3D Studio MAX® Release 3 - Industry's Most Rapid Evolution Continues

When 3D Studio MAX was released in the Spring of 1996, it delivered the first object oriented animation system designed for Windows NT. While many were taken with its unified interactive environment, or the ability to animate virtually anything and revisit operations at any time, 3DS MAX's thorough extensibility was probably its most important innovation. Studios quickly developed custom production tools, game developers forged conduits to their engines, and scores of seamless plug-in products were available to the rapidly growing MAX community in less than a year.

Kinetix built upon the solid 3D Studio MAX foundation, delivering a feature rich Release 2 just 18 months after MAX first shipped, and following that with an impressive Release 2.5 a mere 7 months later. While it may have appeared to some that 3DS MAX simply achieved feature parity with some older 3D systems, those using it realized those same abilities delivered substantially more power and possibility when integrated into MAX's unified, object-oriented NT environment. That fact was certainly not lost on many, as MAX has become the chosen tool for over 90,000 animators around the world.

Now, just 3 years after 3DS MAX was first available, and less then one year after R2.5, Kinetix is proud to announce 3D Studio MAX Release 3 – a very significant release that revolutionizes the workflow and productivity of animators and studios alike. While the 3D Studio MAX architecture has served well, the growing needs of animators and the competitive nature of their industry showed Kinetix that improvements to core areas were needed to ensure MAX artists would continue having what they required to stay in the lead for the years ahead in both efficiency and capabilities. MAX R3 does not shy away from large issues or answer problems with work-arounds – it delivers fundamental architectural innovations, and significant workflow improvements that take advantage of those innovations, to deliver an outstanding creative tool for 3D animation.

Primary 3D Studio MAX R3 Advances Include:

Modern Studio Workflow Design

Studio Workflow and Collaboration:

- Complete External Reference System, Schematic View, and ways of driving 3DS MAX externally.

Individual Artist Productivity:

- Customizable workspaces, workflow streamlining, and powerful, accessible extensibility.

Superior Output with Faster Methods

All-New Renderer

- Rewritten, allowing Plug-Ins at Core Rendering Stages for ultimate control and flexibility.

Interactive Rendering Effects

- Deliver immediate feedback for rapidly achieving stunning results.

Powerful Organic Modeling across Choice of Geometries

Soft Selections and NURMS Subdivision

- Gentle modeling effects, superior polygon control, and convincing dynamics for clay-like modeling.

Fast and Fluid NURBS

- Advances in performance and efficiency make Relational NURBS a valid choice for animated characters.

Spline-based Patch modeling

- Expanded Spline and Patch modeling complete the third geometry toolset for modeling organic characters.

Standout Game Development Enhancements

Basic Character Animation in Core

- Complete character animation tools for skinning, secondary motion, and morphing - with source code.

Unmatched Vertex and Mapping Control

- Streamlined editing interfaces, 100 vertex channels, and precise UVW mapping manipulation.

Animation Advances

Nonlinear Block Animation

- Manipulate animation sequences like clips within a nonlinear video editor.

Event Driven Reactors

- Set up animation events based on the behavior of other objects.

An initial discussion of these primary advancements follows ~

Designed for Modern Studio Workflow

The clear trend is for CG projects to continue growing in scope and for the production effort to be shared among a growing number of artists, often working at multiple sites or studios. 3D Studio MAX R3 delivers real answers to studios coordinating many artists, sharing many assets, on complex projects, in the following ways:

Complete External Reference System

- XRefs – are external references to entire .MAX file scenes, or specific objects within those scenes, and allow projects to share common 3D assets for optimal, collaborative efficiency. Changes made in source scenes are propagated throughout all scenes that reference them, along with permutations introduced in parent scenes. XRefs may be located anywhere on the network the parent scene can access. XRef path search capability is included for managing the transfers to other networks or changing asset sources.
- Scene XRefs – allow the external referencing of an entire scene as an object in the current scene. A Scene XRef is invisible to the parent scene and all animation, including transforms, are referenced. XRef Scenes can be bound to another scene object for transforms if needed. XRef Scenes are ideal for environments and game levels within which local objects are being animated, or when it's convenient to lock out editing in subsequent scenes. XRef Scenes may contain other scene or object references within them for unlimited possibilities. Scene XRef options include Merge, Update (manual and automatic), Box Display, Ignore Scene Elements (lights, cameras, shapes, helpers, animation), and Bind to Parent.
- Object XRefs – allow the external referencing of an object within another scene and allow nesting to any level. An Object XRef can be manipulated as an object in the parent scene, with its original modeling and procedural animation being referenced from the source file. While the original modeling history of the Object XRef can not be affected in the parent scene, additional modeling, texturing, and animation actions can be layered on top of what is being referenced. Object XRef options include Proxy Substitution, Proxy Display, Proxy Rendering, Merge, Update (manual and automatic), Material Update, and Ignore Animation.
- Proxy Objects – XRef Objects can point to alternative objects in any scene to present alternative geometry for viewport manipulation and/or final rendering. This ability makes the manipulation of extremely large objects in complex scenes very practical.

Managing 3D Studio MAX

- Schematic View –gives visual control over the scene's entire hierarchy, instance/reference relationships, modeling history, and material structure with clear indications of objects, animation, modeling, material, maps, and external references. Smart, elegant scene graph management eliminate overlaps and makes clear presentations of scene relationships in either References or Hierarchy display styles with straight or Bezier wires. Hierarchy structures, material assignments, object properties, and modeling history order can all be manipulated in Schematic View with selections that are either synched or independent of the current scene selections or display. Each scene may name, save, and recall custom Schematic Views. Data filtering methods include base-object, modifiers, materials, maps, controllers, bones, geometry, shapes, lights, cameras, helpers, spacewarps, selected only, visible only, and animated only.
- Public Scene Data – the metrics, contents, and external dependencies (bitmaps, XRefs, plug-ins) of the .MAX scene are now stored in structured OLE storage along with author information, comments, and custom fields. Standard Windows storage methods are used to allow the data to be easily read and written for easy integration with any Windows NT asset management tool. This allows the scene data to be easily queried from outside applications, such as Windows Explorer or the stand alone MAXFind utility supplied with Release 3. From outside of 3DS MAX, you can now perform quick queries to learn such things as which files: contain a certain object; reference a certain bitmap; are of a certain size; use a certain plug-in, etc.
- External MAX Control – is now possible with a new Global Utility Plug-in class that provides Distributed COM opportunities. Tools can now be written to drive 3D Studio MAX from outside applications across the network, without ever having to invoke the 3DS MAX interface. Typical uses for such tools would be network or batch rendering, file translation, or inclusion within compositing or editing applications.
- Network Rendering remains free and is now even easier to manage. Network Rendering can now use the network card ID in lieu of an IP address, allowing more flexible rendering farm setups and the option to use DHCP. Servers can be set to automatically restart and search for a Manager. Error reporting and configuration is consolidated for clear tracking and setup.

Designed for Individual Artist Productivity

Improving an animator's efficiency is often difficult because it is impacted by everything from a screen redraw to a button placement and then varies according to each artist's preferences. While 3DS MAX R3 refines much of the interface for fluid workflow, it more importantly gives artists the tools necessary to effect that workflow. The MAX interface is now completely open for customizing where and what tools are needed for the task at hand, allowing individual productivity to constantly accelerate.

Customizable Interface

- Custom User Interfaces (CUI) can be defined, saved, and recalled when needed to accommodate the tastes of individual artists or the needs of specific tasks. The CUI layouts include the position and display of major 3DS MAX interface elements, custom toolbar definitions and positions, button and icon definitions, tooltips, scripts, and color information. The CUI layouts are transportable between machines and are accessible across the network to ensure artists have the layout they need when they need it.
- Any number of custom toolbars can be created with any number of custom buttons. Toolbars can float, dock, or be placed in the Tab Bar for convenient access. Individual toolbars can be hidden and recalled as needed. Custom Buttons can reference keyboard shortcut actions, macros, or scripts and may have custom tooltips and images for easy recognition.
- Button faces can be text or have a customizable icon image (hundreds included). Buttons can be dragged and dropped between toolbars for rapid creation. Button images are high quality, 24-bit color with 8-bit masks to work seamlessly with your choice of Windows Interface colors. Buttons can be small (traditional MAX) or large (the new default) to comfortably accommodate a range of display resolutions.

MAXScript throughout

- Scripting is now pervasive throughout 3D Studio MAX, and provides equivalent scripting calls for nearly every API in the immense MAX SDK in addition to its own, convenient API.
- Macro Recording in the clear, concise MAXScript syntax is now available as you operate 3DS MAX. Code generation can record object names, sub-object selections, transforms, and coordinate contexts in either an explicit or relative fashion so the recorded script acts as you need it to for future situations. Macro recording is dynamic, showing interactive values for your current operation and condenses multiple, sequential operations into single lines for easy editing. Selections of a macro script record can be replayed by simply highlighting the section.
- Code from the recorder can be automatically made into a formal Macro Script by highlighting a section of the record and dragging it to a custom toolbar. Scripts assigned as custom buttons can later be edited directly from the button.
- Startup Scripts - can be defined to execute whenever starting, or resetting a 3D Studio MAX session.
- Scene Scripts - can be included to travel with .MAX scene files for custom abilities or actions.
- Plug-in Scripts - allow MAXScripts to define actual plug-ins, or subclass off existing plug-ins. This means that scripts can add functions to plug-ins, combine the actions of various plug-ins into one interface, or even abstract a complex plug-in and expose only what is relevant to the task at hand (perhaps manipulating several variables from simpler controls). Plug-in Scripts give Technical Directors everything they need to customize 3D Studio MAX functionality to perfectly fit the project methods they are establishing.

Interactive Enhancements

- Transform Gizmos extend 3D Studio MAX's popular modifier gizmo concept to include transform operations of move, rotate, and scale. Transform Gizmos give interactive choice to the transform's constrained axis or plane and can set the axis constraint temporarily or permanently for very rapid operations.
- Customizable Right-Click Menus provide command options at your mouse that are immediately relevant to the object you are working with. Menus use standard MAXScript syntax for consistent editing and leveraging of other functions. Alternative menus can be brought up with keyboard modifiers, so a range of menus is possible per object type. Menus are included that provide all the editing functions for mesh, patch, and NURBS editing and lighting adjustment. With RC Menus and Transform Gizmos, the mouse rarely needs to vary from the object.

- Track Bar provides immediate key management for selected scene elements. Located just below the Time Slider, Track Bar presents the animation keys for the current selection of objects. Keys can be moved, copied, and deleted while properties for individual keys can be viewed and edited. Track Bar includes display filters for transforms, current transform, objects, modifiers, and materials. The convenience and efficiency of Track Bar make visits to the scene's full Track View very infrequent.
- Object creation can now occur immediately and interactively upon any face, in any view, with the new AutoGrid option. The defined construction plane can also be established to continue creation along the plane defined by the clicked-on face.
- Streamlining has been done to all Editing Interfaces for rapid access to explicit modeling actions. EditMesh, EditableMesh, MeshSelect, EditSpline, EditableSpline, EditPatch and the new EditablePach now present single interfaces for all sub-object levels, with all layouts being condensed for efficient access and minimal (if any) scrolling.
- Scene Viewing and Navigation enhancements include: Viewport Clipping Planes for controlling how much of the scene is visible and selectable; Shade Selected Faces mode for clearly seeing selected regions; Interactive Orbit to rotate about an object while in the middle of editing; Sub-Object Rotate for controlling the orbit's center between the object or selection; Single Default Light for consistent viewport illumination; Animation Playback in Reverse or Ping-Pong.
- Object Property dialog editing has been extended to non-geometric objects, providing consistent, convenient access to defining states. Additional Object Properties provide selective control of: *See Through* for conveniently viewing what's within objects; *Ignore Extents* for excluding objects from zoom extents operations; and direct access to Hide and Freeze. Object Properties are also accessible from Schematic View for global property editing, even of hidden and frozen objects.

Flexible File Viewing

- RAM Player loads image sequences into RAM for playback at precise frame rates or with interactive scrubbing. Separate sequences can be loaded into A and B channels for simultaneous playback with horizontal and vertical wipe compares.
- File Sequences can be viewed frame by frame in View File. Image File Lists are automatically generated and stored when file sequences are accessed for convenient use in mapping operations.
- Directory History of recently accessed directories is maintained between sessions for convenient navigation of often used locations.

Superior Rendering Output and Faster Methods of Achieving It

3D Studio MAX R3 includes many innovations and improvements that not only produce superior images, but also make the route of achieving stunning images much shorter.

Rebuilt Renderer

A completely rebuilt Renderer retains the speed and capabilities of the previous version while delivering superior results and simplifying the process of achieving stunning images. The new Renderer makes core rendering stages, such as antialiasing, sampling, shaders, and shadows, both more accurate and flexible as new plug-in classes. This innovation allows the artist to control the overall "look" of an image in a manner that is usually only possible by completely switching renderers. The new approach also simplifies the process of creating rendering related plug-ins.

- Antialiasing Plug-ins provide the fastest way to control a rendering's look - you can easily change the look of the rendering from detailed and lifelike, to soft and shimmering, to hard and crisp with just one click. New Antialiasers include:
  - Area - Computes Antialiasing using a variable size area filter. Original 3D Studio MAX.
  - Blackman - A 25 pixel filter that is sharp, but without edge enhancement.
  - Blend - Blend between sharp area and Gaussian soften filters
  - Catmull-Rom- A 25 pixel reconstruction filter with a slight edge enhancement effect.
  - Cook Variable - General purpose filter. Values 1 ... 2.5 are sharp, greater blur.
  - Cubic - A 25 pixel blurring filter based on a cubic spline.
  - Mitchell-Netravali - Two parameter filter: Trade off blurring, ringing, and anisotropy.

  - Quadratic - A 9 pixel blurring filter based on a quadratic spline.
  - Sharp Quadratic - A sharp 9 pixel reconstruction filter from Nelson Max.
  - Soften - Adjustable Gaussian softening filter. For mild blurring.
  - Video - A 25 pixel blurring filter optimized for NTSC & PAL video applications.
  - Many more AA Filters available within the MAX SDK for development use.
- Shader Plug-ins provide a rapid route for introducing new, high quality surface shaders. New Shaders include:
  - Anisotropic – for including directional highlights on surfaces to simulate things like stainless steel, satin ball, or combed hair.
  - Multi-Layer –for layering directional highlights (essentially a layered Anisotropic) that is superb for simulating lacquered surfaces, automotive paint glazes, or even CD's.
  - Oren-Nayar-Blinn – a very soft shader for dusty appearances that uses the Oren-Nayar model with a Blinn specular component.
  - Strauss – a deceptively simple shader provides "natural", intuitive results.
  - Phong, Metal, Blinn – the original MAX shaders have been revised into the new shader model, and include enhancements that provide additional control and higher quality.
- Pixel Sampler Plug-ins provide total control over the manner shaders evaluate their sources. Different conditions and sources can require different methods. New Pixel Samplers include:
  - Adaptive Halton – 4-40 samples in a quasi-random pattern in the X and Y.
  - Adaptive Uniform – 4-36 samples in a square, regular pattern.
  - Hammersley - 4-40 samples pattern regular in the X and quasi-random in the Y.
  - MAX 2.5 Star – 5 samples in a star pattern, revised into the new model.
- New Materials and Maps include:
  - Shellac – layers two materials for transparency control.
  - Composite – layers up to nine materials for sophisticated compositing.
  - Morpher – controls the material transitions for the Morpher (100 channels).

Interactive Render Effects

3D Studio MAX R3 and its new Renderer further streamlines the creation of compelling images with a new method of immediate post effects called Render Effects. With Render Effects, post processes special effects are applied immediately after a frame is rendered, and are interactively adjustable thereafter, giving immediate feedback for making artistic decisions.

- Render Effects is a new, modeless module that integrates seamlessly with the rest of 3D Studio MAX. All parameters are animateable and controllable in Track View. New Render Effects plug-ins may be reordered in a queue and also merged from other scenes.
- Interactive Render Effects include:
  - Lens Effects – with Glow, Ring, Ray, Auto/Manual Secondaries, Star, and Streak elements.
  - Depth of Field – by camera or focal node for interactive camera focusing.
  - Blur - with uniform, directional, and radial methods for a wide range of effects.
  - Film Grain – with background isolation, for matching film images.
  - Color Balance – with background isolation, for composite matching.
  - Brightness/Contrast - with background isolation, for composite matching.
  - File Output – at any stage to RGB, alpha, grayscale, z-depth.

Rich Pixel Format (.RPF) – the New G-Buffer

The concept of embedding 3D information into 2D images (first introduced 3 years ago in MAX R1) and made popular by use in compositing products like Discreet effect*, has been radically expanded for unlimited post production opportunities with the new RPF format - being first used with MAX R3's new Render Effects.

- Velocity and Sub-Pixel Weight buffers added allowing post process manipulation of motion blur and other animation based events. Scene name tables and min/max bounds for relevant channels embedded in the RPF give other applications the information they need to relate intuitively with the 3D scene information.

- Per Channel Layer System provides all the information necessary to completely remove an object from a 2D image without leaving a trace. This power allows nearly any special effect to occur and easily handles overlapping transparencies, allowing complex operations like depth of field through transparent objects and glowing eclipsed objects.

Redesigned Lights

Lights have been combined into a single object allowing the type (omni, spot, direct, etc.) to be changed at any time, while the interface has been reorganized for efficiency.

- Atmospherics and Render Effects can be assigned and controlled from the light's panel. New abilities include affect ambient only and separate decay start ranges.
- Significantly more accurate shadows as Shadow Generation becomes a new plug-in class. New shadow generators allow shadow color (by tint or map), density, affect shadow color, color and opacity impact within atmospherics, and local quadtree depth control for Raytrace shadows.

Adaptive Displacement for Any Geometry

- Adaptive Displacement supported in polygon meshes, with individual quality control provided per mesh object. Presets included for convenient editing.
- NURBS displacement control optimized, and separated into its own category, allowing separate detail settings for displaced, trimmed, and whole NURBS surfaces. Presets included for convenient editing.
- Displacement Approximation modifier provides adaptive displacement control for any parametric object or geometry class within 3D Studio MAX (even new geometries introduced from third party developers).

Organic Modeling across Choice of Geometries

Organic modeling is easier than ever with the significant enhancement made to 3D Studio MAX software's already extensive Polygon, Patch, Spline and NURBS modeling tools. The even and thorough support of modeling methods within 3D Studio MAX R3 ensures animators can freely choose the approach that best fits their project's needs.

Soft Selections

Soft Selections extend a region of diminishing influence from around the actual "hard" selection of vertices, softening the overall effect of subsequent operations or influences. The extent, hardness, and fall-off of Soft Selections can be interactively revisited at any time to ensure just the right modeling or animation result. Soft Selections are perfect for rapid, gentle modeling effects that would otherwise be extremely tedious to duplicate. Soft Selections can also be used in conjunction with forces or even Flex, for fast convincing dynamics of things like flowing cloth.

Interactive Operation at Defining Levels

The result of the MAX Modifier Stack can now be shown while within editing operations like Edit Mesh, Editable Mesh, Mesh Select, and Volume Select. This deceptively simple ability allows basic polygonal geometry to be manipulated with familiar editing tools while affecting the model as if the mesh was a NURBS control lattice. This ability also provides interactive feedback of a Soft Selection's impact to later modeling operations.

Polygon Subdivision (MeshSmooth & NURMS)

Advances in MeshSmooth, 3D Studio MAX's popular polygon subdivision tool, give artists fluid control over meshes in a way that usually is only associated with higher order surfaces. New abilities in MeshSmooth include:

- NURMS (NonUniformally Rational MeshSmooth) output approximates a NURBS surface from the defining vertices of the polygon lattice. Weighted vertices and edges for NURMS provides a true, clay-like modeling feel. NURMS vertex weights can also be controlled in the base EditableMesh or EditMesh modifier.
- Separate interactive and rendering subdivision levels allow complex results to be easily manipulated. Subdivision recursion limit increased to 10 levels. Keep Faces Convex option included for dealing with irregular meshes.

Polygon Mesh Modeling – Streamlined and Expanded

The commitment to mesh modeling continues with extensive improvements for fluid workflow and advanced operations. New abilities include:

- Editable Mesh Object – the base level for explicit mesh editing has been streamlined by consolidating all sub-object levels and into one, highly efficient interface. In the process, many abilities have been expanded:
  - Object Editing gains controls for adaptive displacement, Explode, View/Grid Align, and Remove Isolated Vertices.
  - Vertex Editing gains interactive Soft Selection, Chamfer, NURMS weighting control, Slice Plane, Ignore Backface, Hide/Unhide, Make Planar, Attach, and Make Planar.
  - Edge Editing gains interactive Soft Selection, Chamfer, NURMS weighting control, Divide at mouse pick, Extrude about local/common normal, By Vertex selection, Attach, View Align, Grid Align, Make Planar, and Remove Isolated Vertices.
  - Face Editing gains interactive Soft Selection, Bevel and Extrude about local/common normal, Arbitrary face creation, Slice Plane, Face Cut, Divide, and Remove Isolated Vertices.
  - Right Click Menu includes all mesh editing commands for rapid access
- Edit Mesh – the procedural version of EditableMesh now mirrors all capabilities of the base mesh object and maintains the new streamlined interface. Edit Mesh matches all aspects of EditableMesh and will continue to mirror it in the future.
- Mesh Select – gains a streamlined interface, interactive Soft Selection control, and Select by Material ID.
- Volume Select – gains interactive Soft Selection control, arbitrary volume selection (by mesh object), Select by Material ID, Select by Smoothing Group, Select with Texture Map.

Patch & Spline Modeling – Greatly Expanded

Numerous spline and patch modeling enhancements brings Bezier patch modeling on par with the robust Polygon Mesh and NURBS modeling. New additions to this great character modeling choice include:

- Surface Tools – the popular Digimation product is now included in 3DS MAX R3, and provides an intuitive approach to building patches from spline networks. The inclusion of Surface Tools promoted many enhancements to the other spline and patch modeling to make spline surface modeling even easier and a natural choice for organic modeling.
- Edit Patch - the procedural modifier for Patch editing has been streamlined by consolidating all sub-object levels and into one, highly efficient interface. Edit Patch has also been redesigned to require minimal memory when storing edits. In the process, many abilities have been expanded:
  - Vertex Editing gains Bind/Unbind (for local patch subdivision), Hide/Unhide, and Attach.
  - Edge Editing gains Hide/Unhide and Attach.
  - Patch Editing gains Extrude, Bevel, Hide/Unhide, and local Smoothing Group assignment control.
  - Right Click Menu includes all patch editing commands for rapid access
- Editable Patch – a new base level object for explicit Patch modeling matches the interface and all abilities of the new Edit Patch while adding the ability to animate control vertices and their weights.
- Editable Spline– the base level for explicit spline editing has been streamlined by consolidating all sub-object levels and into one, highly efficient interface. In the process, many abilities have been expanded:
  - Vertex Editing gains Fillet, Chamfer, Bind/Unbind (for creating subdivision patches), Intersection Break, Hide/Unhide, Create Spline, and Attach.
  - Segment Editing gains Hide/Unhide, Create Spline, Material ID, and Attach.
  - Spline Editing gains Trim, Extend, Explode, Mirror about pivot, Material ID, and Attach.
  - All Editing gains the ability to show Vertex numbers and constrain spline creation by 90 degrees or the current angle snap setting.
  - Right Click Menu includes all spline editing commands for rapid access.
- Edit Spline –the procedural version of Editable Spline, now mirrors all capabilities of the base spline object and maintains the new streamlined interface. Edit Spline matches all aspects of Editable Spline and will continue to mirror it in the future. Edit Spline has also been redesigned to require minimal memory when storing edits.

NURBS Modeling – Speed and Efficiency

NURBS modeling enhancements concentrated on speed - in both performance and workflow.

- Substantial Performance Increases in core procedures make complex operations like UV Loft creation very quick. Very fast procedural modeling, skinning, and animation of NURBS with: Shaded Lattice display for treating surfaces as light weight polygons; and a Relational Stack option for controlling evaluation.
- Faster Workflow for the majority of creation methods and procedures. Clear navigation of even the most complex NURBS structures provided by Schematic View. Right Click Menu includes all NURBS editing commands for rapid access.
- Surface Approximation includes separate settings for basic, trimmed, and displaced surfaces giving just the right detail per situation. Presets are included for quickly setting low, medium, and high resolution results. Settings are also definable for individual surfaces for maximum control. New total face count option provided for intuitive limit setting of adaptive results.
- Additional enhancements include Surface Fillet, Curve/SurfEdge, superior Texture Mapping editing and control, intuitive Blend continuity control, and the ability to draw curves across 3D viewports, and IGES support for leveraging NURBS models from other applications.

Standout Game Development Features

MAX R3 builds on its popular, interactive UVW mapping by greatly increasing vertex data opportunities and paying close attention to the needs of Game and Interactive Content development:

Core Character Animation Tools

3D Studio MAX R3 includes new core character animation tools for skinning, secondary motion, and morphing, with critical source code in the MAX SDK for coordination with exterior animation engines.

- Skin - Characters can be deformed with either splines or bones, and carefully controlled with volumetric envelopes and paintable falloff weights with the new Skin feature. Squishy, playful animation.
- Flex – provides cartoon-like, and even cloth-like, soft-body dynamic effects are provided by Flex a spring-based, secondary deformation feature with paintable weights and support for dynamic system forces. Flex makes it easy to create characters with spring-like movement and even cloth effects such as wind blowing through drapes.
- Morpher - a new procedural tool for efficiently managing elaborate animations containing up to 100 targets with weighted influence.

Unmatched Vertex Info and Mapping

- 100 Vertex Channels - are now available per mesh vertex for virtually unlimited texture mapping control and the opportunity to store all the vertex information needed by subsequent game environments. The new vertex channels are supported throughout all modeling and are supported in all mapping projection and manipulation modifiers.
- Vertex Paint - modifier for interactively painting vertex colors directly on objects in the viewport. Transparency control provided for softly adding color shading.
- Assign Vertex Colors - utility for capturing scene lighting to vertex colors can now capture shadows, diffuse lighting, and the option to mix with existing vertex color assignments.

Mapping Control

- Surface Mapper - projects the even, UV space of a NURBS surface onto a mesh. This essentially provides the ability to create custom projection geometry that closely wraps irregular models (rather than the plane, cylinder, and sphere projection of traditional methods).
- Unwrap UVW - includes substantial enhancements for precisely manipulating the actual texture coordinates. Unwrap UVW additions include fast planar map assignment to selection, Mirroring, NU Scale & Squash, Welding, Breaking, Hide/Unhide, Freeze/Thaw, Save/Load, Locking, Filtering, Pixel Snapping, Falloff, and Texture Map History.

- World XYZ - projection space added to all 2D Map types for situations where an object needs mapping according to world coordinates or needs to travel through those coordinates.

Animation Advances

The traditional ability to animate virtually anything in the creative process has been expanded with numerous, important additions in 3D Studio MAX R3.

General Animation Advances

- Blocks – allow animation sequences to be manipulated like clipart from potential libraries of animation. Animation Blocks can be cut, pasted, combined, blended, and timed in a paradigm similar to nonlinear video editing.
- Reactor Controllers – drive animation events based on other events for true, event-driven animation.
- Master Tracks – allow the animated vertices of meshes, patches, NURBS, and FFD's to be grouped and controlled as units for effective management of complex vertex networks.
- Freeform Deformation (FFD) –lattices can now conform to the object's form and be set to define starting volumes for control points that relate very well to the deforming object.
- Dynamics – support object hierarchies and keyframed setups. Dynamics controller keeps initial keyframes separate from that of the dynamic solution. New dynamic forces include Pin, Spring, Damper, DynaFlectors and OmniFlectors.

General Enhancements Throughout 3D Studio MAX R3

A complete list of Release 3 enhancements is far too long to effectively list here. Improvements to previous tools and methods have been made throughout the system in accordance to the many wishes of MAX artists participating in the 3D Studio MAX Wishlist process.