WASP**3D**

Drone Designer Tech Specifications

DESIGN TOOLS

PARAMETRIC 2D SHAPES & 3D PRIMITIVES
Comprehensive set of vector shapes and 3d mesh primitives that are parametric and key farmable. The D Shapes also act as building blocks for complex meshes. Lines with Leader functions, Bezier Spines & Freehand polylines extends the shape functionality.

EXTENDED OBJECTS
Build complex meshes using Extrudes, Lathe, and Bevels. Spline Extrudes using Shapes extruded along a path. Object Tiling, E-Text and Table Text objects quicken design speed.

RICH TEXT WITH TEXT FORMATTING
3D and 2D Text objects supporting full rich-text features. Multiple font properties can be added to single line of text enabling user to Highlight, Underline, Bold, Italicize etc. a word or a character in the particular text sting object. User can also format the text types with Suffix, Prefix or based on Character Casing in Upper, Lower, Title or Small-caps.

3D TEXT WITH CHARACTER BASED EFFECTS
User designed custom character animations: type-write, fly-ins, erase, translate, scale and rotate - on the characters local or global transformation axis. The text objects can be defined to act as Countdowns, Date, Clock objects, integers and more. Character based animations of text.

E-TEXT & TEXT BLOCKS
Text with emoticon support (automatic conversion of text acronyms to image/animated emoticons on the fly). Text Block for highlighters that automatically size to the width of the word or sentence.

TABLE TEXT
Table Text instantiates multiple text objects in a rectangular array. Each text object in this array can be aligned across rows and columns. The parametric properties of the whole table or a single text can be set. Sports scoreboards can be easily built using a single text object. Users can modify individual texts in this array from an external data source.

PIE OBJECT
A pie object to create pie graphs with ease. The ready-made pie object can be used with user-defined or table based data. It supports various animation styles.

SHAPE VERTEX ANIMATIONS
Edit & Animate Shape vertices. Texture - mapped shape outlines help in animating textures along a path simulating animated flares along the shape perimeter.

PIVOT TRANSFORMATIONS ANALOG & DIGITAL CLOCKS
User Designed Digital and Analog Clock Display functions. Display multiple clocks simultaneously with time offsets. The Clock Add - in lets users wire any scene object as an arm of a C lock.

REAL-TIME CLOTH
Create real time Cloth with realistic mesh deformations. The cloth can be parametrically controlled and are also constrained by real world physics of wind, gravity and speed parameters.

SCROLLER GROUP AND SCROLLER NODE
Builds scrolls (tickers) and rolls in a Wasp scene.

PUSHPINS (LINEAR & ANGULAR LOCATORS)
Pushpins help locate and transform associated objects to the local coordinate system of the target object.

BLAST
Explodes the Target object into their individual faces.

PARTICLE SYSTEM
Real-time emitter based Particles with wind, gravity, and speed parameters to achieve realistic effects. Objects & Shapes can also be emitted as particles. Create realistic explosions, water, snow, rain & more.

PARTICLE DYNAMICS
Planar Deflectors that act as a shield to repel the particles generated by a particle system. Wind & Gravity Forces help simulate real-world physics of particles.

MENU GROUPS
Create touch (gesture) based carousel menus for WASPI.

OBJECT TILING
Instantiate multiple objects (shapes and primitives) in a rectangular array. Each object in this array can be controlled with a single animation path.

BILLBOARDS
Objects can act as billboards (camera - aligned), by specifying the axis of rotation.

PARAMETRIC WIRING & EXPRESSIONS
Wire Parameters of objects and variables to define relationships. Modifying one parameter automatically modifies the other associated parameter. Functions like add, subtract, divide etc. & Java scripts can be used in these expressions.

POSITIONAL LINKS BETWEEN OBJECTS
Link objects to create parent - child relationship. Transformations applied to the parent are inherited by the children. Positional link is useful to create lower - third continuous Crawls and Rolls.

COPY WITH ANIMATION OFFSETS
Instantiate multiple copies of any object on the transformation level (SRT) with animation keys offset.

PAGE GROUP
For design and display of multiple pages of information in a single wasp scene.

GROUPS & INHERITANCE
Create hierarchical grouping of objects. Work in either mode with Parent transformations inheritance or individual object level transformations.

CANDLE GRAPHS AND LINE-GRAPHS FOR DATA GRAPHICS*
A combination of a line - chart and a Bar - Chart that used to show a data range over a given time interval.

USER DEFINED TABLES (UDT)*
UDT is a relational table management system designed for Artists to link Scene elements to a simple database. It provides users, access to a collection of tables that can be customized to create hierarchical, Category - based data entry and data storage interfaces.

OPENTYPE FONT SUPPORT*
Wasp3D now also supports the Open Type Formats. Based on Unicode, an international multi-byte character encoding that can include multiple language character sets in one font.

3D IMPORT FORMATS
The Drone Designer imports Autodesk FBX®, 3DS, Rhino3D (.3DM) & Microsoft DirectX® (.X) mesh files along with their materials & UV mapping. NURBS surface (imported via FBX format) is tessellated with steps.

SKELETAL BIPED IMPORT
Import Autodesk FBX® files with Biped Animations.

AI & SHAPE FILE IMPORTS (.SHP)
Import Adobe Illustrator (.AI) splines with poly-data. Import ESRI geospatial vector data format and assign colors to the DB associated polygons.

UV TEXTURE MAPPING AND PLANAR MAPPING
Texture mapping functions for wrapping textures on 3d meshes.

RENDER ORDER
User-Defined Render Order for Objects help decide the order of the real - time rendering.

XREF SCENES AS LAYOUT
Cross reference Scenes and templates in the current scene, helps to design and built scenes while keeping the layout of another scene as a visual reference.

SCENE & SERVER VARIABLES
Scene Variables can be of Integer, Float, Float3, Float 4, String and Boolean Types. Objects parameters can be wired to a variable and conditional actions can be executed on checking the variable value. A single variable can be wired to multiple parameters of multiple objects. Updating the variable updates all the wired parameters. These variables are having a local scope (available within the current scene) Server Variables differ from Scene variables in only one context that they can be accessed by multiple wasp scenes which are running in the Server. In a way their scope is global. Server variables can be used to trigger events across scenes-one On-Air scene can send triggers to a specific Sting Server (render engine) or to all Sting Servers on the network.

SCREEN ALIGNED Z-LAYERS
SAZ Layers lets create multiple Z-ordered layers between the background and the layout object.

VIEWPORT BASED OBJECT MANIPULATION
The Manipulator mode lets users to modify the parametric properties of the selected object in the Viewport itself. Additional modes are Vertex and Polygon for Shape modifications. The Pivot mode allows users to customize the pivot transformation.

INTERACTIVE MODE
The Gesture mode helps users to test the WASPi interactive function in design time.

MODELING AIDS
Rulers, Grids, Guides, Axis Constraints (X, Y and Z). Guides saved with each scene. User defined Safe, Title and Action Area. Selection/Un-selection of objects in list.

RESOLUTION INDEPENDENT RENDERING
SD & HD-SDI, PAL & NTSC formats supported. User defined resolutions & frame rate. Supported for large video wall resolutions.

RENDER TO DISK
Interlaced and Non-Interlaced Render to Disk in a number of file formats.

USER-DEFINED OBJECT PRESETS
Customize the toolbar with pre-defined parameters of the primitives.

ARCHIVE & UNARCHIVE TEMPLATES
Archive/Un-Archive templates, along with their linked assets to folders.

DATA & ANIMATION TOOLS

KEYFRAME BASED ANIMATION
All the Scene graph objects (models, lights and cameras), texture maps and UV coordinates can be key framed.

TRANSFORMATION
SRTV (Scale, Rotate, Translate and Visibility) of objects on the fly.

NURBS WITH CV ANIMATION TRACKVIEW
Key frames can be manipulated in the hierarchical track view of the Scene graph. Key frames can be added, modified; & animation can be moved, stretched and scaled. Selective copy-paste of multiple animation keys across tracks. Filter options simplify the track view display to chosen tracks.

TRACKVIEW MARKERS
Helps add comment on the frame level in Timeline.

INTERPOLATOR TYPES
Linear, Boolean, Bezier, Wire, Numeric & Noise interpolation. Ease-In and Ease-Out timing at key frames in Bezier interpolation. Wire Interpolator parameter changes on one to its wired counterpart.

CONTROL KEYS ON OBJECTS
Flow control for creating linear and non-linear animations with pause-points, go-to, loops and steps.

ACTION & ACTION SETS
Facilitates a non-coding mechanism to trigger actions and methods - e.g. Video Playback Actions, Audio Playback, Animation Set Actions, Character Animation, and Data Actions.

RENDER ACTION
Switch the rendering of objects to an On/Off state. Helps optimize the scene rendering.

USER DATA - TAGS (VARIABLE FIELDS)
Add user-data tags on a parameter and on key frames to enable control of the object parameters from external sources (data - entry module/ DB values).

STRING FORMAT
Allows user to concatenate multiple data or variables into one single string.

MATCH VARIABLE
A switch case based action which triggers various commands based on data changes.

MATERIALS, LIGHTS & TEXTURES

HLSL SHADERS - REALTIME PHONG SHADING
With the same number of polygons, achieve realistic visual representation of the scene objects. The Specular highlights in Phong tend to be more accurate and the vertex highlight much sharper. Wasp also offers Gouraud and Flat Shading modes.

MATERIAL TYPES
Standard, Uniform, Chroma Key, Matte and Particle.

REAL TIME REFLECTION & REFRACTIONS
Real Time Reflections in clouding Flat Mirrors using Render - Target textures. Real Time Refractions using Snapshot Textures.

CHROMAKEY FOR LIVE & DISK BASED VIDEO
The In - built Chroma keying Material simplifies the creation of Virtual Sets. The Chroma material works with both blue and green screen backgrounds, its parameters allow you to fine tune the keying and you can assign it to any object in the scene. Post processing filters parameters are available for color and spill correction.

PARAMETRIC HATCH TEXTURES
The Hatch Texture is a Real-Time 'non-photorealistic' rendering using tonal DDS Texture Maps. Controlling the intensity of the Strokes within the Hatch texture (DDS) helps attain appropriate stroke size and density at all resolutions, and helps maintain coherence across scales and tones.

TEXTURE CHANNELS
Each Texture layer of a material can be constrained to a color or luminance channel - R, G, B, A or L.

STENCIL MATTE
Mask/Matte specific objects in the Scene.

SELECTIVE OBJECT LIGHTING
Lights can be assigned to act on one or more than one materials. This allows for selective lighting of objects.

REAL-TIME 3D SHADOWS
Shadows of Scene Lights with Casting and Receiving functionality.

2D SHADOWS
Shadows based on Offset and Angles.

MULTI-LAYER TEXTURE BLENDS
Material can have multiple layers of texture maps (as Diffused Maps, Opacity maps, Reflection maps, Gradient Map, X-Ray, Refraction map and Bump map). The multi-layered textures can further be blended with the preceding layer using the 27 blend modes (Normal, Negative, Additive, Subtractive, Average, Burn, etc.) Create materials with Live & Disk Video Texture maps over layer & rendered in real-time.

IMAGE BASED TRANSITIONS & EFFECTS
Create transitions and Effects on objects by using the Image FX texture Layer. Based on the Pixel Luminance value of the Image (or by using any of its color channel - R, G, B or Alpha) create key frame
DVE effects.

MATERIAL LIBRARY
Artists can build upon the library to store commonly used materials (along with their texture references)

TEXTURE MAP TYPES

1. **Image Textures**
   BMP, DDS, DIB, PNG, HDR, JPG, JPEG, PFM, PPM & TGA.
2. **Environment**
   DDS
3. **Audio-Video Textures**
   Disk based 24-bit, 32-bit video files - AVI, MPG, MOV, WMV, MP4*, MP3 & WAV.
4. **LIVE Video**
   HD/SD SDI I/O.

5. **WEB Textures**
Web Browser as a Texture & Adobe®
Flash (.SWF)

6. **SNAPSHOT Texture**
Snapshot of the entire scene graph as a Texture maps

7. **RENDER Texture**
Texture of Rendered Scene objects.

8. **Brightness Contrast**
A post process color correction function with brightness, contrast, hue and saturation adjustments.

9. **Water Texture***
A Texture map that simulates water.

10. **Gradient Texture***
A custom texture to create Gradient effect using four point color gradients. It offers Rectangle, Radial, Conical and linear gradients.

11. **BLUR Textures***
Gaussian Blur | Directional Blur | Spin Blur | Zoom Blur
God Rays
Glow Blur
Depth of Field
SSAO (Screen Space Ambient Occlusion)

12. **Remap Texture**
Allows user to re-map the colors of the texture as per the defined color gradient.

TEXTUREMAPPING
UV Manipulation of Texture maps -Offset, Translation, Rotation and Scale of Textures along with Texture Filter and Repeat mode (wrap, crop, tile, mirror, and clamp).

INTERACTIVITY & TRIGGERS

WYSIWYG TR\IGGERS FOR WASPI MIMOSA
Artists can now design for Wasp Mimosa - the Interactive touchscreen based presentation solution. 42 Touch gestures corresponding to mouse actions can be visually attached to any object to design interactive templates.

SCENE & OBJECT EVENTS
Allows user to define commands or actions at different scene events like - On Trigger, On Named Event, On Scene Prepare, and On Scene unload. Gesture Events for events to be performed in Mimosa Touch Screen application. Page Group Events & Scroller Events.

TIMER & ALARM
Trigger events and actions based on a specific time and intervals.

USER INTERFACE

INTUITIVE UI FOR SPEED DESIGN
The Drone Designer has been designed as a rapid creation tool – nearly all its features are accessible through a single key. The dock-able Windows allow users to customize the interface and show/hide only the windows desired.

UI INTERNATIONALIZATION
The user - Interface is customizable for display of multiple languages.

ACTION HISTORY
User-defined history levels of Undo/Redo.

OBJECT ISOLATION
Object Isolation lets you to work on a single object or a set of objects while hiding the rest of the scene on a temporary basis.

BREAD-CRUMB NAVIGATION
All actions and wiring controls support bread-crumb based navigation.

VISUAL USER-TAG & ANIMATION SYMBOLS
Easy visual display of animated parameters and User-tagged parameters of Objects.

COMMAND EDITOR
Create automated scripts to perform repetitive action. Commands can be saved as buttons & context menus. A Command Listener, generates a script for all the actions performed in design mode.

SEARCH FILTERS
Filtering functionality now in Object Pool, Material Pool & Texture Pool helps user filter results based on query.

WINDOWED OBJECT SELECTION
Select objects in the viewport with a mouse dragged rectangular region. Customize the selection criteria based on the class of the object.

ASPECT RATIO OVERRIDE
The aspect ratio of the active camera in a scene can be modified irrespective of the Aspect - Ratio defined in the Sting Server Output settings.

QUICK ACCESS COLOR PALETTE
A customizable quick access Color Palette is available in the viewport. Users can simply drag - drop the colors to any equivalent parameter.

SEARCH OBJECTS & MATERIALS
A Search function is available in the Object Pool & the Material Editor.

WIREFRAME HUNT
The scene viewport has an option to switch between solid and wire - frame mode. This facilitates users with a visual search of objects hidden behind multiple layers.

MOVING OBJECTS USING THE KEYBOARD
Transforms Objects using the Arrow Keys of the keyboard.

TEXTURE OPACITY ATM ATERIAL EDITOR
Users can now modify the texture opacity in the Material Editor.

TRACKVIEW ZOOM
Keyboard based Zooming function of the track view.

WORKFLOW

UNIFIED BASIC TEMPLATING

One of the major enhancement introduced in the Drone Designer is the ability to design the 'Data Input' User Interface of the Graphics Template. Users can simply drag-drop the defined variable elements (User-Tags) to the form and create a link between them.

ADD-INS

A host of add-ins are available to extend the features of Wasp. Automation Add-Ins are available for integration with third-party Automation applications. Data Add-Ins integrate data sources into the Wasp graphics (e.g. Excel, XML, RSS Feeds, SQL, PostgreSQL*, Wire Feeds, Stock Feeds to name a few). Workflow Add-Ins to customizing the workflow to suit a specific requirement. NLE Add-Ins for integration Edit Stations into the Wasp workflow. Third party Software Developers can also build and host the add-ins.

ASSET EXCHANGE INTEGRATION

Users of the Wasp Asset Exchange Module can simply search and Drag-Drop assets (Templates, Models, Shapes, Images and Video) to the Drone Designer interface.

SHARED FAVOURITES LIBRARY

Artists can share commonly used assets -Templates, Objects, Animation Tracks with each other using the Favorites Window. A simple drag-drop to the Favorites library ensures that the asset is available to all Designer clients on the network.

CODE EDITOR

A comprehensive visual programming IDE supporting C# & VB.NET IDE is now available in the design application.

WASP3D SDK

Available for developers of Broadcast & Interactive Applications (Live Sports Graphics, Elections, Betting Results, Interactive TV Applications, Business Graphics & more) with documentation & sample projects in
C#.NET and VB.NET.