent with other Autodesk applications, MotionBuilder has adopted a Dark Look UI.

Drag and Drop interactivity

You can now dock and undock UI elements around different parts of the UI by dragging and dropping their dotted edges.

- Rearrange the interface

Single-step interoperability

You can now send new scene data or updates to currently open scenes from MotionBuilder to Maya or 3ds Max. You can access these new options from the File menu.

- Send objects to Autodesk applications
- Send to Maya
- Send control rigs to Maya
- Send to 3ds Max

What's New in Animation

FCurves window improvements

A new FCurves window has been added to MotionBuilder to be more consistent with other Autodesk applications. FCurves window improvements include:

Multi-point editing

Multi-point editing was possible in previous releases of MotionBuilder. Now, this functionality has been visually enhanced to be more consistent with other Autodesk applications.

- Scaling keys in the FCurves window
- Editing function curves

Isolate selected curves

Quickly narrow your focus in the FCurves window by showing only the curves you want to work with. The new Isolate curve option lets you easily view curves for selected channels only.

- FCurves contextual menu
- FCurves toolbar

Auto tangent type

This new tangent type replaces the Bezier-Auto and Bezier-Clamp options. As you move keyframes in the FCurves window, Auto tangents can automatically self-adjust to ensure smooth transitions, without overshooting maximum and minimum values. Auto tangents can save animators valuable time when roughing out animation, as tangents are naturally adjusted to avoid creating spikes.

The Auto tangent type is common to several other Autodesk applications, and is the default tangent type for new keys.

- Auto interpolation
- Tangent options

Simplified toolbar option

The FCurves contextual menu now includes a Classic Mode option which toggles the FCurves window between the classic, full toolbar, and a more simplified toolbar that displays a smaller set of options. Switching off Classic Mode gives animators who primarily use MotionBuilder as part of a suite a more streamlined display of curve editing tools.

- FCurves toolbar
- FCurves contextual menu

Interpolation

The following table lists updates to interpolation terminology.

Updated Term	Replaces
Auto	Bezier-Auto and Bezier-Clamp
Fixed	Bezier-User
Stepped	Constant
Stepped Step	Constant Standard
Stepped Step Next	Constant Next

See Interpolation for a detailed explanation of each interpolation type.

Recording and storing vertex animation/point cache

MotionBuilder now supports the recording and playback of point cache data on models. Use point cache to boost performance on animation intensive scenes or to transfer animation based on complex constraint or physics set-ups into other applications. Enable recording through an option in the Model settings.

NOTE Point cache is supported by the FBX file format.

- Point Cache support
- Models settings

Physx point cache recording

Physx point cache recording is only for Softbodies and Cloth and does not support Fluids.

- Adding PhysX Physical Property assets

NURBS Curves support

MotionBuilder now supports NURBS Curves from Maya. Learn more about NURBS Curves in the Maya Help online: *http://www.autodesk.com/maya-helpdownload-enu*.

Syncronization of animation with physics

A new physics solver property has been added. Enable ForceAnimationSync in the properties window when computation of the physics takes longer than the animation.

NOTE Enabling this property will restrict animation playback to occur only when physics is live. As a result, your animation playback could be slower.

- Physics solver

Time Code property

This property can be used with a time code generating device and allows you to associate time code to animation.

- LTC device

Up-vector property

Path constraints now have an option to set an up-vector. This option can be enabled in the properties window.

- Path constraint properties settings
- Path constraint

Real Time Filter operator

This Relations constraint operator applies a low-pass filter that allows filtering of live, incoming data. Real Time Filter can be found in the Other section of the Relations constraint Object browser.

- Real Time Filter
- Relations Constraints

Displacement operator

This Relations constraint operator has been created to eliminate the dependency on display frame rates when using Relations constraints with

Physics. Displacement can be found in the Vector section of the Relations constraint Object browser.

- Displacement
- Relations Constraints

What's New in Basics

Updates to Layouts

MotionBuilder now has three basic layout types: Editing, Scripting, and Preview.

- Layouts

Creating Custom Layouts

Now, there is a new process for updating custom layouts in MotionBuilder.

- Creating, updating, renaming, and deleting a layout

Supported screen resolutions

Each basic layout now supports six screen resolutions:

- 1024 x 768
- 1440 x 900
- 1280 x 1024
- 1440 x 960
- 1600 x 1200
- 1920 x 1200

- Screen Resolutions

Configuration files relocation

MotionBuilder configuration files are now written in a folder outside of the Program Files, here: *C:\My Documents\MB*. This user-specific location is more compatible with Windows Vista and Windows 7 operating systems.

NOTE It is recommended that you do not access the old config folder even if you are using a Windows XP operating system.

Help preferences

New Help Location options have been added to the MotionBuilder Preferences to accommodate the new way that the MotionBuilder help is published.

- Help preferences

Visibility and Visibility Inheritance

The visibility of a parent node can now be inherited by all children. A new Visibility Inheritance property has been added to allow users to adjust this default.

- Showing and hiding objects in the Viewer window

Live video input

You can now use a webcam with MotionBuilder. If your device is properly configured on your system, it will appear in the Videos section of the Scene Browser when you launch MotionBuilder. To begin recording live video, enable the online option in the webcam's settings area.

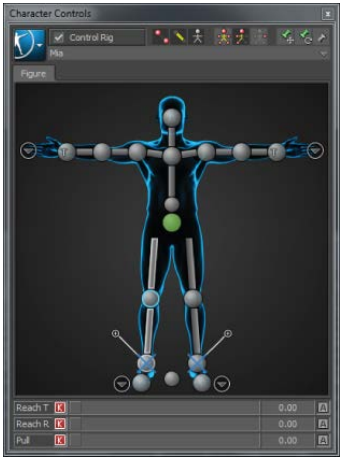
Vertex color display

Vertex color shading of models is now supported in MotionBuilder. Access this display information by switching to the Flat or Wireframe shading modes in the Viewer > Display > Models Display menu.

What's New in Character Controls

New Character setup tools

The new Character Controls window and Characterization Tool improve your character workflow.



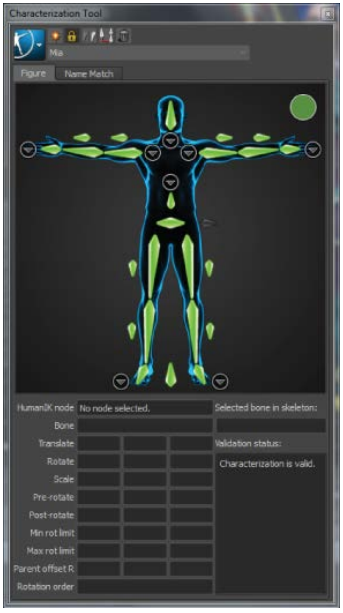
Character Controls window

The new Character Controls window gives you a visual interface for interacting with the FK and IK effectors on your Control rigs.

The Character Controls let you activate different manipulation and keying modes depending on whether you want to work on the entire body, specific body parts, or only the current selection. The Figure representation gives you constant visual feedback on which parts of the character are active for keying, reach and pull values.

Other controls let you quickly pin and unpin Control rig effectors, create auxiliary effectors and pivots, and adjust the reach and pull properties between a Control rig and its retargeting source.

- Character Controls
- HIK character

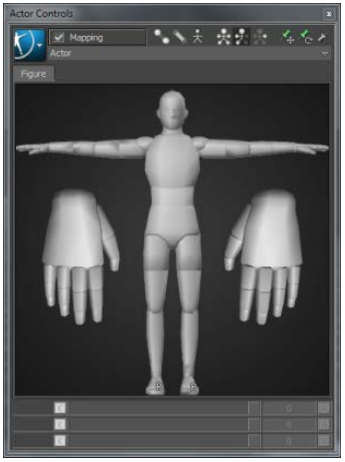


Characterization Tool

The new Characterization Tool provides character animators with an improved, more visual tool for mapping and defining the structure of characters. Designed to be consistent with other Autodesk applications, the Characterization Tool helps to enhance your character animation pipeline, with improved error reporting and an intuitive, visual interface.

- Characterization Tool
- HIK character

New Actor Controls window



With its improved visual interface, the new Actor Controls window echoes the look and feel of the new Character Controls window.

- Actor Controls window

New Character solver

Now, the default character solver in MotionBuilder is HIK 4.5.

- What's New in HumanIK 4.5 release

Maya interoperability

You can now use Send to commands to transfer character data between MotionBuilder and Maya. This means you no longer need to export your characters from Maya to FBX to import them into MotionBuilder. To see the Send to Maya commands in the MotionBuilder File menu, you must have the latest version of Maya installed on your computer.

- Send to Maya
- Send control rigs to Maya
- Send objects to Autodesk applications

3ds Max interoperability

You can now use Send to commands to transfer character data between MotionBuilder and 3ds Max. This means you no longer need to export your biped, skeleton, or character from 3ds Max to FBX to import them into MotionBuilder. To see the Send to 3ds Max commands in the MotionBuilder

File menu, you must have the latest version of 3ds Max installed on your computer.

- Send to 3ds Max
- Send objects to Autodesk applications

Dynamic Baking

Now, dynamic baking automatically detects what constraints need to be baked before sending objects to remote applications using the new single-step interoperability commands.

- Dynamic baking
- Selecting character data to update current scene

Marker types

Additional types have been added to the properties list for markers. You can choose to display a marker as any of the following marker types: cube, sphere, square, circle, hard cross, light cross, box, bone, or stick.

- Changing the look of IK effectors
- Changing the look of FK effectors

What's New in Rendering

Stereo camera

MotionBuilder now has a stereoscopic camera that is based on the Maya/Flame default stereo camera rig.

- Stereo cameras
- Camera Settings

Frustum Culling

Frustum Culling prevents the rendering of anything outside the confines of the Viewer window. This option can be toggled on and off through the new Profiling Center window.

- Profiling Center window

What's New in SDK

For more information about accessing and installing the MotionBuilder SDK Help, see About the MotionBuilder SDK Help.

New Functionalities and Exposures

Stereo camera rig New classes include FBCameraStereo, FBCameraStereotype, and FBStereoDisplayMode with extensions to FBVideoGrabOptions.

Webcam input The FBVideoIn class has been extended to include this new functionality, which is demonstrated in the new sample Python script VideoInput.py.

Vertex color display Vertex color display is now exposed. Parameter changes have been made to FBGeometry VertexInit and VertexAdd, and there have been many changes to FBGeometry. Look for objects including the name "color", for example VertexColorSet. This new functionality is demonstrated in VertexColor.py.

Hybrid motion capture device A new function is FBAnimationNode::WriteGlobalData. This functionality is demonstrated in two new C++ sample projects deviceopticalhybrid (the device) and opticalhybriddevicetester (a server to output test data).

TimeWarp curve TimeWarp curve is now exposed in the new class FBTimeWarpManager. The new sample, TimeWarp.py, shows the usage of FBTimeWarpManager by creating a model and its animation, then creating and merging a TimeWarp onto its animation node.

Optical tool exposed in Python The following new classes have been exposed in Python: FBOpticalGap, FBModelOpticalAdvance, FBOpticalSegment, FBRigidBody, FBModelMarkerOptical, FBPropertyListMarkerSegment, FBPropertyListOpticalSegement, FBPropertyListOpticalGap, and FBModelOpticalAdvanced.

Exposure of simple math functions in Python The following simple math functions have been exposed in Python: matrix, T,R,S to matrix, matrix to T,R,S, local/global conversions, vector operations, vertex operations, rotation utilities, and others. The following classes have been extended: FBVector2d, FBVector3d, FBVector4d, FBSVector, FBNormal, FBVertex, FBUV, FBColor, FBColorAndAlpha, and FBMatrix. Functionality is demonstrated in MathUtilities.py, Matrix.py, and Vectors.py.

Setting the initial state of a checkbox using FBTree FBTreeNode has a new boolean attribute, checked, that you can use to set the state of CheckBoxes created with FBTree.

Time code property support In the FBEvaluateInfo class, the functions GetLocalTime and GetSystemTime replace GetLocalStart, GetLocalStop, GetSystemStart, and GetSystemStop.

Create an auxiliary effector You can now create an auxiliary effector. The FBCharacter class includes two new functions CreateAuxiliary and GetEffectorModel. The new functionality is demonstrated in the new Python script MatchAuxiliaryEffectors.py.

MergeLayers FBTake class now includes the MergeLayers function. The new functionality is demonstrated in the new Python script MergeAnimationLayer.py.

Geometry cache recording and playback

New classes

- FBPointCacheManager
- FBDeformer
- FBDeformerType
- FBPointCacheFile

New functions

- FBCharacter::GetSkinModelList
- FBModel::NoFrustumCullingRequire
- FBModel::NoFrustumCullingRelease
- FBModel::UseFrustrumCulling
- FBModel::Deformers
- FBModel::SkeletonDeformable
- FBModel::BlendShapeDeformable
- FBModel::ConstrainDeformable
- FBModel::PointCacheDeformable

New sample

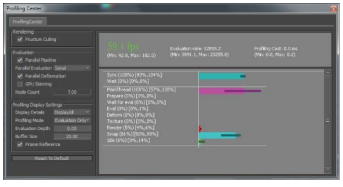
- CharacterPointCache.py shows the character point cache workflow.

Changes to the development environment

- Changes to the Open Reality (C++) SDK necessitates recompilation of plugins.
- Qt 4.7.
- HIK 4.7.
- Changes to some accessor functions: to get or set a value you now use the property instead of the function.
- MB_CONFIG_DIR: new environment variable which you can optionally set to override the default location of the MotionBuilder configuration files.
- You can now see profiling for evaluation, devices, and rendering. When profiling a scene you can now see what tasks are being performed by MotionBuilder, when, and for how long. This is implemented via the new classes FBProfileTaskCycle, FBProfileTimeEven, FBProfiler, and FBProfilerHelper. A new UI window Profile Center provides a visualization.
- New functions FBBeginChangeAllModels and FBEndChangeAllModels allow you to control scene refresh. This could be used to improve performance.
- FBFbxManager is deprecated. Functionality is moved to FBApplication.

What's New in Performance

Profiling Center



The new Profiling Center window includes tools that allow you to monitor scene performance and determine where performance cost is highest. Access this tool from the Window menu.

- Profiling Center window

What's New in File Management

Image Sequence

Now, you can import the first frame of an image sequence and have all frames of the sequence display and play back. The Image Sequence option is located on the Video settings pane.

- Video settings

Audio link to take

Assign an audio file to a particular scene take through a new option in the Audio Settings pane.

- Audio settings

What's New in Documentation

MotionBuilder Help on Autodesk.com

Starting this release the MotionBuilder Help is being published to the Autodesk.com website. By default, MotionBuilder 2012 calls the Help from a web location to provide you with the latest documentation available. This shift to publishing directly to the web means we can provide regular updates and additions to content in an ongoing manner. This change also significantly reduces the footprint of locally installed data to your machine and makes the install and uninstall of MotionBuilder quicker.

A download version of the 2012 MotionBuilder Help is available for those who prefer a local copy.

- About MotionBuilder Help
- Help preferences

MotionBuilder SDK Help

For more information about the MotionBuilder SDK Help, see About the MotionBuilder SDK Help.