

## REALFLOW 2012: COMPLETE OVERVIEW OF FEATURES

### + COMPONENTS

- **RealFlow GUI:** A software application to set up and simulate your scenes.
- **RealFlow CMD:** A software application to simulate your scenes.
- **RealFlow RenderKit:** A set of software tools to render simulation data.
- **License Manager:** A software application to handle licenses.
- **RealFlow Job manager/node:** A software application to control simulation jobs.
- **Plug-ins:** Connects RealFlow with the most popular 3D packages

### + REALFLOW FEATURES

#### ▶ Liquids

- Particle-based liquids
- Grid-based liquids
- Hybrid technology
  - Large scales
  - Coupling particle-based and grid-based liquids
  - Splash
  - Secondary splash
  - Foam
    - Particle-based
    - Texture-based
  - Mist
  - Wet
  - Waterline
  - Statistical spectrum displacement
  - Distance fields
  - Velocity fields
- Multi-threaded

#### ▶ Gases

- Particle-based thermal and iso-thermal gases

#### ▶ Elastics

#### ▶ Fibers

#### ▶ Particle emitters

- Circle
- Square
- Sphere
- Linear
- Triangle
- Spline
- Cylinder
- Bitmap
- Object
- Fill
- Binary Loader
- NBinary Loader
- Container

## ▶ Retimer tool

- Curve based time warp
- Retime fluid and dynamic simulations
- Complete HybridO support
- Velocity, force and vorticity adjustment
- Quick preview over an existing image sequence
- Exported data format can be different from the original simulation
- Combine and separate animation.sd objects
- Embedded on Binary Loader emitter

## ▶ Bodies

- Caronte Body Dynamics solver
- Two-way coupling with liquids
- Rigid bodies
  - Collision primitives: cube, sphere, convex hull and mesh
  - State-of-the-art stacking
  - Multi-threaded
- Soft bodies
  - Free-form deformation based
  - Efficient for high polygon-count meshes
  - Permanent deformation
  - Multi-threaded
- Joints
  - Automatic creation and break
  - Ability to connect rigid-rigid, rigid-soft and soft-soft bodies
  - Permanent deformation
- Servo motors
- Fracture tool

## ▶ Fluid surfaces (RealWave)

- Statistical spectrum wave for the generation of realistic oceans
- Control points wave
- Fractal wave
- Spectrum wave
- Gerstner wave
- SDK built wave
- Export as a displacement texture
- Object splash
- Crest splash
- Depth texture
- Downstream
- Custom geometry

## ▶ MultiBody nodes

- For efficient handling of scenes with many objects

## ▶ Meshes

- Standard mesh
  - Metaballs
  - Micro-polygons
  - Cloning objects
  - Camera level of detail
  - Camera, objects and RealWave clipping
  - Texture based on particle attributes or particle UV
  - Tension and relaxation filters
  - Camera and geometry clipping
  - Optimized curvature and camera-based
  - Built-in Glsl and custom shaders
- RFRK mesh (RealFlow RenderKit)
  - Multi-threaded
  - Field Types (Metaballs or Spheres)
  - Auto polygon size
  - Tension and relaxation filters
  - Camera, objects and RealWave© clipping
  - Optimize curvature and camera-based
  - Particle attributes transferred to the mesh
  - Built-in Glsl and custom shaders

- Grid mesh
  - Able to create mesh mixing a grid-based and a particle-based fluid
  - Texture, Y-planar projection, UV particle and fluid average velocity
  - Tension and relaxation filters
  - Optimized curvature and camera-based
  - Built-in Glsl and custom shaders
  - Displacement
  - Open boundaries

## ▶ Cameras

- Import/export from/to major 3D platforms
- Link target

## ▶ CrowdFlow plugin

- Flocks
- Swarms
- "Follow the leader"

## ▶ Morph plugin

- Improves on the built-in Magic daemon

## ▶ Filter daemon

- Transfer particles from one emitter to another based on particle attributes

## ▶ Sheeter daemon

- Auto-fill areas with low resolution to create thin sheets of fluid

## ▶ External forces

- Gravity
- Attractor
- Daemon spline
- Wind
- Vortex
- Layered vortex
- Limbo
- Tractor
- Coriolis
- Ellipsoid
- Drag
- Surface tension
- Noise
- Heater
- Magic
- Object
- SDK built forces

## ▶ Initial state

## ▶ Simulation passes

- Fluid dynamics
- Bodies dynamics

## ▶ Python SDK

- Commands
- Batch
- Simulation Events
- Forces
- Particle solvers
- Waves
- Version 2.6.2

## ▶ C++ SDK

- Commands
- Batch
- Simulation Events
- Forces
- Particle solvers
- Waves
- Job managers

## ▶ Customizable GUI

- Tree layout
- UI dark and light color scheme
- Commands tool bars
- Change predefined layouts by using keyboard shortcuts
- Display and Simulation layers

## ▶ Computation distributed over a network

- IDOC (Independent Domain of Computation) nodes
- Send jobs by using an open plug-in architecture
- Job manager built-in panel to browse the jobs status
- Browse the job status using a standard internet browser

## ▶ On-line help system

- Global search
- Parameter context help
- Node context help

## ▶ Scene import/export as XML format

### ▶ Textures

- Displacement maps
- Wet/dry
- Texture based parameters (interaction maps)
- UV Mapping
  - UV from particle
  - UV sprite
  - Speed
  - Pressure
  - Temperature
  - Fluid average velocity

## ▶ Preview

- One-click generation of a preview video/sequence of files

## ▶ Movie player

- tga, bmp, jpg and png sequences
- Write out avi files
- Real time play

## ▶ Curve and expressions editor

- CB, bezier, linear and stepped curves
- Pre- and post- curve behavior
- Tangent tools (break, unify and flat)
- Copy/paste control points
- Multi-curve editing
- Save/load curves to/from crv and xml formats

## ▶ Snap tools

## ▶ Align tools

## ▶ Import MXS (Maxwell Render) format

## ▶ Predefined or user defined OpenGL shaders

## ▶ Multi-platform

- Linux
- Windows
- MacOS

## ▶ 32/64bits

## ▶ Multi-threaded

## ▶ Export simulation data to popular file formats

- Krakatoa PRT file format

## ▶ Export simulation data to most popular 3D packages

- Autodesk Maya
- Autodesk 3ds Max
- Houdini
- Autodesk Softimage
- LightWave 3D
- Cinema4D

## + REALFLOW RENDERKIT FEATURES

- ▶ **RFRK\_Mesher.** Generates a high-resolution polygonal mesh from RealFlow BIN particle files at render time
  - Core/Splash filter.
  - Boolean operations including merging with RealWave surface.
  - Motion blur.
  - Attributes of the particles transferred to the mesh.
  - Low memory consumption.
  - Multi-threaded.
  - Relax/tension filters.
  - Optimization.
  - Clipping.
  - Smoothing.
- ▶ **RFRK\_Partycler.** Enables you to load millions of particles at render time quickly and easily
  - Spheres, cubes, sprites and points.
  - Multipoint.
  - Core/Splash filter.
  - Size based on camera and particle attributes.
  - Motion blur.
- ▶ **RFRK\_Cloud.** A tool for rendering volumetric data
  - Uses BIN and MTC RealFlow standard file formats for particles and mist.
  - Anisotropy settings.
- ▶ **RFRK\_Displacement.** A tool for rendering displacement 3D statistical spectrum maps
- ▶ For mental ray, RenderMan, Mantra, Houdini and Maxwell Render
- ▶ C++ SDK

## + LICENSE MANAGER FEATURES

- Handles RealFlow RenderKit and RealFlow CMD licenses in a centralized, **unified way**
- **Visualization of license information** through a web browser or telnet
- **Multi-platform**, Linux and Windows



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