Sci-fi armor by
Andy Goralczyk

Blender 2.80 realtime e professionalità

Blender

Blender

È una suite per il 3d libera ed open source

Creata **da** e **per** gli artisti

Copre tutta l'intera pipeline per la creazione in 3D:

- MODELLAZIONE
- ANIMAZIONE
- MATERIALI
- RENDERING
- COMPOSITING
- CAMERA / MOTION TRACK
- GAME

E soprattutto è distribuito sotto licenza GNU GPL che garantisce che

Blender sarà un software libero per sempre

Breve storia di Blender

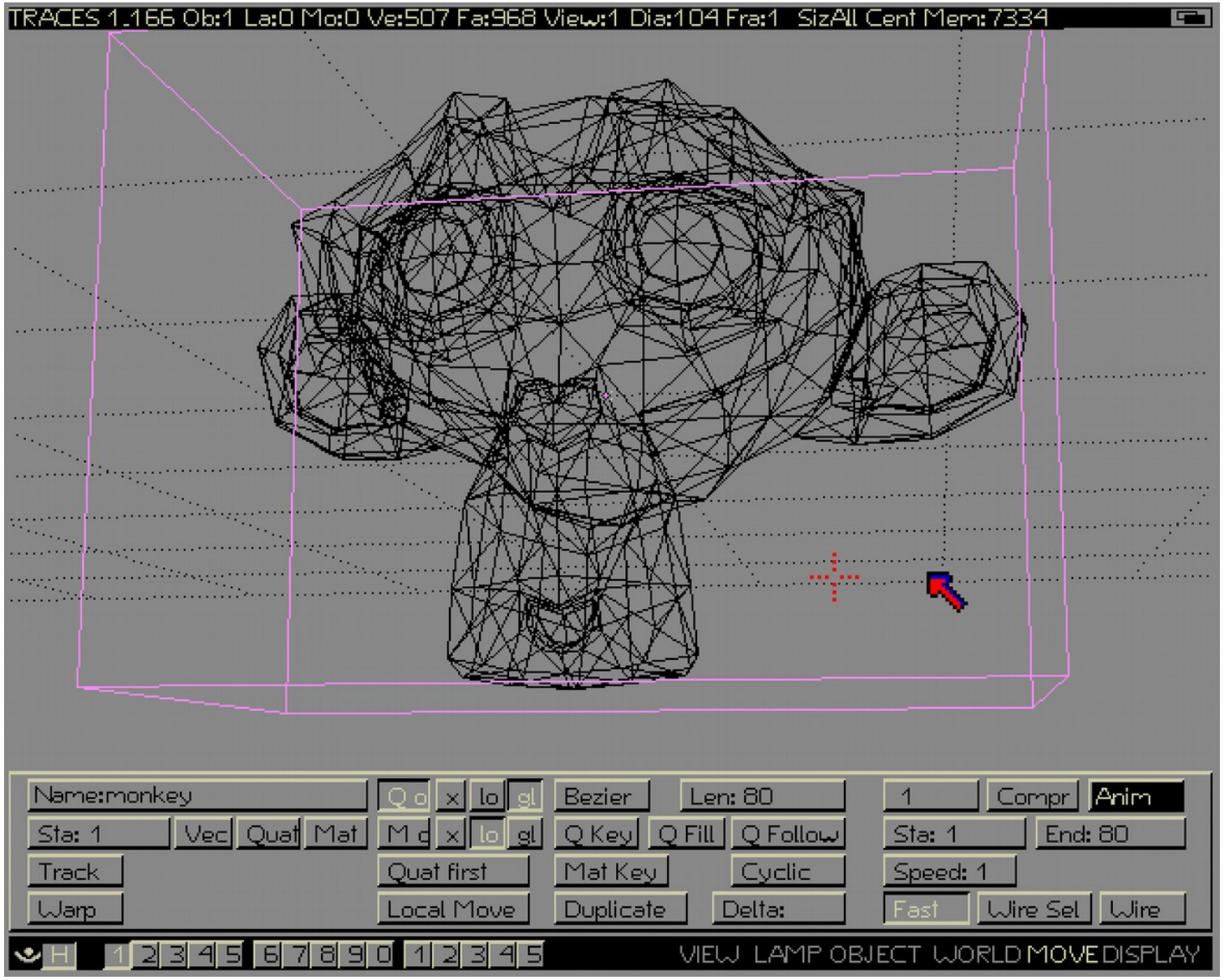
Nel 1988, T**on Roosendaal cofondò** lo studio di animazione olandese **NeoGeo** che divenne il più grande studio di animazione olandese.
Fu sua l'intuizione di rendere gli strumenti grafici sviluppati all'interno dell'azienda accessibili anche per gli artisti esterni all'azienda. Incontrò i favori di alcuni importanti finanziatori.

Ton Roosendaal

Nel 2001 un quadro economico non favorevole convinse i finanziatori a desistere

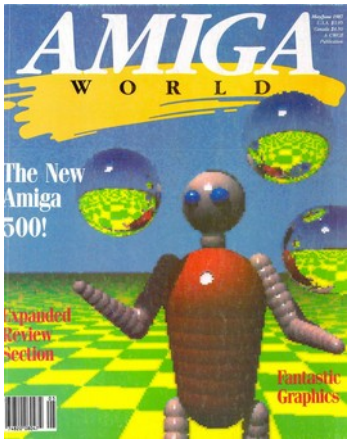
Nel 2002 Ton Roosendaal fondò l'organizzazione, senza fini di lucro, **Blender Foundation**.
Promuove la campagna "**Free Blender"** raccogliendo € 100.000 per acquistare i diritti del codice per poterli rilasciare alla comunità OpenSource.

Oggi è un software, libero, in continua fase di sviluppo e competitivo.



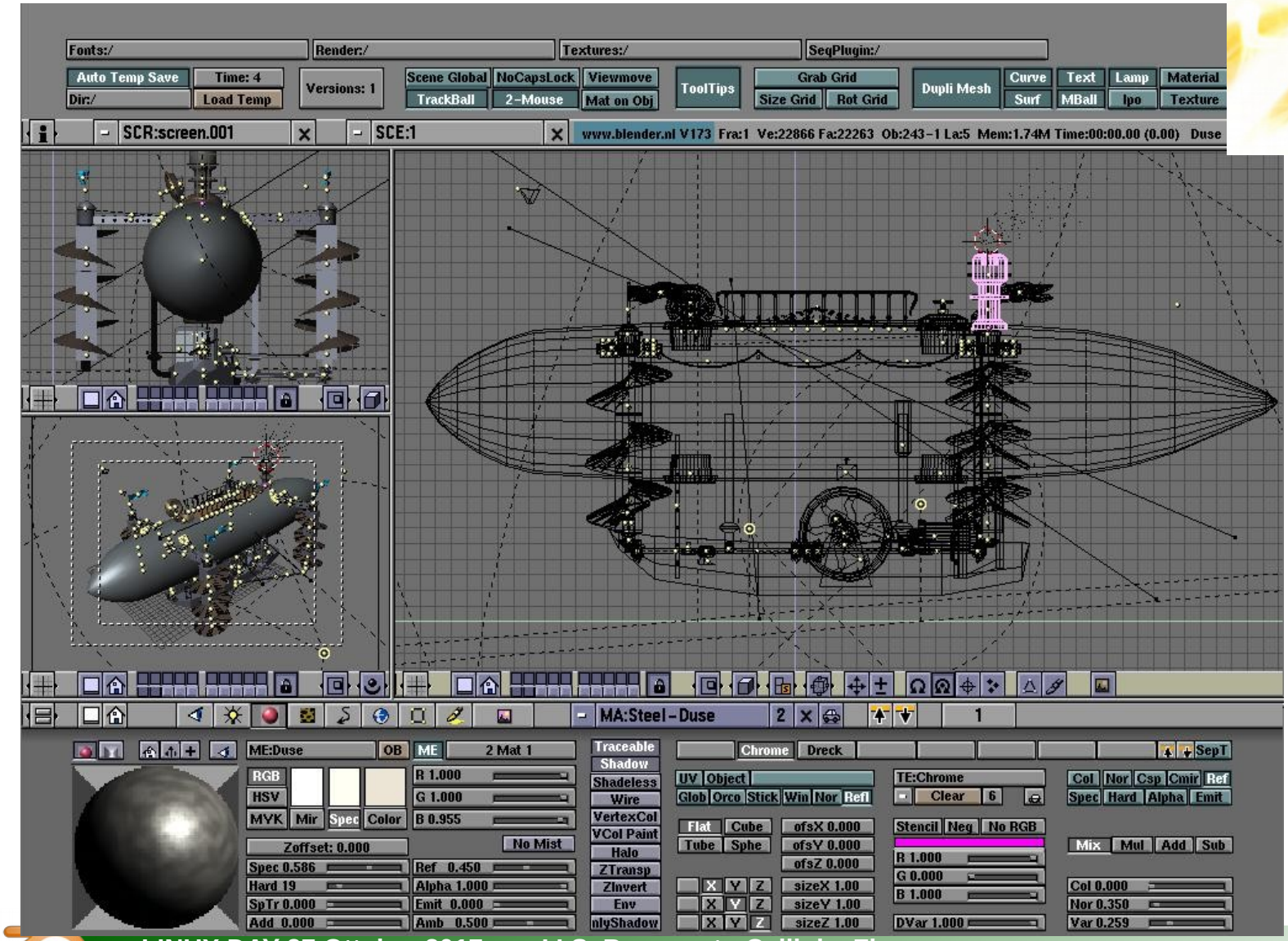
Traces
1987 Commodore Amiga

http://zgodzinski.com/blender-prehistory/



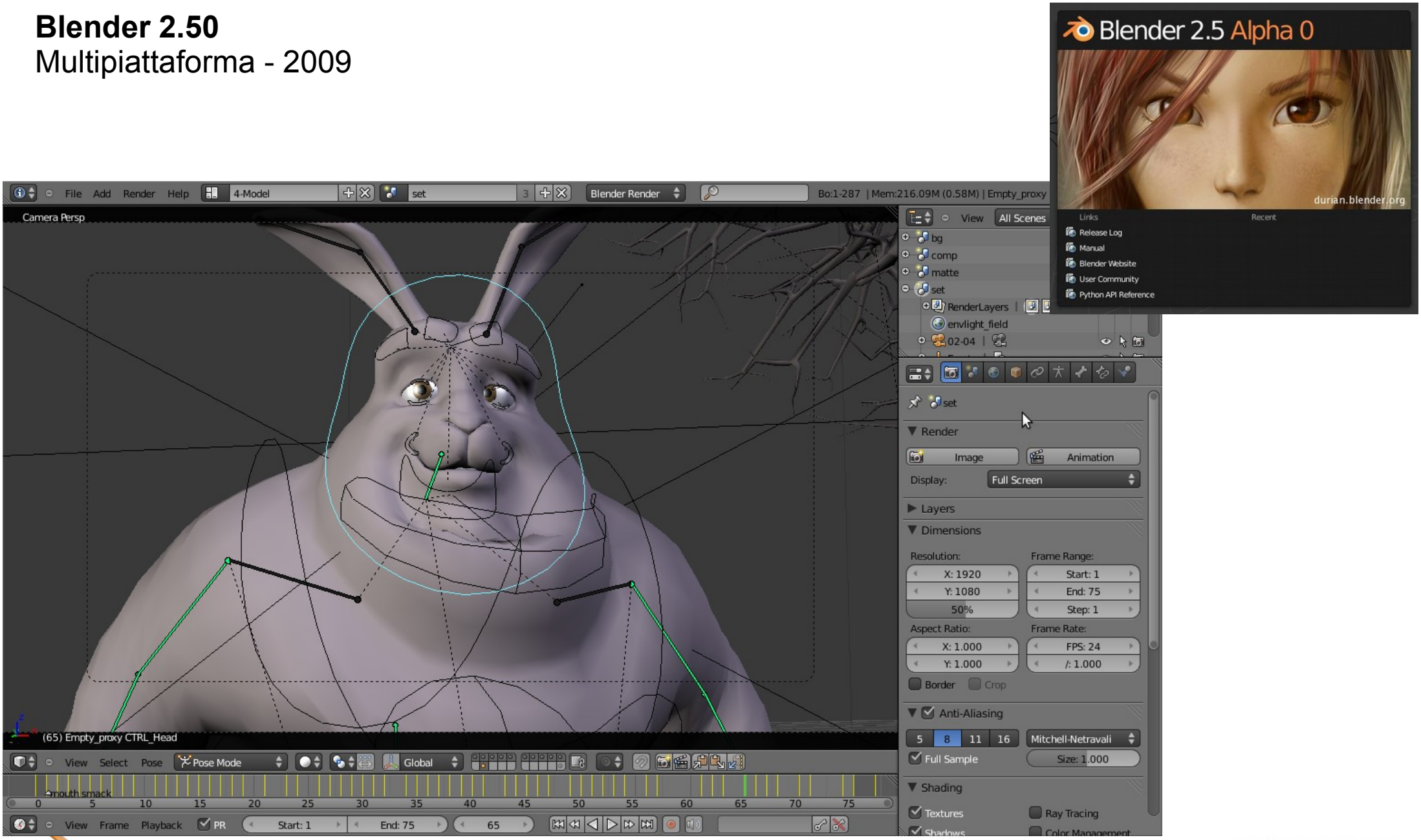
Blender 1.0
IRIX – Unix system

Blender 2.31
Multipiattaforma - 2003

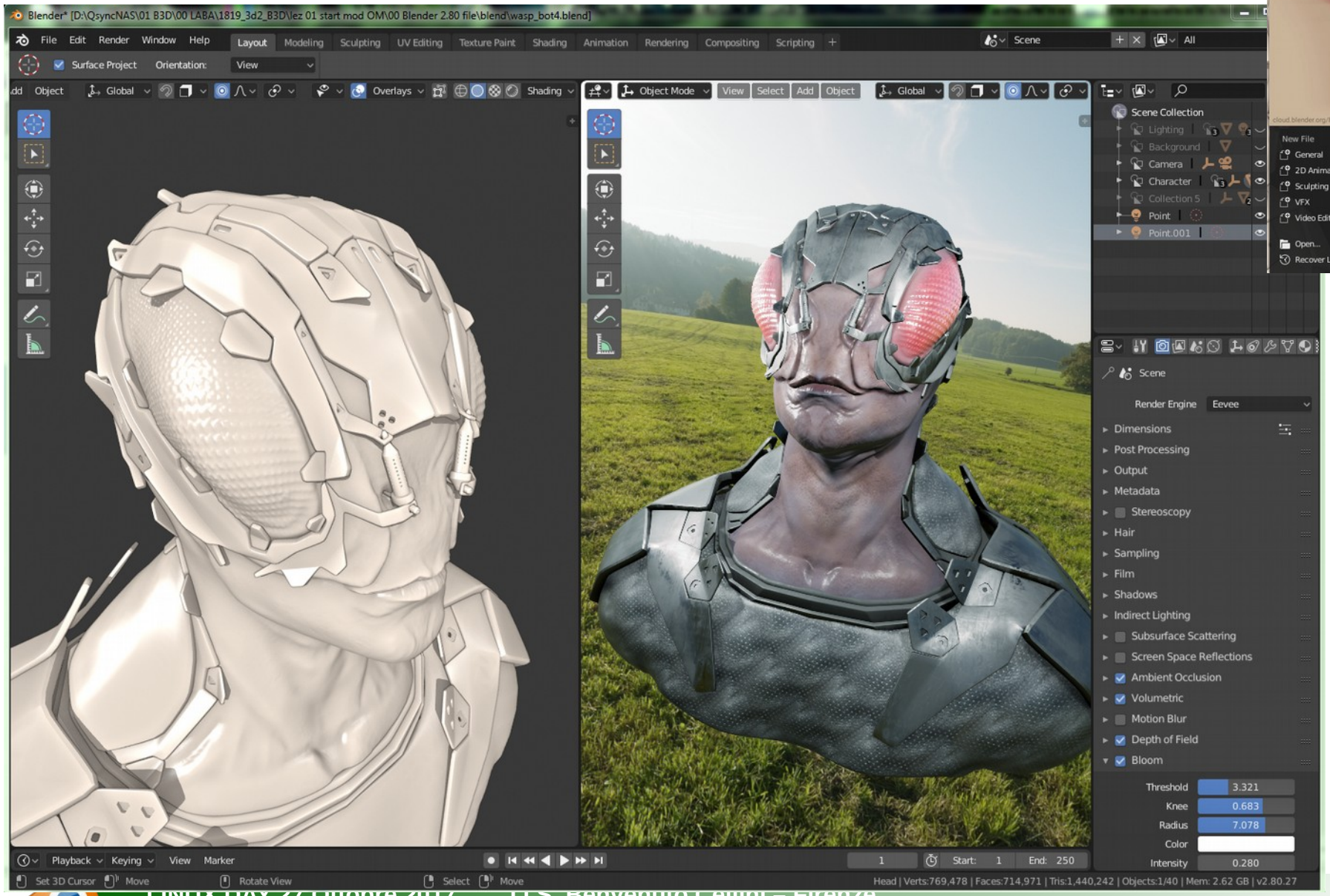


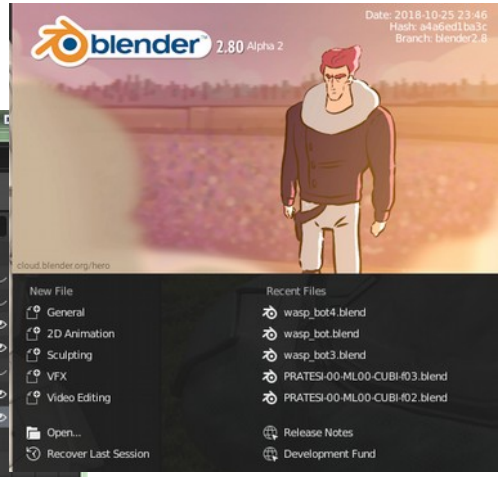
Miglioramento Interfaccia

Blender 2.50
Multipiattaforma - 2009



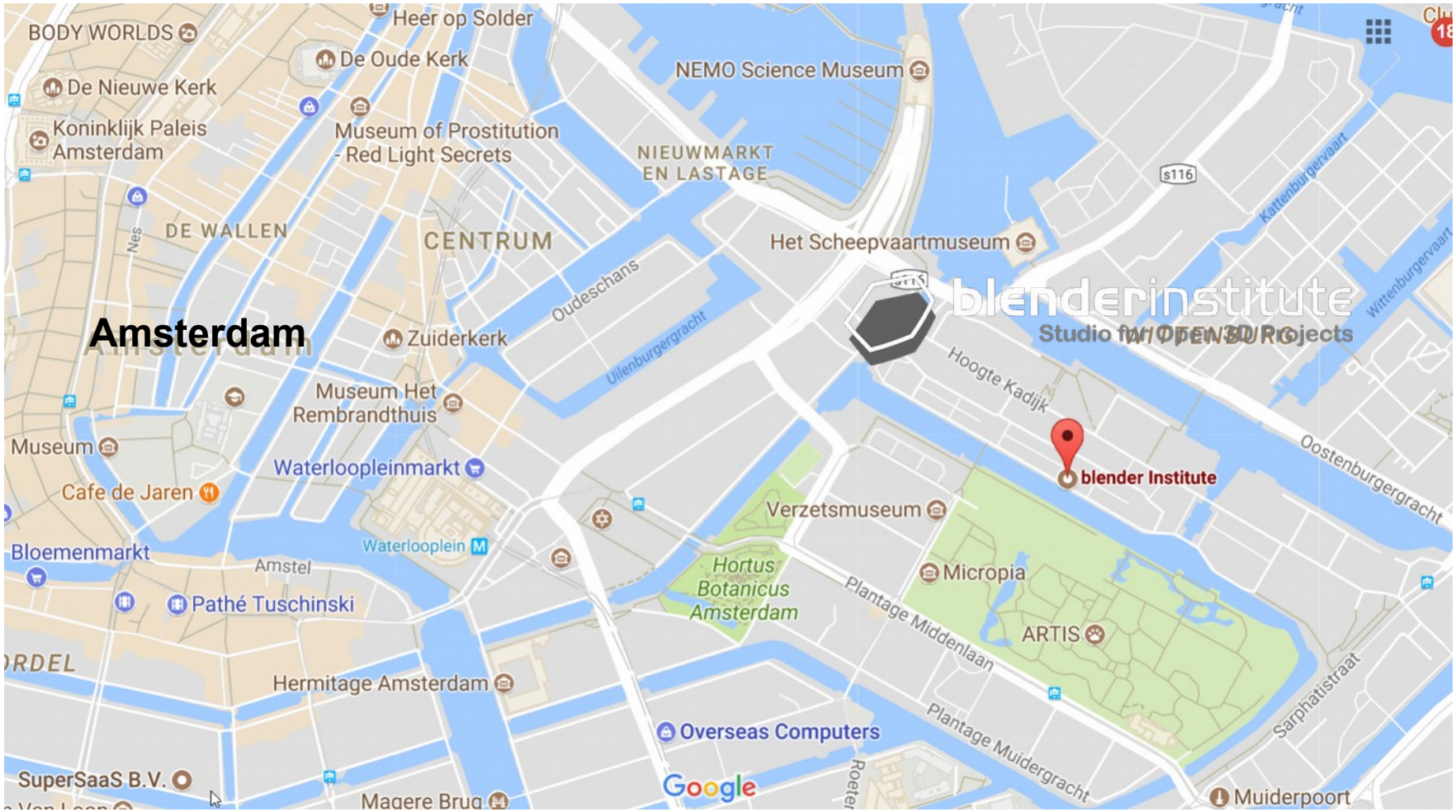
Blender 2.80
Multipiattaforma – Ottobre 2018





C'è qualcuno in rete che gli è molto devoto per questo!!!!

Blender Foundation è una società di pubblica utilità olandese, istituita per sostenere e facilitare i progetti su blender.org ed ha sede al **Blender Institute**



Foundation Contact

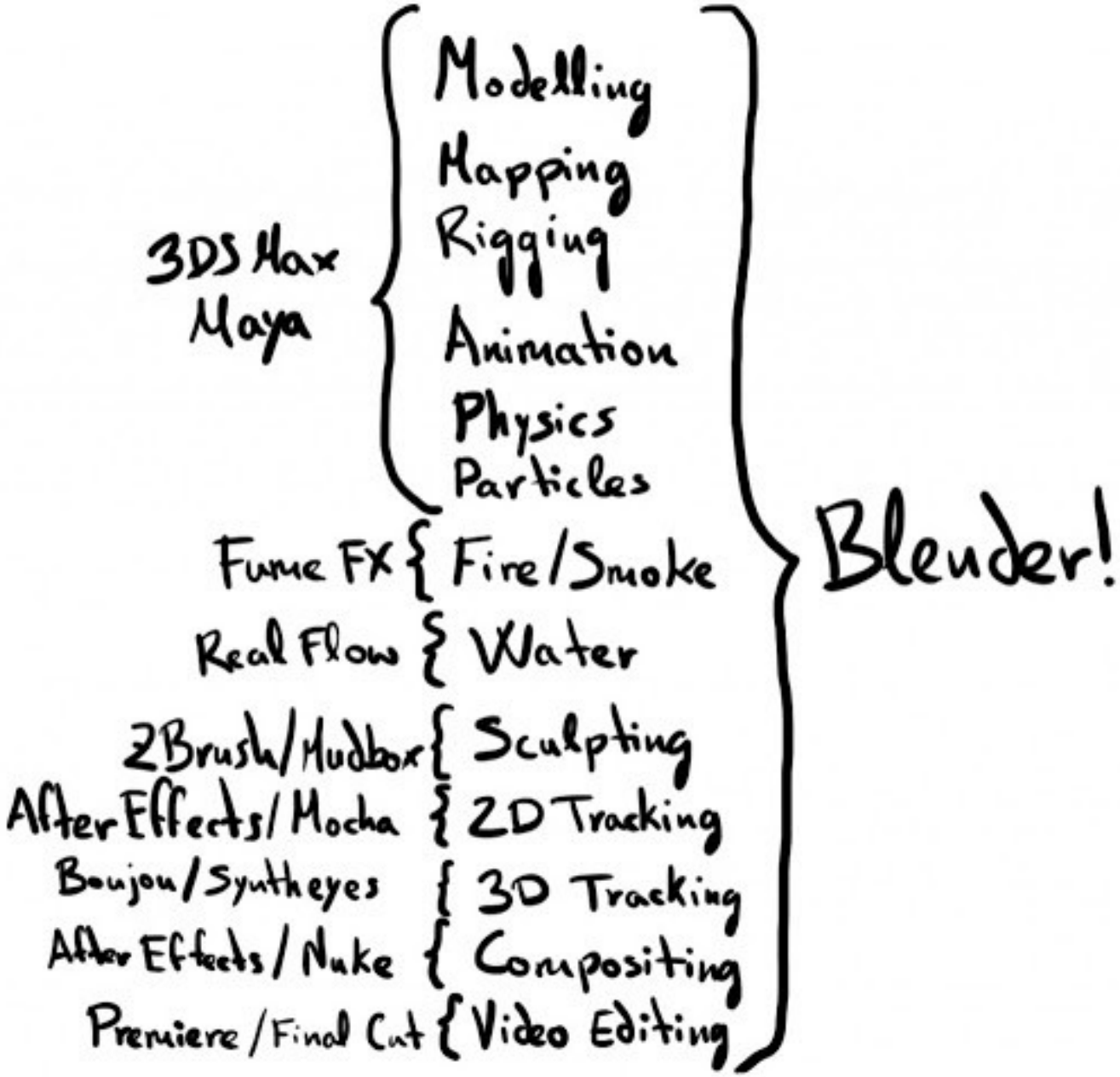
Stichting Blender Foundation
Buikslotermeerplein 161
1025 ET Amsterdam
the Netherlands

ONLY for organizational or press topics:
Email: foundation (at) blender (dot) org

Chairman: Ton Roosendaal

Blender Conference 2018
25-26-27 October,
De Balie, Amsterdam

L'**Associazione Blender Italia** è la prima realtà associativa italiana dedicata ai professionisti e non professionisti che operano nel mondo del 3d con l'ausilio del software Blender.



All in one!!!

Non esiste un altro programma che permetta di fare modellazione 3d, rendering fotorealistico, compositing, montaggio video, camera tracking, gaming, animazione 2d e 3d, sculpting, painting ecc ecc.

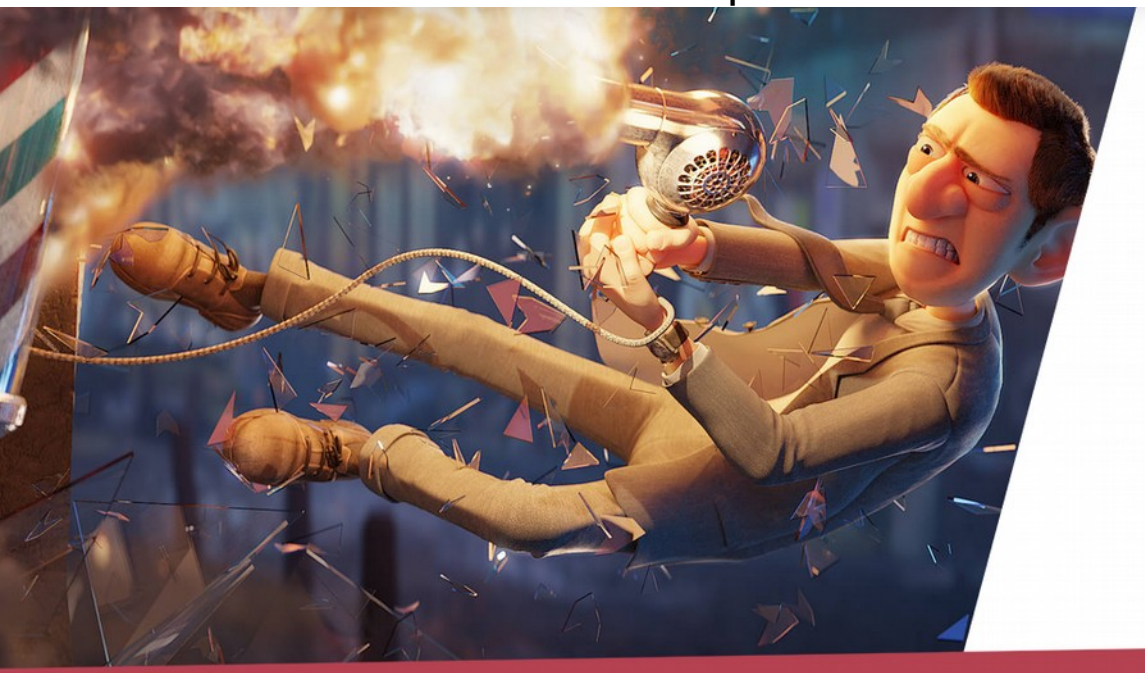
Blender **GESTISCE L'INTERA PIPELINE LAVORATIVA** senza dover ricorrere a software di terze parti volendo.
In più ha il grosso vantaggio dell'opensource che permette d'avere molti addon gratuiti e una community esagerata!"

Perchè usare Blender

- Gratuito anche per usi commerciali
- Opensource, quindi privo di virus
- Sviluppo continuo del software
- Sempre aggiornato
- Leggero (circa 100 mb)
- Multipiattaforma
- Portatile, non necessita di installazione
- Molto stabile
- Comunica con moltissimi altri software
- Modulo specifico per la stampa 3d
- La rete è piena di tutorial

http://www.blender.org/

https://www.blender.org/download/



New in Blender 2.79b

Blender 2.79b features a new Denoiser, PBR Shader, Shadow Catcher, Filmic Color Management, AMD OpenCL improvements and much more.

All of that plus over a massive 900 bug fixes! (since 2.78)

But wait, there's more. Check out what's new in 2.79b

See all Blender features ›

Go Experimental

Blender evolves every day. Experimental builds have the latest features and while there might be cool bug fixes too, they are unstable and can mess up your files.

These builds use the latest snippets of magic code developers write. Give the upcoming Blender 2.8x a try! Although it is absolutely **not recommended** for use on production environments.

With great power comes great responsibility.

Latest Experimental Builds

Go! Go! Go! Go! Go! Go! Go!

blender

Features Download Support Get Involved About Store

Windows

Operating System	Variation	Name	Size	Built On
Windows 64 bit	Official	blender-2.79-bd267b0332d-win64.zip	127.76MB	Sep 28 2018 00:37:11
Windows 64 bit	Blender 2.8	blender-2.80-6f42eb245b1-win64.zip	118.73MB	Sep 28 2018 01:21:46
Windows 32 bit	Official	blender-2.79-bd267b0332d-win32.zip	100.21MB	Sep 27 2018 23:07:10
Windows 32 bit	Blender 2.8	blender-2.80-6f42eb245b1-win32.zip	93.10MB	Sep 27 2018 23:20:35

Linux

Operating System	Variation	Name	Size	Built On
Linux 64 bit	Official	blender-2.79-de3ee3c6e84-linux-glibc224-x86_64.tar.bz2	131.60MB	Sep 29 2018 23:37:58
Linux 64 bit	Blender 2.8	blender-2.80-f36efe0e2ad-linux-glibc224-x86_64.tar.bz2	108.95MB	Sep 29 2018 23:06:39
Linux 32 bit	Official	blender-2.79-de3ee3c6e84-linux-glibc224-i686.tar.bz2	118.98MB	Sep 30 2018 00:03:09
Linux 32 bit	Blender 2.8	blender-2.80-f36efe0e2ad-linux-glibc224-i686.tar.bz2	95.24MB	Sep 30 2018 00:19:35

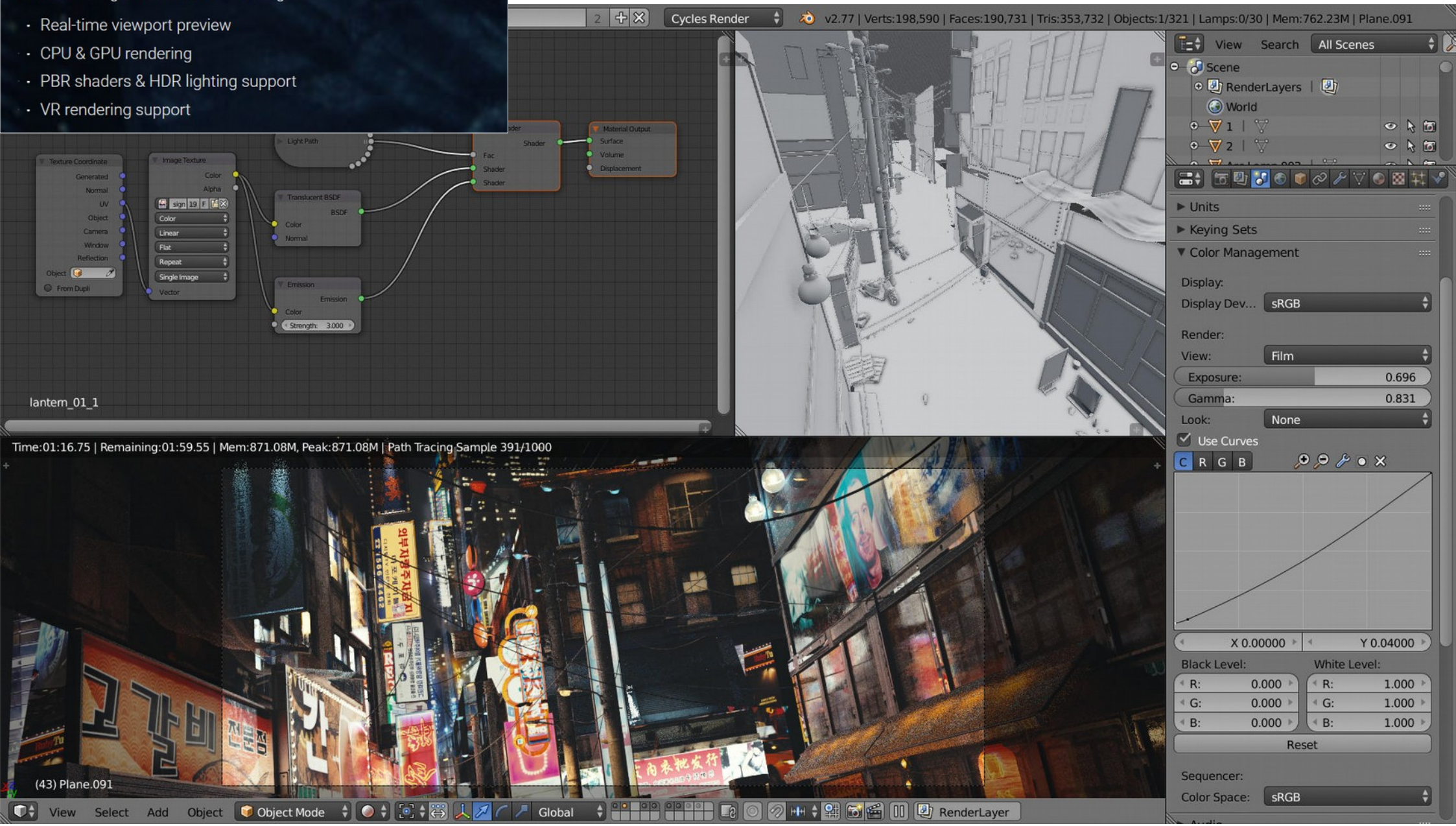
MacOS

Operating System	Variation	Name	Size	Built On
macOS 64 bit	Official	blender-2.79-de3ee3c6e84-OSX-10.9-x86_64.zip	144.36MB	Sep 29 2018 23:04:29
macOS 64 bit	Blender 2.8	blender-2.80-f36efe0e2ad-OSX-10.9-x86_64.zip	127.50MB	Sep 29 2018 23:41:14

Cycles Render Engine

Cycles is Blender's built-in powerful unbiased path-tracer engine that offers stunning ultra-realistic rendering.

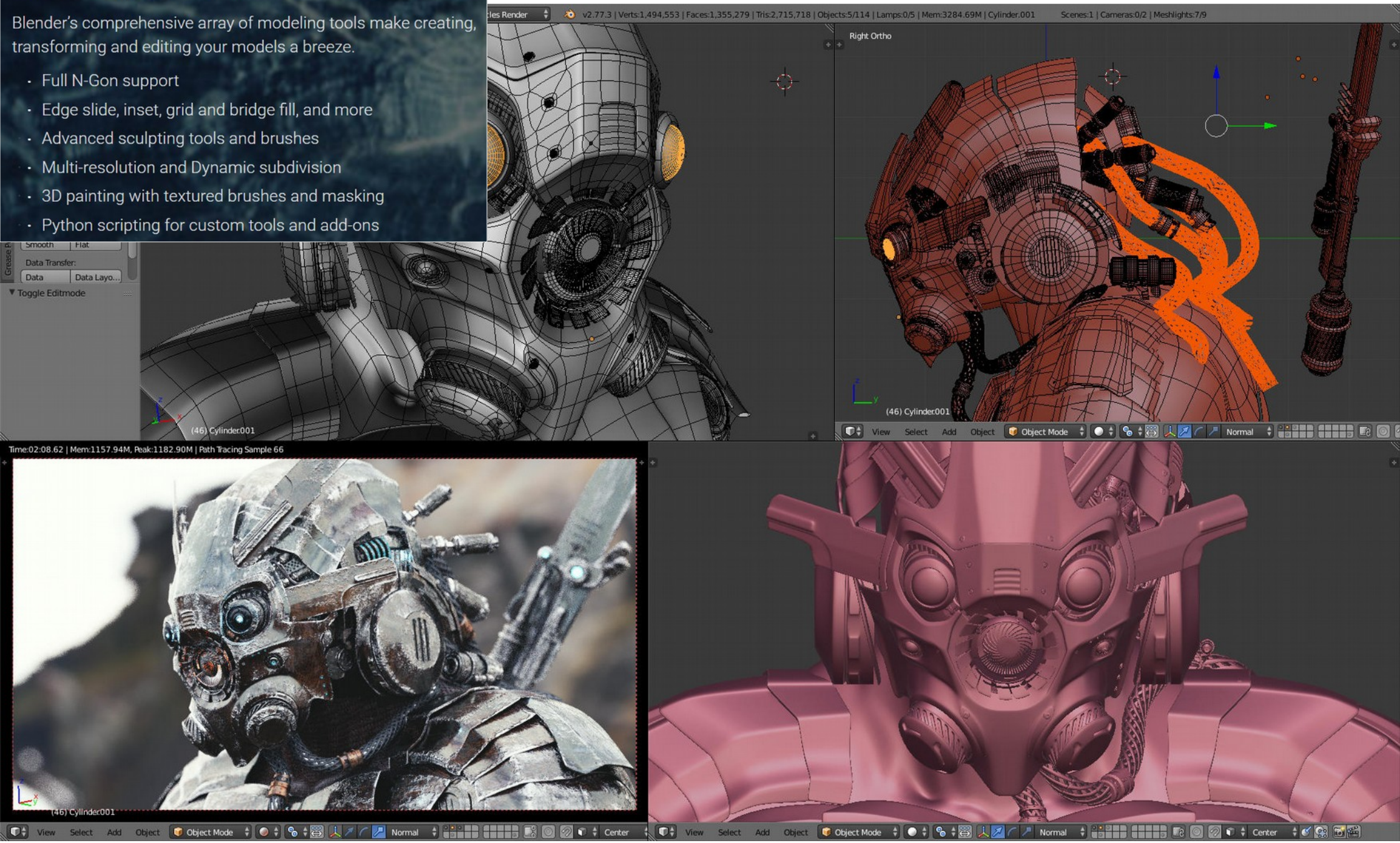
- Real-time viewport preview
- CPU & GPU rendering
- PBR shaders & HDR lighting support
- VR rendering support



Modeling, Sculpt, UV

Blender's comprehensive array of modeling tools make creating, transforming and editing your models a breeze.

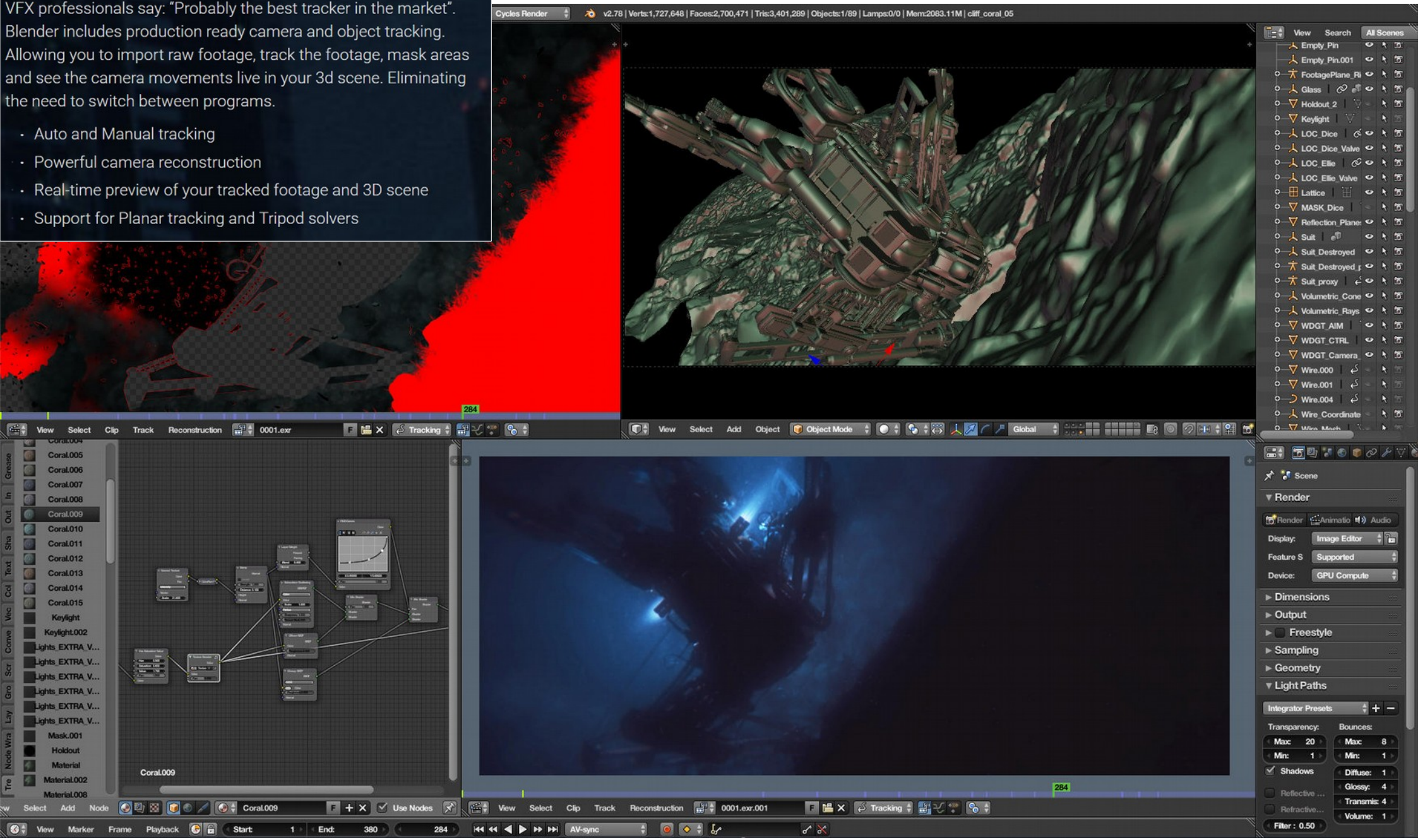
- Full N-Gon support
- Edge slide, inset, grid and bridge fill, and more
- Advanced sculpting tools and brushes
- Multi-resolution and Dynamic subdivision
- 3D painting with textured brushes and masking
- Python scripting for custom tools and add-ons



VFX

VFX professionals say: "Probably the best tracker in the market". Blender includes production ready camera and object tracking. Allowing you to import raw footage, track the footage, mask areas and see the camera movements live in your 3d scene. Eliminating the need to switch between programs.

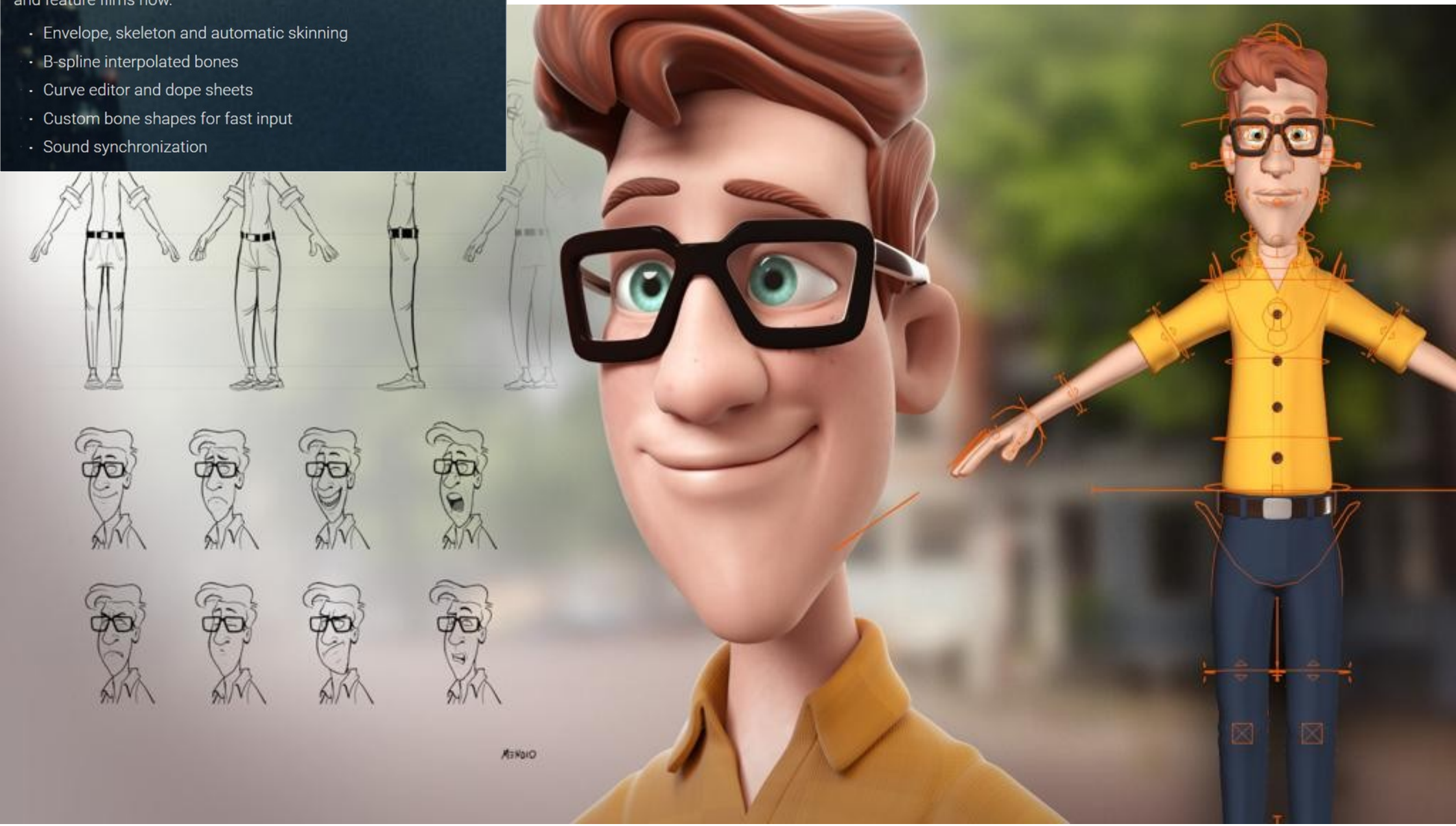
- Auto and Manual tracking
- Powerful camera reconstruction
- Real-time preview of your tracked footage and 3D scene
- Support for Planar tracking and Tripod solvers



Animation & Rigging

Thanks to the high quality rigging and animation tools, Blender is being used for numerous short films, advertisements, TV series and feature films now.

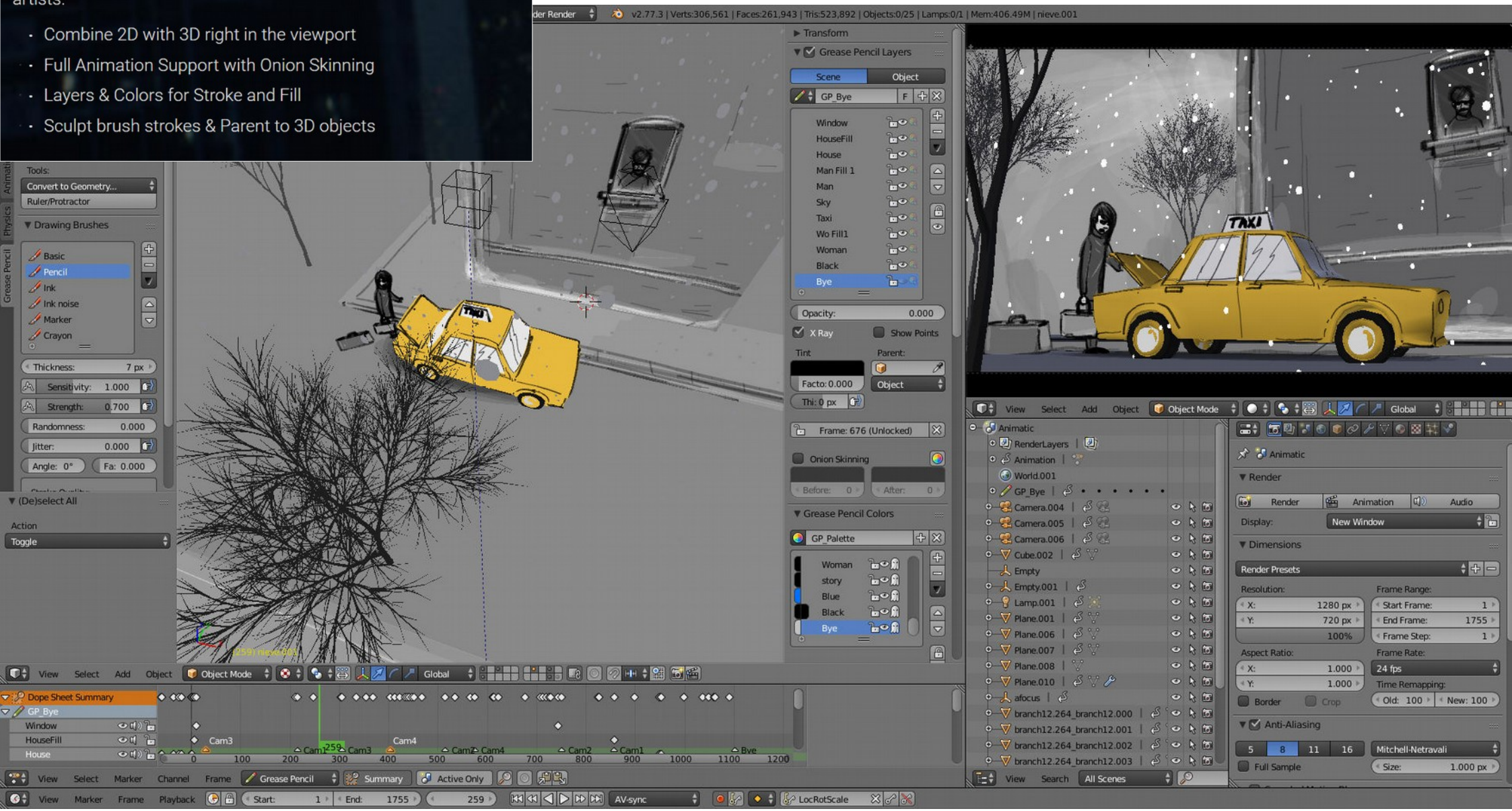
- Envelope, skeleton and automatic skinning
- B-spline interpolated bones
- Curve editor and dope sheets
- Custom bone shapes for fast input
- Sound synchronization



Story Art, drawing 2d in 3d

Really! Drawing directly in a 3D viewport makes a lot of sense. It opens unsurpassed workflow freedom for story-boarders and 2D artists.

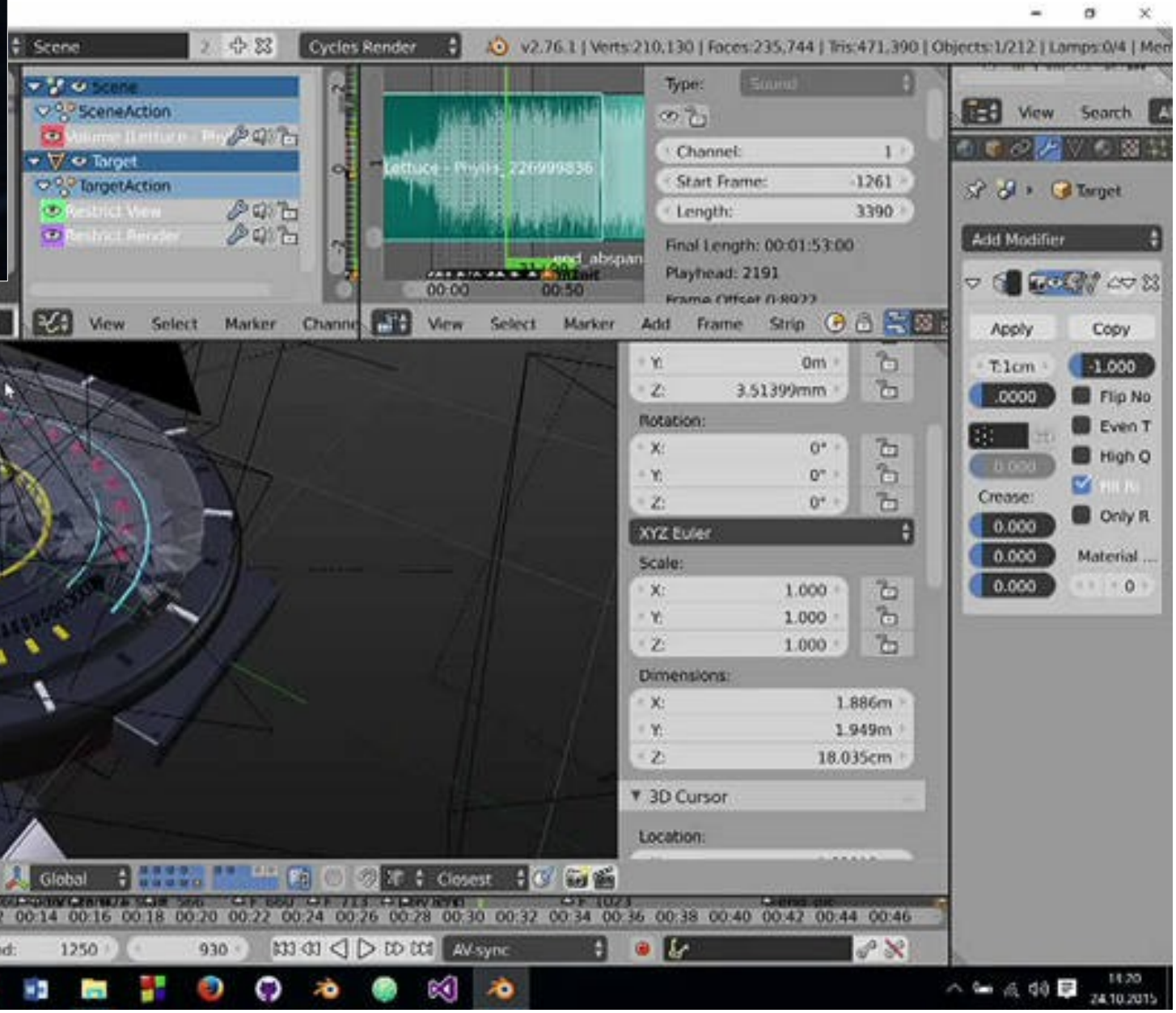
- Combine 2D with 3D right in the viewport
- Full Animation Support with Onion Skinning
- Layers & Colors for Stroke and Fill
- Sculpt brush strokes & Parent to 3D objects



Make it your own

Blender has a flexible Python controlled interface. Layout, colors, size and even fonts can be adjusted. Use hundreds of add-ons by the community or create your own using Blender's accessible Python API.

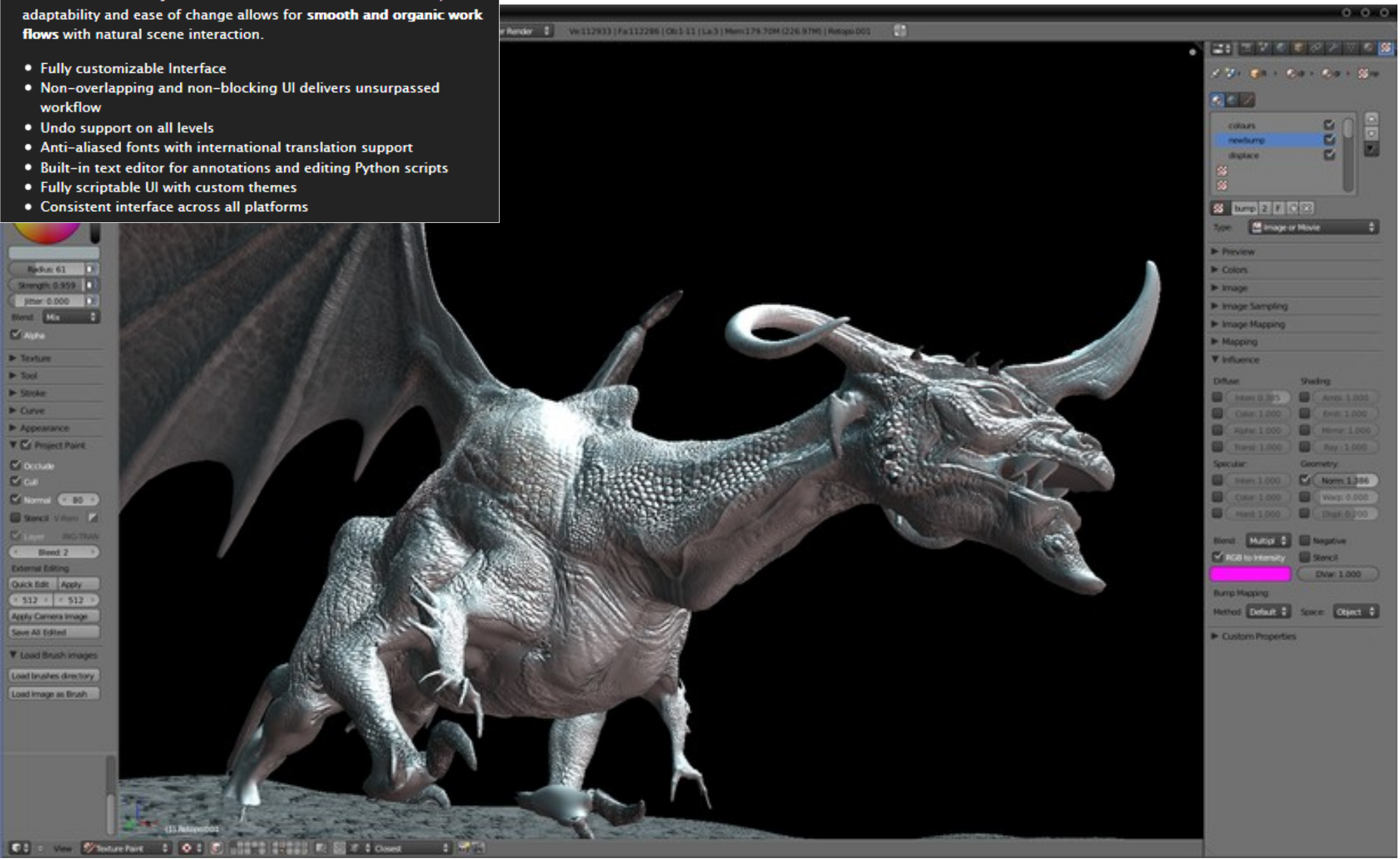
- Customize the interface layout and colors
- Hi-res/Retina screen support
- Create your own tools and add-ons
- Draw over the OpenGL viewport
- Connect with Blender's Render API



The Interface allows you to change, adapt and re distribute the layout of all UI components and tools to suit the task at hand.

From the smallest adjustment in size to a full custom interface, all this adaptability and ease of change allows for **smooth and organic work flows** with natural scene interaction.

- Fully customizable Interface
- Non-overlapping and non-blocking UI delivers unsurpassed workflow
- Undo support on all levels
- Anti-aliased fonts with international translation support
- Built-in text editor for annotations and editing Python scripts
- Fully scriptable UI with custom themes
- Consistent interface across all platforms

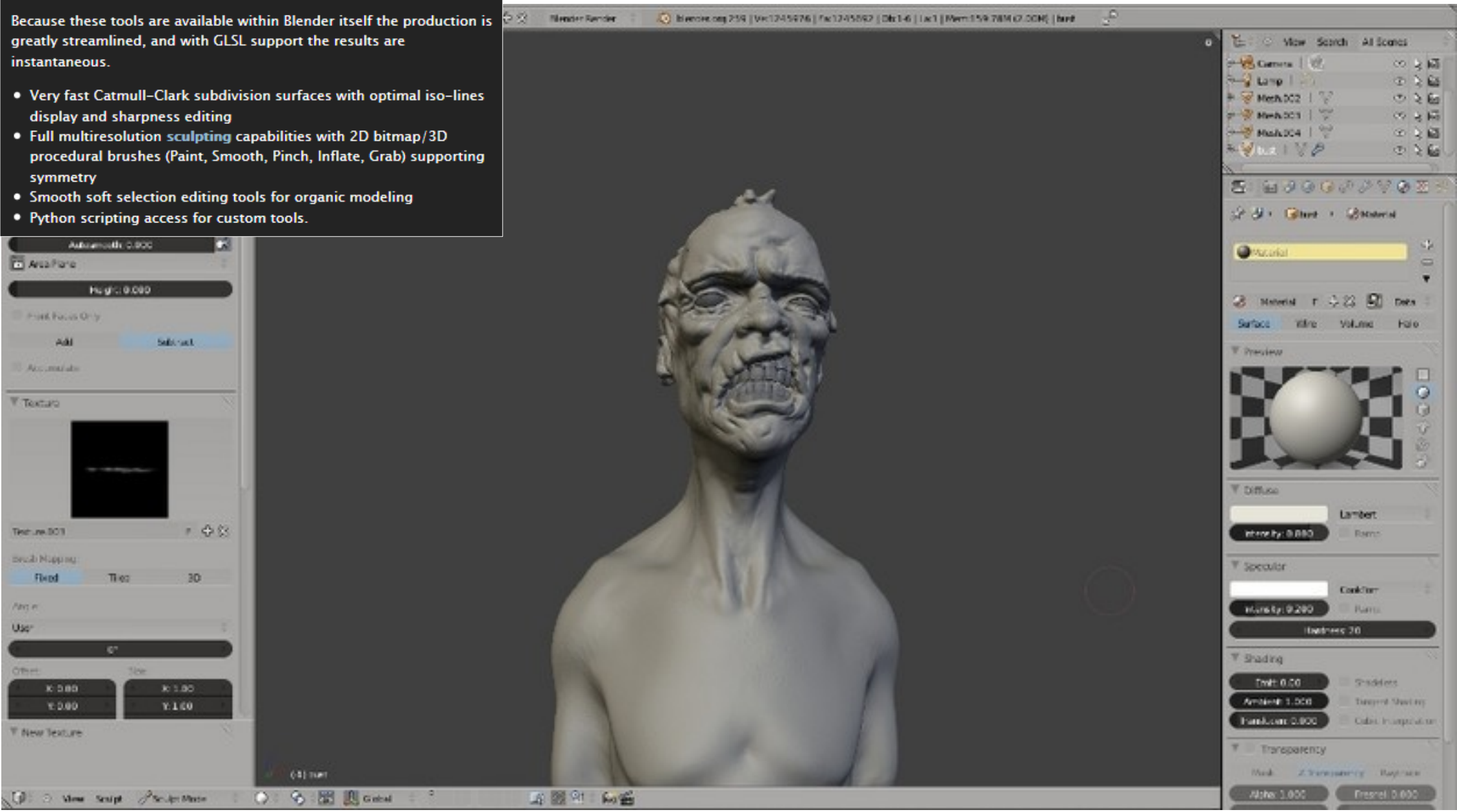


Character Modeling

With a great variety of tools available, Sculpting can be used to create very detailed organic looking characters. Coupled with modifiers like multi-res, the models can be very complex while the interface remains responsive.

Because these tools are available within Blender itself the production is greatly streamlined, and with GLSL support the results are instantaneous.

- Very fast Catmull-Clark subdivision surfaces with optimal iso-lines display and sharpness editing
- Full multiresolution sculpting capabilities with 2D bitmap/3D procedural brushes (Paint, Smooth, Pinch, Inflate, Grab) supporting symmetry
- Smooth soft selection editing tools for organic modeling
- Python scripting access for custom tools.

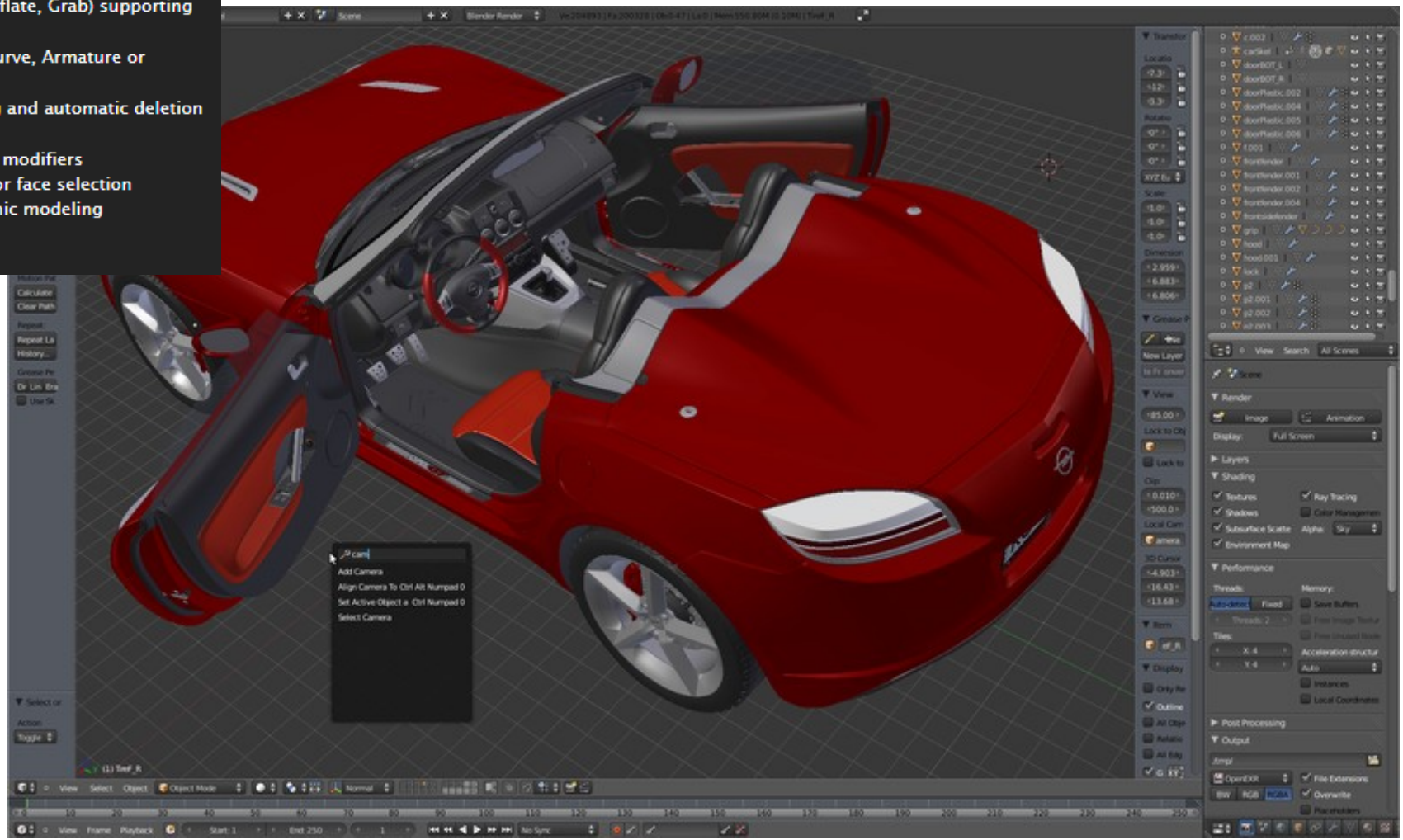


Solids Modeling

Hard surfaces and Subdivision surface modeling benefit from tools that range from community provided complex primitives to stackable modifiers

The modifiers allow non destructive alterations to a base mesh, these can be easily modified, interchanged and undone.

- A range of 3D object types including polygon meshes, NURBS surfaces, bezier and B-spline curves, metaballs, vector fonts (TrueType, PostScript, OpenType)
- Very fast Catmull-Clark subdivision surfaces with optimal iso-lines display and sharpness editing
- Full multiresolution sculpting capabilities with 2D bitmap/3D procedural brushes (Paint, Smooth, Pinch, Inflate, Grab) supporting symmetry
- Modifier stack deformers such as Lattice, Curve, Armature or Displace
- Mirror modifier with middle vertices clipping and automatic deletion of inner faces
- Non destructive real time Boolean and Array modifiers
- Mesh modeling based on vertex, edge and/or face selection
- Smooth soft selection editing tools for organic modeling
- Python scripting access for custom tools.

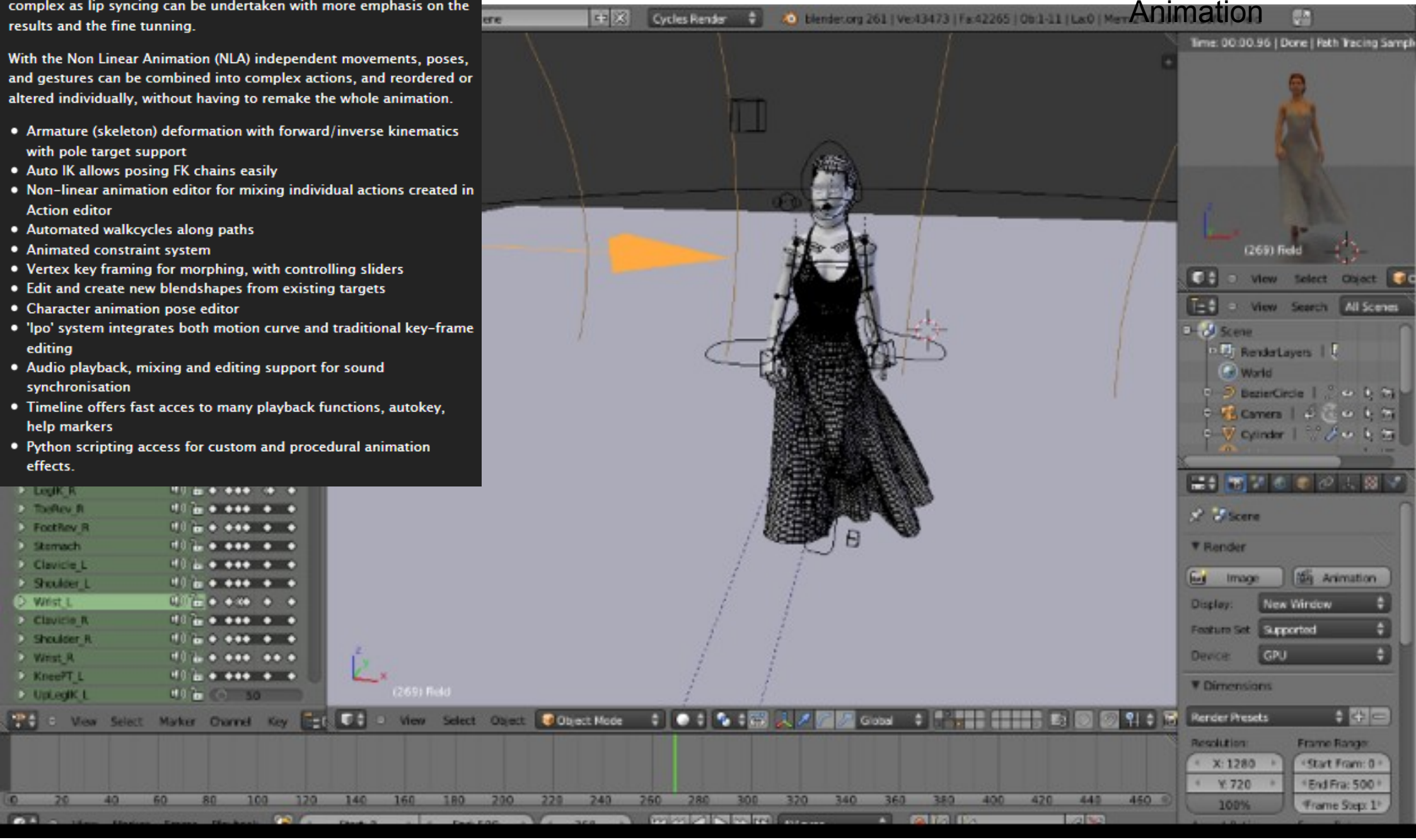


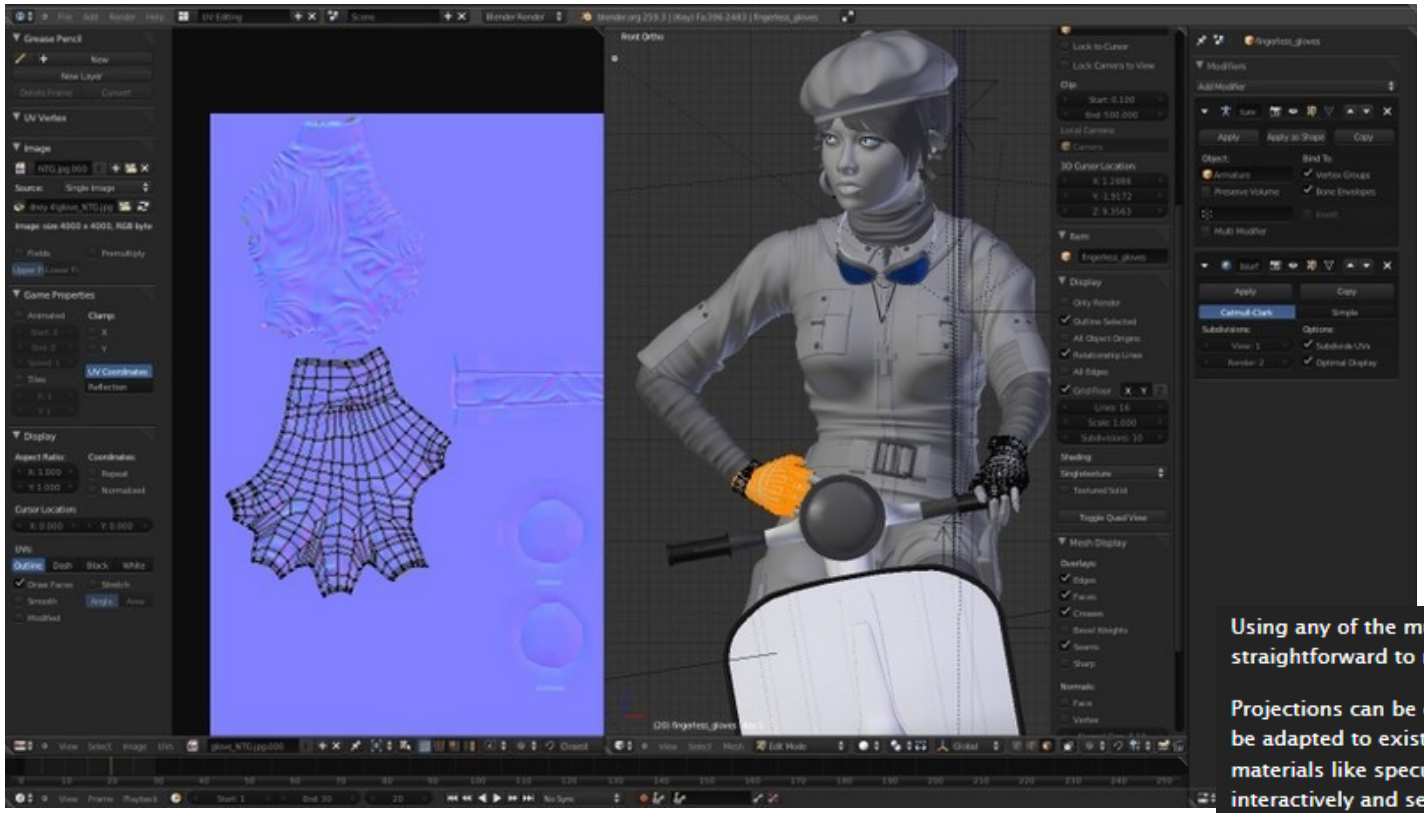
Animation

Thanks to flawless integration, tasks as simple as walk cycles or as complex as lip syncing can be undertaken with more emphasis on the results and the fine tunning.

With the Non Linear Animation (NLA) independent movements, poses, and gestures can be combined into complex actions, and reordered or altered individually, without having to remake the whole animation.

- Armature (skeleton) deformation with forward/inverse kinematics with pole target support
- Auto IK allows posing FK chains easily
- Non-linear animation editor for mixing individual actions created in Action editor
- Automated walkcycles along paths
- Animated constraint system
- Vertex key framing for morphing, with controlling sliders
- Edit and create new blendshapes from existing targets
- Character animation pose editor
- 'Ipo' system integrates both motion curve and traditional key-frame editing
- Audio playback, mixing and editing support for sound synchronisation
- Timeline offers fast acces to many playback functions, autokey, help markers
- Python scripting access for custom and procedural animation effects.





Using any of the multiple available tools to project meshes, it is straightforward to manage texture space for a given geometry.

Projections can be exported as image layouts, the unwrapped area can be adapted to existing images, apply multiple textures and special materials like specular and bump maps, alterations can be done interactively and see the results in real time.

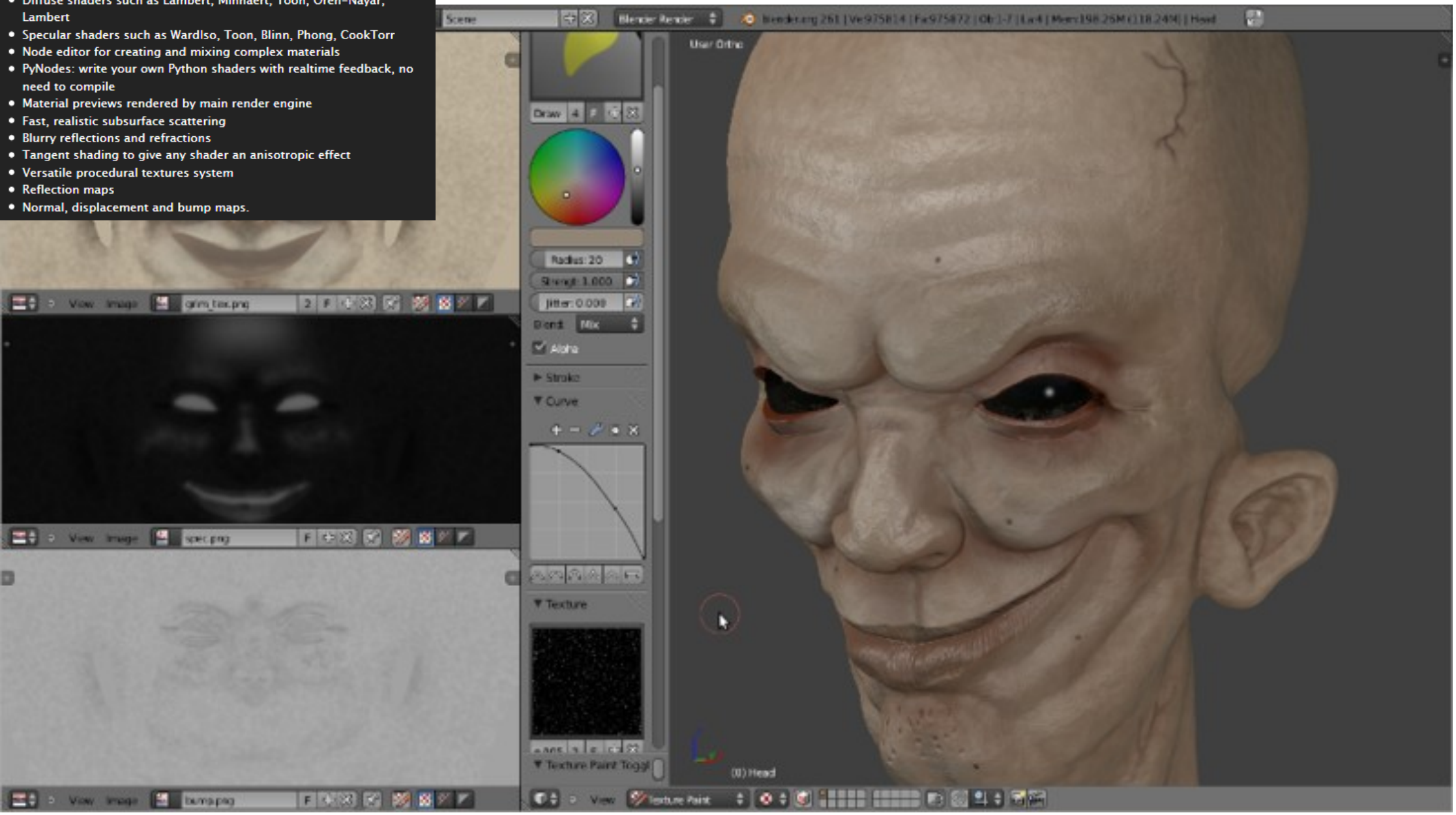
- Conformal and Angle Based unwrapping methods
- Interactive transform of UV maps by vertex pinning
- Proportional falloff editing of UV maps for smooth transformations
- Seam based unwrapping
- Cube, Cylinder, Sphere, View projections
- Catmull-Clark subdivition of UVs for less distortion
- Minimize stretch tool allows to reduce area distortion
- Multiple UV layers

Shading

Combining textures with fine grained deformation, complex materials can be applied and directly altered in the viewport.

With the completely node based Blender Shadding system, complex computed colors can be obtained by the controlled combination of base materials, lighting, and special textures mapped to the geometry.

- Diffuse shaders such as Lambert, Minnaert, Toon, Oren-Nayar, Lambert
- Specular shaders such as Wardlso, Toon, Blinn, Phong, CookTorr
- Node editor for creating and mixing complex materials
- PyNodes: write your own Python shaders with realtime feedback, no need to compile
- Material previews rendered by main render engine
- Fast, realistic subsurface scattering
- Blurry reflections and refractions
- Tangent shading to give any shader an anisotropic effect
- Versatile procedural textures system
- Reflection maps
- Normal, displacement and bump maps.

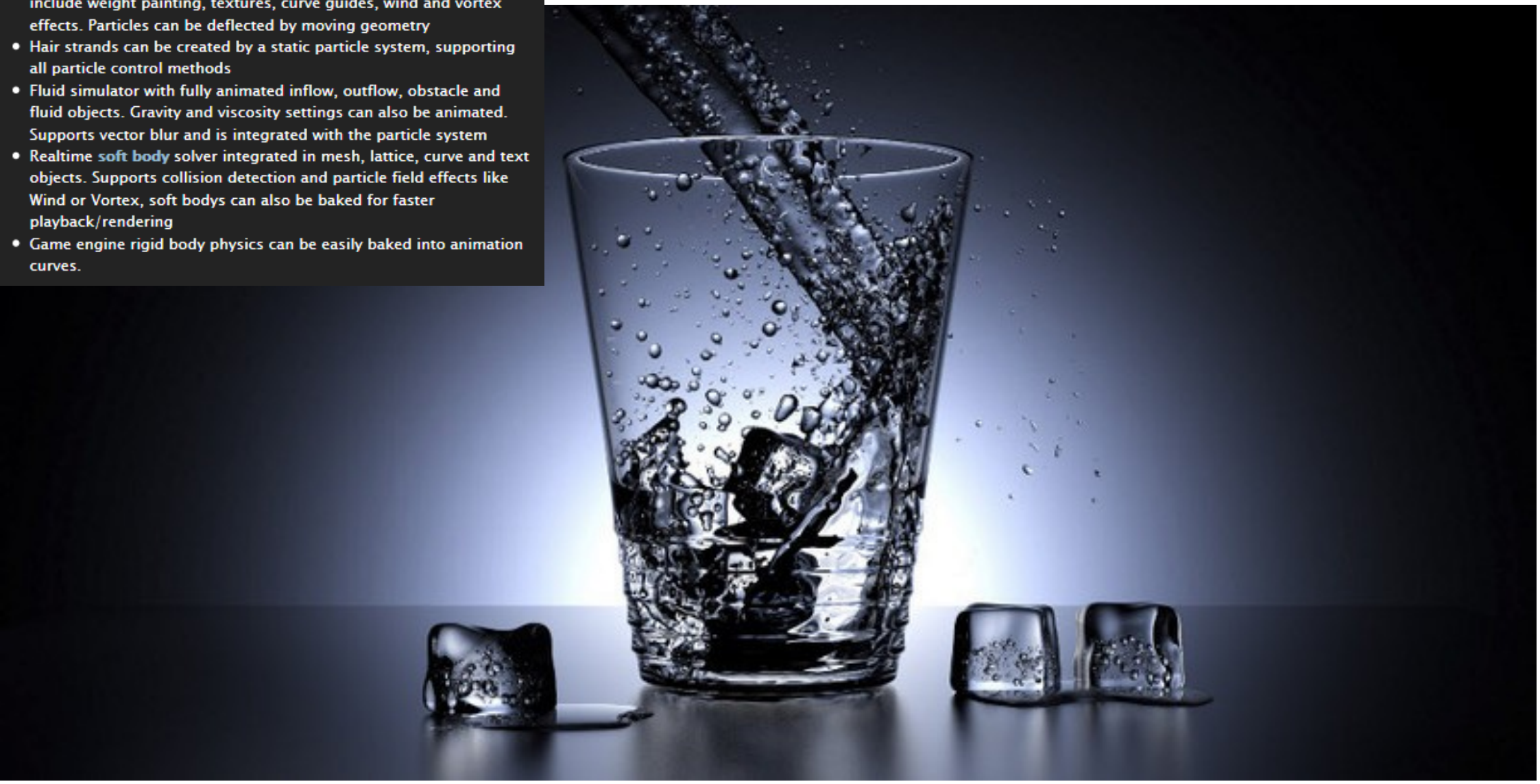


Physics and Particles

Complex and dynamic materials that interact with each other and their environment are easy to set up and control, alter the natural flow of water or set flags to rail in the wind with special effectors.

From a crumbling building, an exploding ship or a refreshing glass of water to hair that wades in the air, fluffy fur or a patch of grass, the physics and particle system will deliver **great looking results**.

- Particle system can be atached to any mesh object. Control methods include weight painting, textures, curve guides, wind and vortex effects. Particles can be deflected by moving geometry
- Hair strands can be created by a static particle system, supporting all particle control methods
- Fluid simulator with fully animated inflow, outflow, obstacle and fluid objects. Gravity and viscosity settings can also be animated. Supports vector blur and is integrated with the particle system
- Realtime **soft body** solver integrated in mesh, lattice, curve and text objects. Supports collision detection and particle field effects like Wind or Vortex, soft bodys can also be baked for faster playback/rendering
- Game engine rigid body physics can be easily baked into animation curves.



Realtime 3D/Game Creation

With its complete integration to code base and its totally graphical interface, the game engine is both fully independent from, while at the same time perfectly adapted to, your programing skills.

Use the visual data blocks to create your game logic, or code your own, either way once finished your product can be ported to the run time environment of your choice.

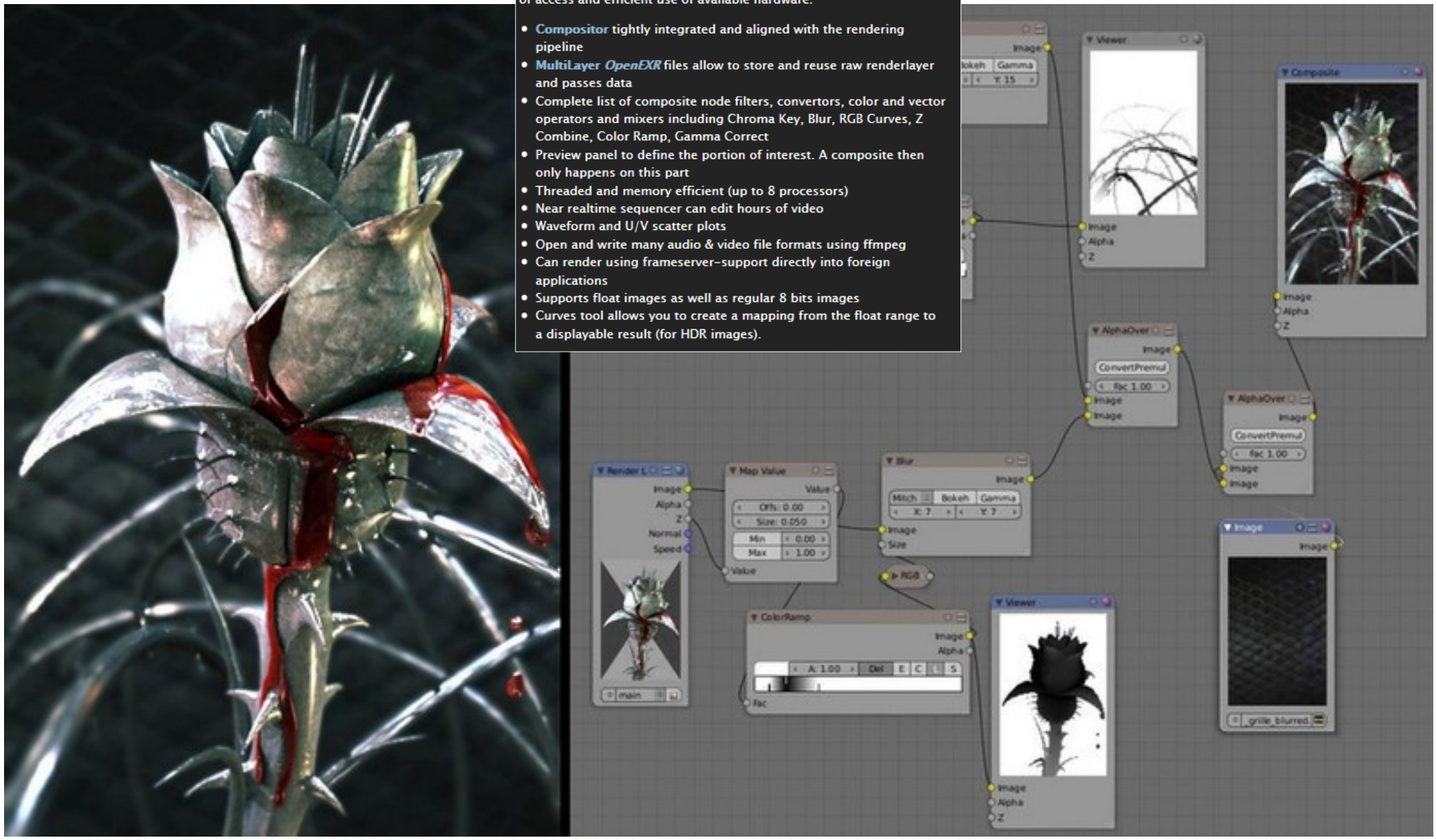
- Graphical logic editor for defining interactive behavior without programming
- Collision detection and dynamics simulation now support **Bullet Physics Library**. Bullet is an open source collision detection and rigid body dynamics library developed for Play Station 3
- Shape types: Convex polyhedron, box, sphere, cone, cylinder, capsule, compound, and static triangle mesh with auto deactivation mode
- Discrete collision detection for RigidBody simulation
- Support for in-game activation of dynamic constraints
- Full support for vehicle dynamics, including spring reactions, stiffness, damping, tyre friction etc
- Python scripting API for sophisticated control and AI, fully defined advanced game logic
- Support all OpenGL™ lighting modes, including transparencies, Animated and reflection-mapped textures
- Support for multimaterials, multitexture and texture blending modes, per-pixel lighting, dynamic lighting, mapping modes, GLSL vertexPaint texture blending, toon shading, animated materials, support for Normal Maping and Parallax Mapping
- Playback of games and interactive 3D content without compiling or preprocessing
- Audio, using the SDL toolkit
- Multi-layering of Scenes for overlay interfaces.

Imaging and Compositing

With the compositor fully integrated into the rendering pipeline, there is no need for intermediate files or applications, allowing for quick and easy corrections and composites to your rendered scene.

But if you need to use intermediate applications Blender can render out all layers and passes to a single multilayered OpenEXR file for ease of access and efficient use of available hardware.

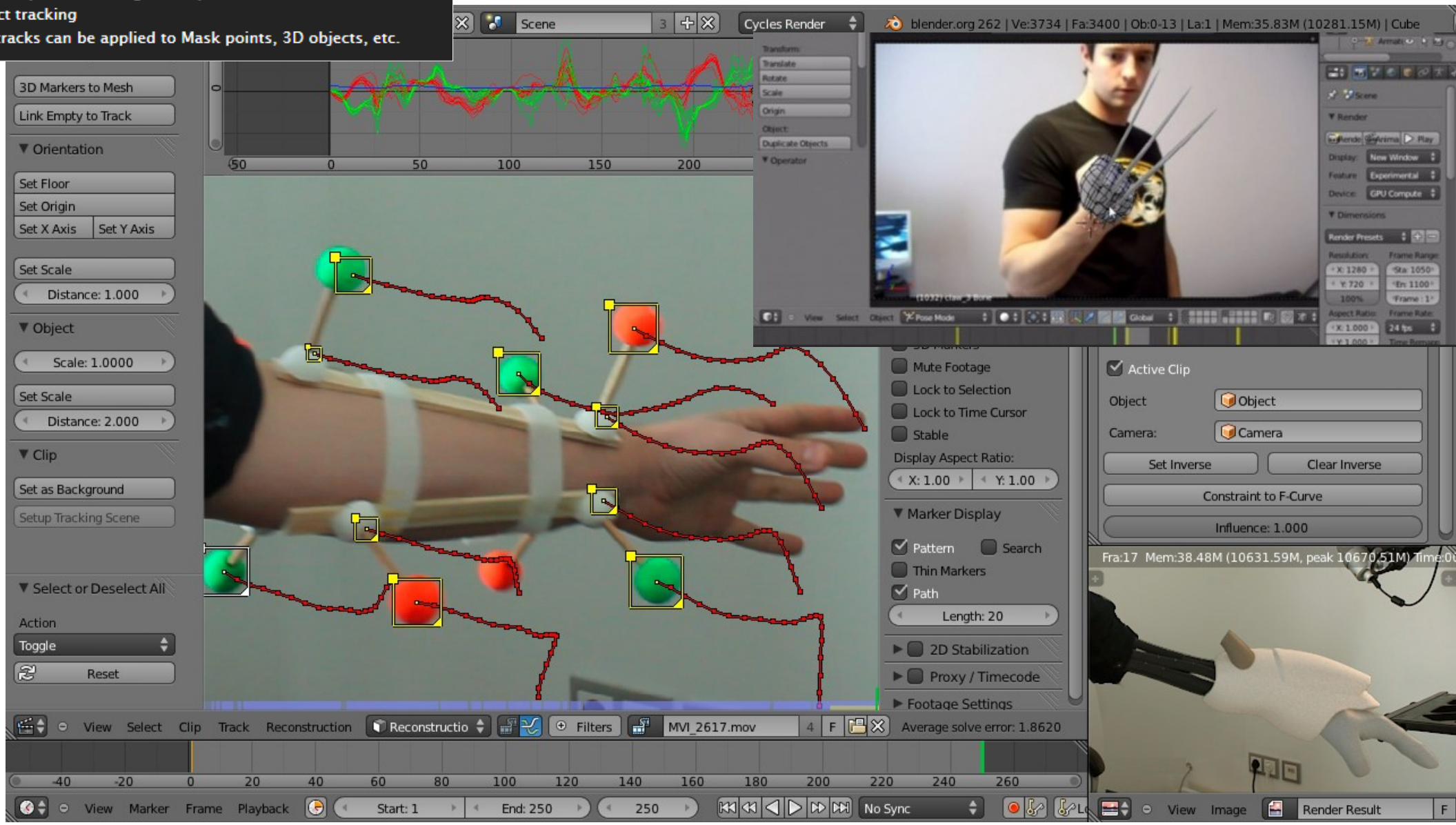
- **Compositor** tightly integrated and aligned with the rendering pipeline
- **MultiLayer *OpenEXR*** files allow to store and reuse raw renderlayer and passes data
- Complete list of composite node filters, convertors, color and vector operators and mixers including Chroma Key, Blur, RGB Curves, Z Combine, Color Ramp, Gamma Correct
- Preview panel to define the portion of interest. A composite then only happens on this part
- Threaded and memory efficient (up to 8 processors)
- Near realtime sequencer can edit hours of video
- Waveform and U/V scatter plots
- Open and write many audio & video file formats using ffmpeg
- Can render using frameserver-support directly into foreign applications
- Supports float images as well as regular 8 bits images
- Curves tool allows you to create a mapping from the float range to a displayable result (for HDR images).



Camera and motion tracking

Blender offers tools built-in for VFX production, covering the entire pipeline from footage import, tracking & masking, all the way to final edit and grading. For camera and motion tracking we use the open Libmv library, fully integrated in Blender's "Movie Clip Editor".

- Fast and powerful camera reconstruction
- Real-time preview of 3D and footage combinations
- Support for planar tracking and tripod solvers
- 3D object tracking
- Motion tracks can be applied to Mask points, 3D objects, etc.



Case history

Mathilde Ampe – Automotive design with Blender

Stoccolma
Svezia

Usano diverse applicazioni 3D, come **Houdini**, **Blender**, **Zbrush** e **Maya**.

In una dichiarazione affermano di come siano rimasti sorpresi su quanto velocemente si possano produrre modelli.

Blender sta diventando sempre più utilizzato nel reparto di modellazione in ufficio di Stoccolma”

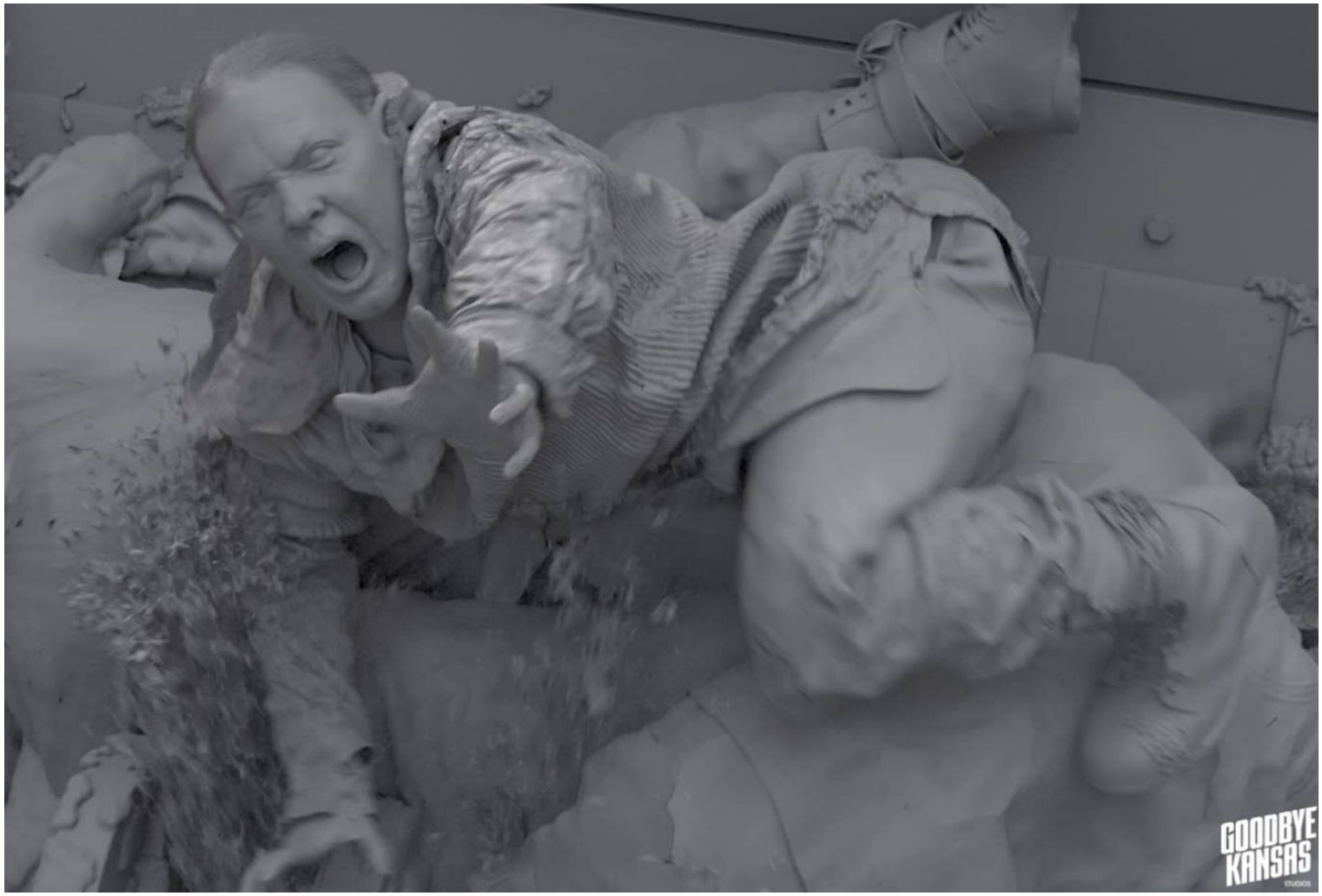
ADAM

I personaggi sono stati modellati in **Blender** e **Zbrush**. La versione low poly del personaggio è stata interamente fatta in Blender.

Hanno così lavorato in un ambiente integrato in tempo reale, consentendo al team di costruire, strutturare, animare, illuminare e renderizzare tutto in **Unity** per garantire una grafica di alta qualità ad una frazione del costo e del tempo rispetto al normale ciclo di produzione di un film. **Risultati visivi quasi fotorealistici alla metà del tempo medio** rispetto ai cicli di produzione abituali.

Walking Dead - Stagione 8

Retopology e UV-mappatura delle scansioni attore umano sono state fatte in **Zbrush** e **Blender**. Acconciature fatte anche in Blender.



GOODBYE KANSAS STUDIOS

Altri lavori in cui l'utilizzo di blender è stato fondamentale

Along with the gods – The two worlds

Biomutant – cinematic trailer

Raid: World War 2 – Cinematic Trailer

Mass Effect: The Andromeda Initiative

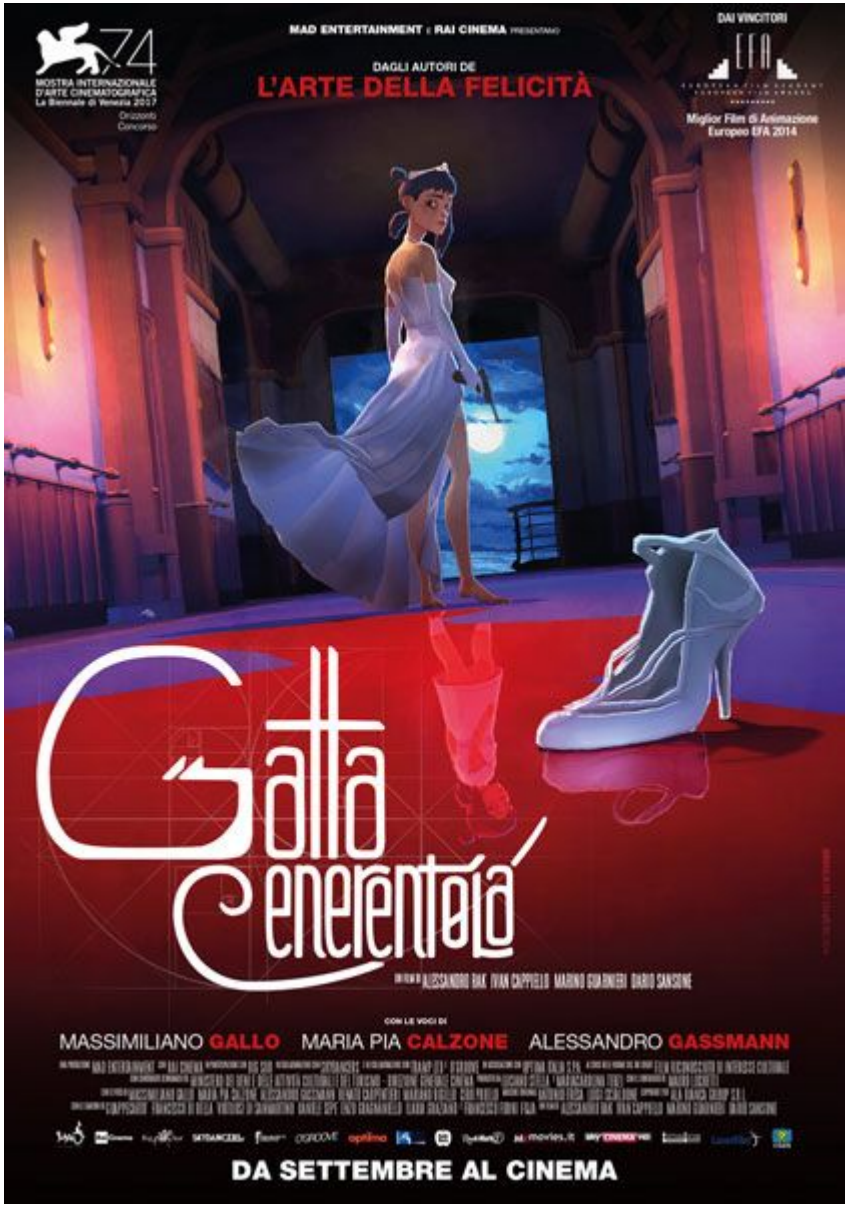
NEXTGEN
blender™

TANGENT ANIMATION

BLENDER FOR NETFLIX
Netflix ha pagato 30 milioni di dollari per acquistare i diritti di messa in onda sulla propria piattaforma (Cina esclusa) di Next Gen, film 3D realizzato interamente con Blender e renderizzayo tramite Cycles (il motore di render proprietario interno di Blender).

Substance Painter e **Photoshop** sono stati impiegati per il texturing. **Houdini** e **FumeFX** sono stati impiegati per generare VDB e dati **Alembic** per l'importazione e renderizzazione in Cycles.

L'animazione è stata prodotta in Canada presso **Tangent Animation,** conosciuta per avere realizzato in precedenza Ozzy.



Gatta Cenerentola è un film d'animazione italiano del 2017, diretto da Alessandro Rak, Ivan Cappiello, Marino Guarnieri e Dario Sansone, ispirato all'omonima fiaba di Giambattista Basile e all'opera teatrale di Roberto De Simone.

Il film è stato proiettato al Festival del cinema di Venezia nella sezione Orizzonti, ed è stato distribuito nei cinema italiani il 14 settembre 2017.

Il film è stato anche in gara per partecipare ai premi **Oscar 2018**, nella categoria miglior film d'animazione, ma non è rientrato nella cinquina finale.[

Gatta Cenerentola si aggiudica 7 nomination ai **David di Donatello** del 21 Marzo 2018, e vince due premi per Miglior Produttore (Luciano Stella e Maria Carolina Terzi) e Migliori Effetti Speciali Visivi (M.A.D. Entertainment).

MAD entertainment

http://www.madinnaples.com/

Let's Get In Touch!

MAD ENTERTAINMENT - Piazza del Gesù Nuovo, 33 - 80134, Napoli (Italy)

+39 081 552 71 06

info@madinnaples.com

https://blenderartists.org/t/emmys-2018/1126934

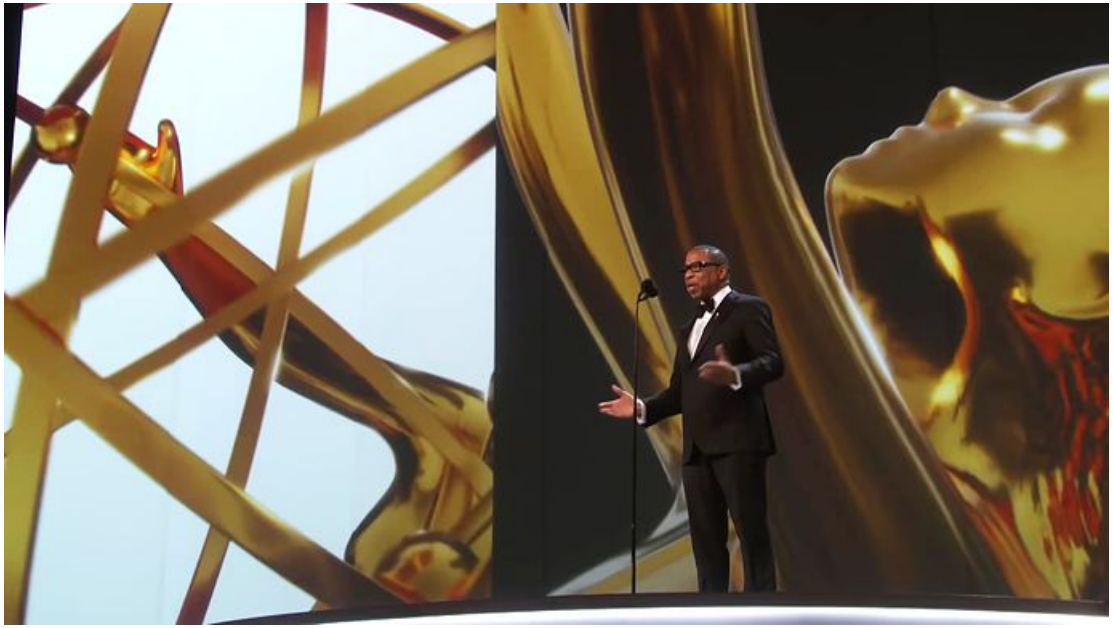
Emmys 2018

Artwork Forum Gallery featured

alanplanes15 Member

I had the opportunity and pleasure of working with **Allucinari** in association with **Raj Kapoor Productions** on the 2018 **Emmy awards**.

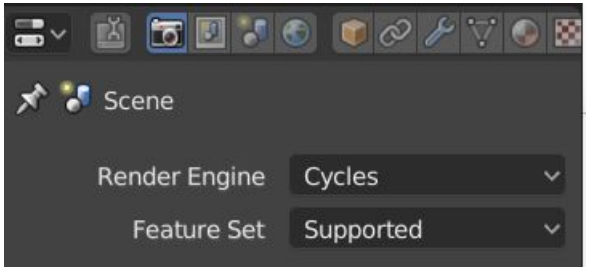
We used Blender and Eevee to create the backgrounds throughout the whole show. Eevee even though in Alpha was very useful because of its speed and ability to get good materials rendering in seconds.
In the linked video is where I did most of my work with Mark D Allen. We created the composition, materials, lighting and animation for the statue.
I also personally also animated the interns animation in Blender and Eevee.
Check out the link to see it animated!
Pretty cool to use Eevee on a international world wide event!



Render Engine

Cycles

è un motore di rendering di tipo **raytracing** è basato sul algoritmo denominato Uni-Directional Path Tracing, in grado di renderizzare in modo fisicamente corretto. Non richiede plugin, è più complesso da usare, utilizza CPU e GPU anche combinandoli. Permette di fare preview in realtime. È un motore di rendering unbiased ovvero realizza immagini calcolando il comportqamento corretto della luce. Utilizzato con la CPU può risultare lento. Può produrre immagini con rumore se non settato correttamente. È concepito per le animazioni. Lavora con il sistema dei nodi.

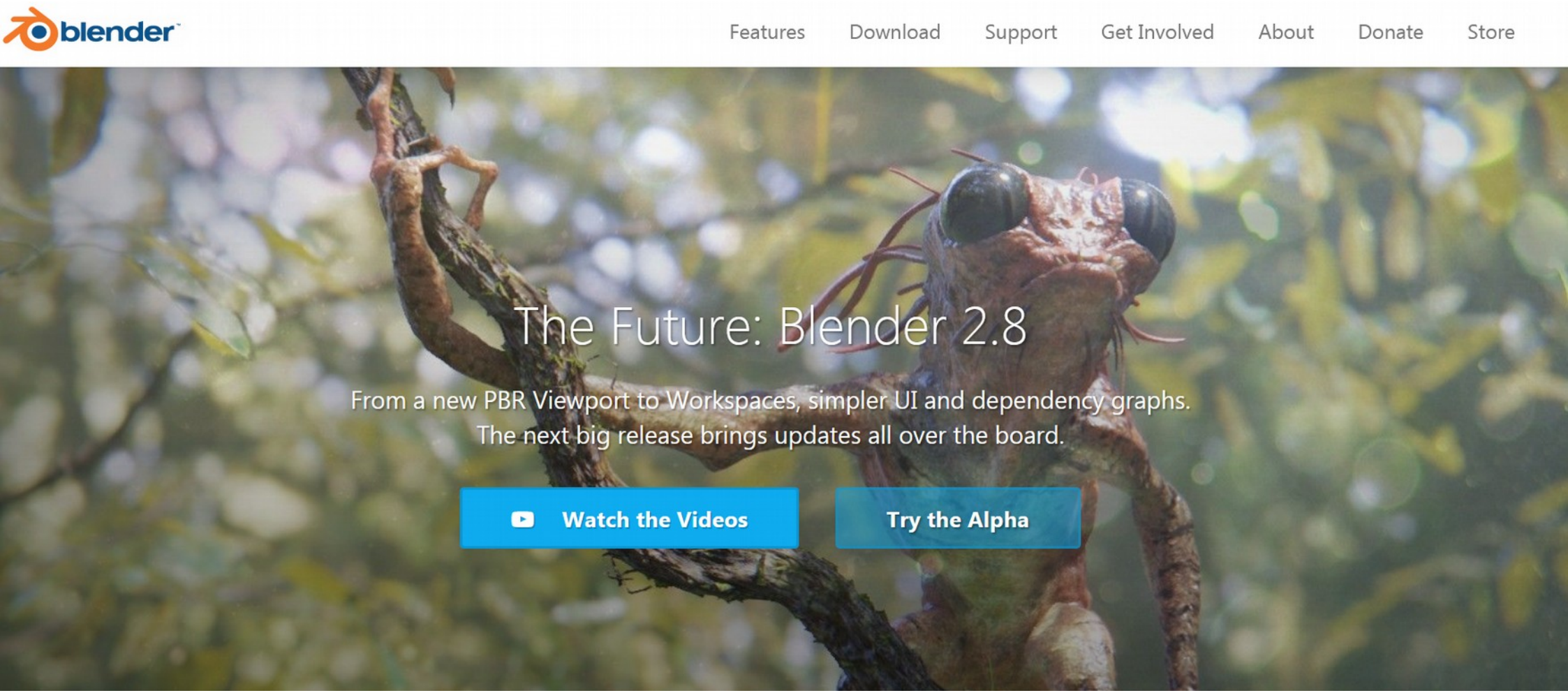


Pro

- Lavora in realtime
- Rendering unbiased
- Render passes
- Potente sistema di nodi
- Calcolo su CPU o GPU anche più di una in parallelo
- Veloce in gpu
- Natura unbiased e progressiva

Contro

- Poco supporto per le GPU AMD
- Non performante in CPU

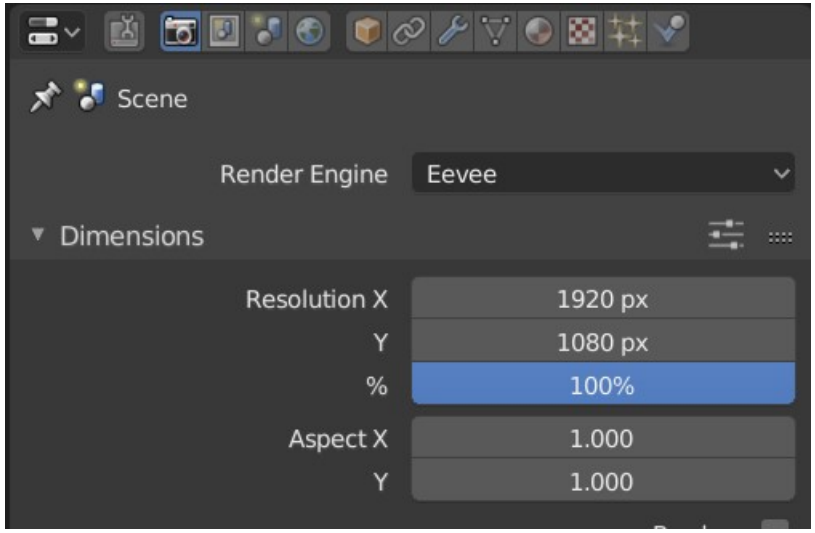


EEVEE

Extra **E**asy **V**irtual **E**nvironment **E**ngine

È uno strumento pensato per essere usato in produzione affiancando Cycles ma anche come motore di rendering completo poiché supporta il rendering di fotogrammi, di animazioni, compositing e sequencer.

A differenza di Cyles è **EEVEE** è un motore di rendering realtime reattivo e gli animatori possono utilizzarlo per lavorare vedendo ombre e riflessi, illuminazione e profondità di campo.

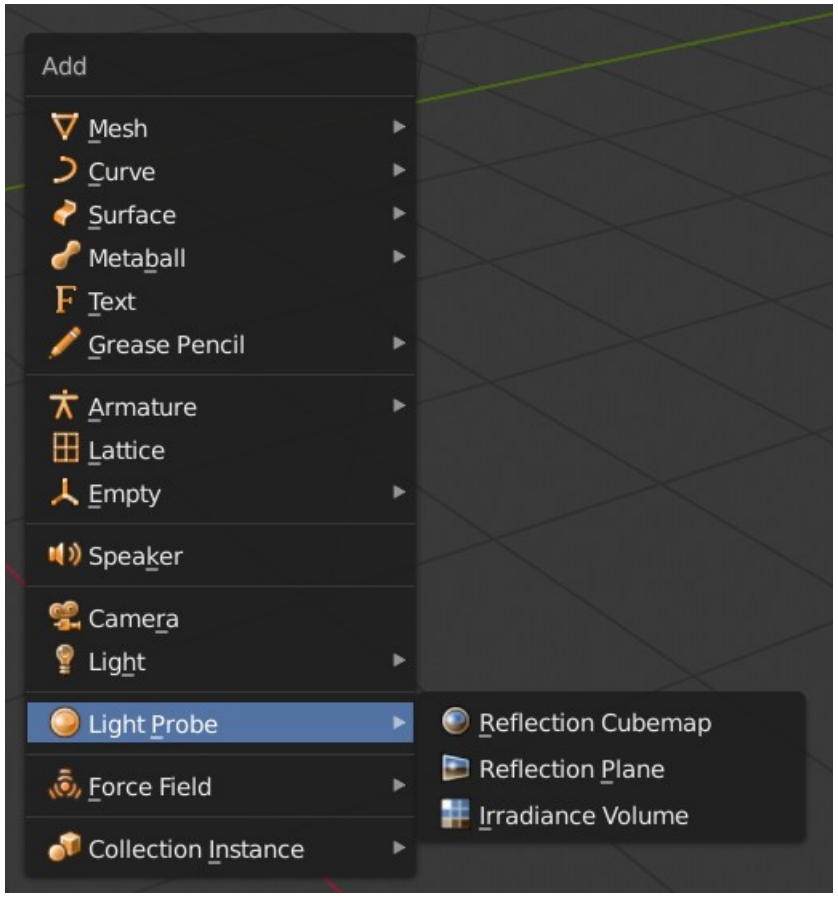


Usa
OpenGL (Open Graphics Library) che è una specifica che definisce una API per più linguaggi e per più piattaforme per scrivere applicazioni che producono computer grafica 2D e 3D.
Per ottenere un motore di render che abbattesse in maniera drastica i tempi di rendering è stata effettuata una *"OpenGL factoring"* e sono aumentati i requisiti minimi passando a OpenGL 3,3 core e OpenGL ES 3,0 minimo

materiali PBR (Physically Based Rendering)

Eevee consente la riproduzione in tempo reale di **materiali PBR** accorciando i tempi di rendering ciascun fotogramma.
Questo non solo accelera la produzione ma riduce il costo poichè non è necessario eseguire il rendering degli stessi fotogrammi dopo ogni modifica.

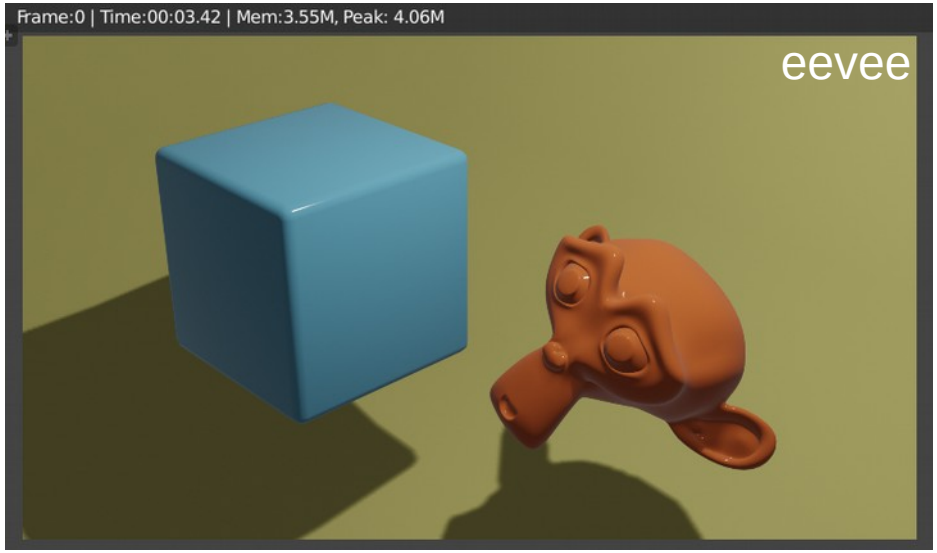
Questi nuovi oggetti permettono di simulare la riflessione ambientale degli oggetti



Eevee seguirà il trend della game industry e del PBR (Physically Based Rendering) supportando schede video high-end per avere un viewport estremamente reattivo.

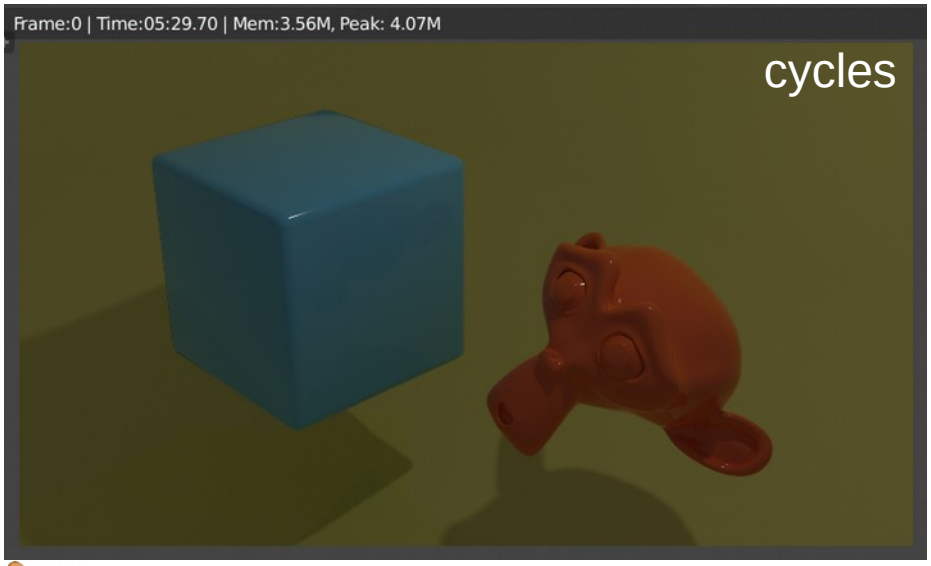
La roadmap di Eevee prevede:

- Supporto di tutte le luci di Blender
- Smooth shadows realistiche
- Uber shaders che seguono la filosofia di Unreal Engine 4 con i PBR materials
- Materiali avanzati come SSS, Clear Coat e Volumetric
- Image Based Lighting (supporto per le pre-rendered HDRI)
- Glossy rough shaders
- Diffuse approximation
- Probe Objects
- Environment map array
- Post Process Effects (come Motion Blur, Bloom, Tone Map, Depth of Field, Ground Truth Ambient Occlusion)



Tempo di rendering: quasi 4”

EEVEE 80 volte più veloce di Cycles



Tempo di rendering: 5’ 29”

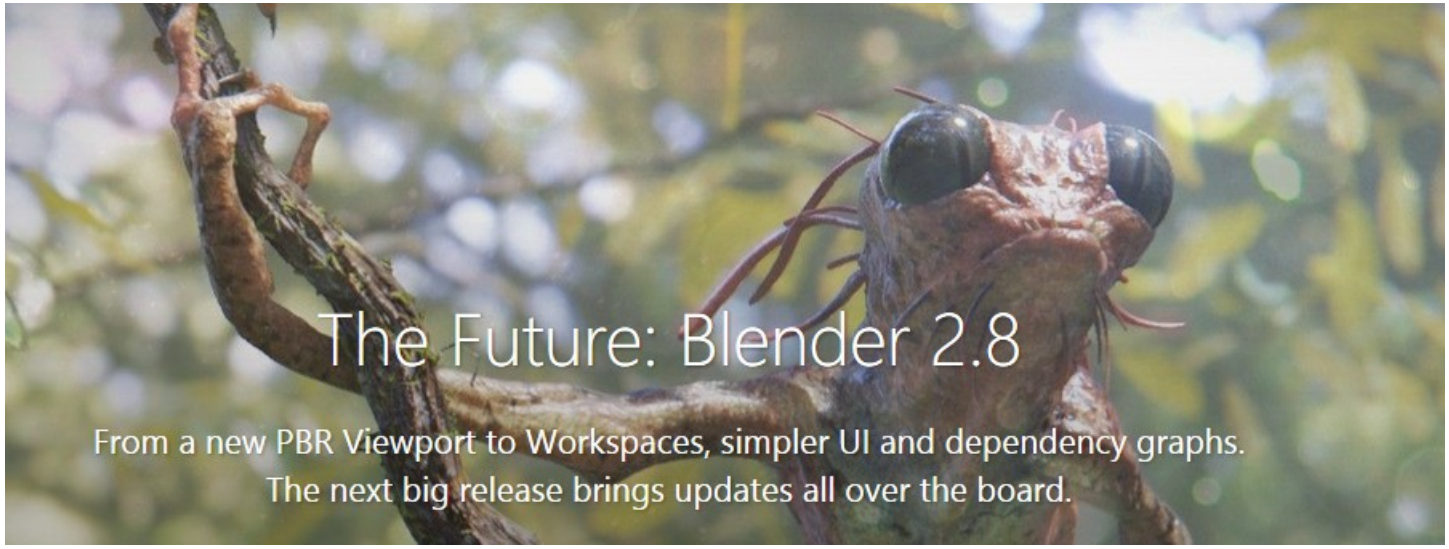
A chi può servire EEVEE
A tutti quelli che hanno bisogno di una previsualizzazione molto fedele alla resa finale

Game asset creators che poi magari esportano in **Unity** o **Unreal Engine 4**.
Possono modellare e controllare il materiale senza bisogno di esportare in Unity o UE4 oppure apportare modifiche e reimportare nuovamente. Il flusso di lavoro è molto accelerato,

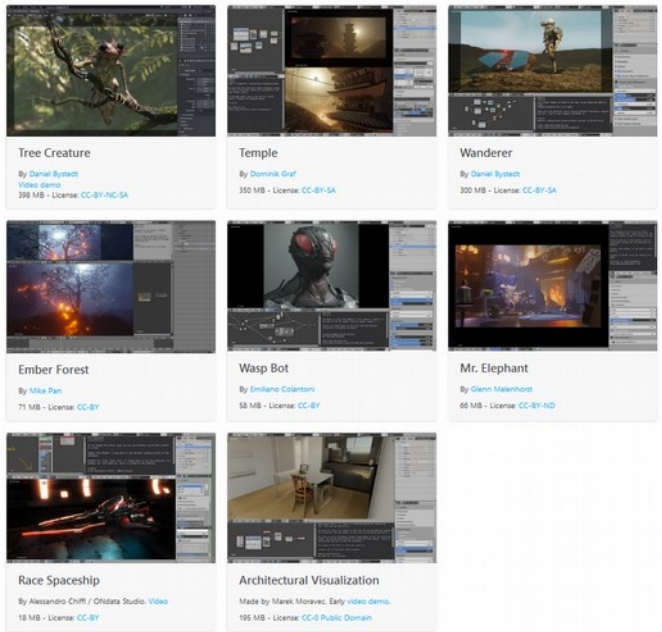
Animatori che lo usano come ottimo strumento veloce e performante

Achviz, idem

https://www.blender.org/2-8/



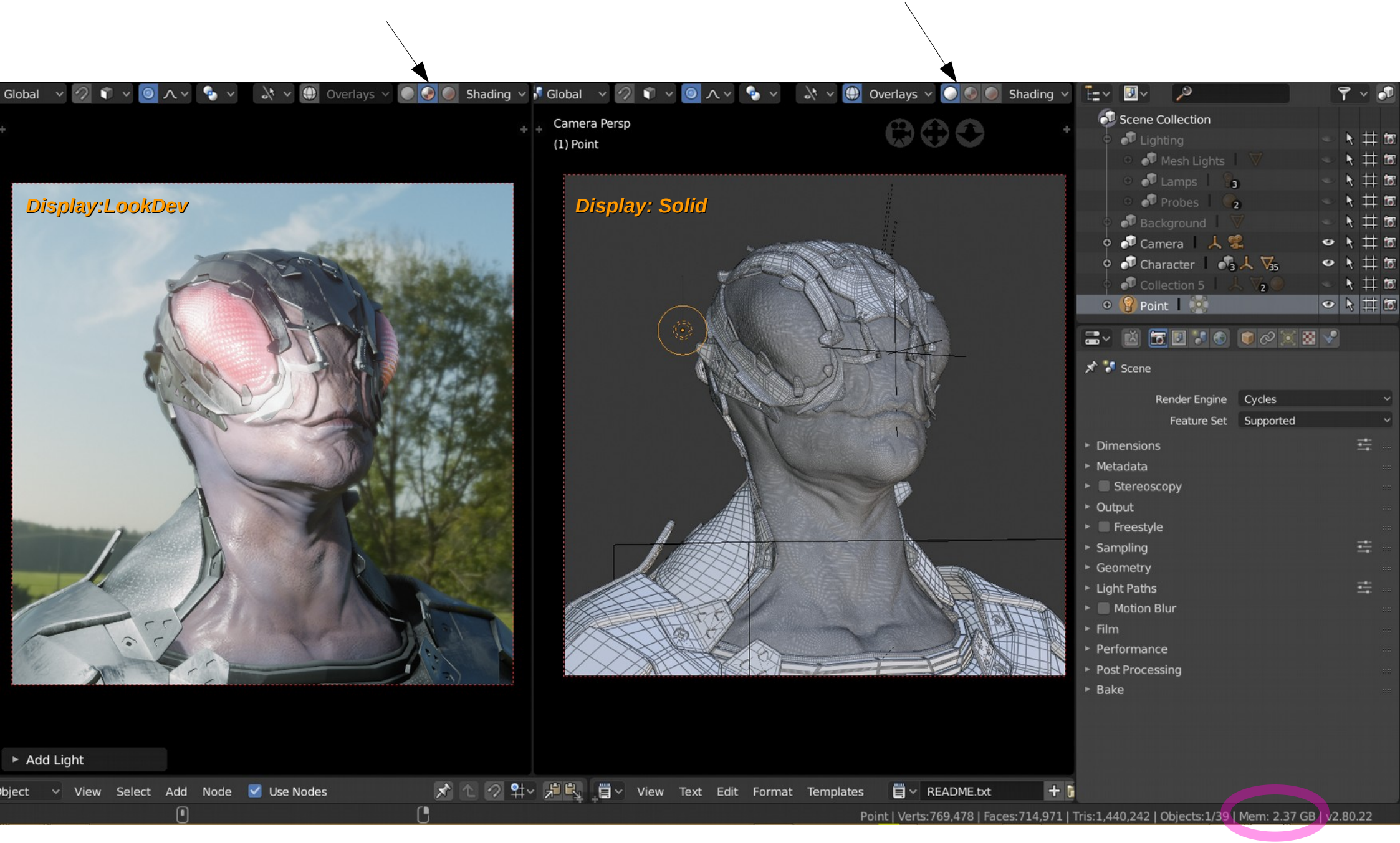
DEMO FILE



Wasp Bot

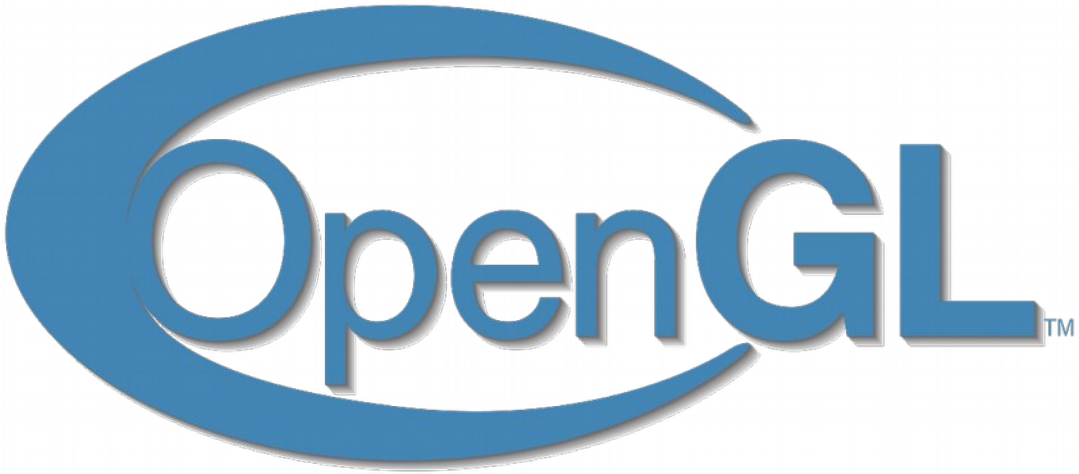
By Emiliano Colantoni

58 MB - License: CC-BY


Display:LookDev
Display: Solid
Global
Overlays
Shading
Camera Persp
(1) Point
Scene Collection
Lighting
Mesh Lights
Lamps
Probes
Background
Camera
Character
Collection 5
Point
Scene
Render Engine
Cycles
Feature Set
Supported
Dimensions
Metadata
Stereoscopy
Output
Freestyle
Sampling
Geometry
Light Paths
Motion Blur
Film
Performance
Post Processing
Bake
Add Light
View
Select
Add
Node
Use Nodes
Text
Edit
Format
Templates
README.txt
Point | Verts:769,478 | Faces:714,971 | Tris:1,440,242 | Objects:1/39 | Mem: 2.37 GB | v2.80.22

OpenGL factoring

Per poter modificare in maniera drastica il rendering sono aumentati i requisiti minimi passando a **OpenGL 3.3** core e OpenGL ES 3,0 minimo



OpenGL (Open Graphics Library)

è una specifica che definisce una API per più linguaggi e per più piattaforme per scrivere applicazioni che producono computer grafica 2D e 3D.

OpenGL 3.3

Pubblicato l'11 marzo 2010.

Questa versione ha lo scopo di permettere alle GPU delle generazioni precedenti di usufruire di parte delle funzionalità di OpenGL 4.0. Pensato anche nell'ottica dello sviluppo di OpenGL ES (API dedicata ai dispositivi mobili come quelli basati su Android, webOS e iPhone OS).

Introduce la revisione 3.30 del linguaggio OpenGL Shading Language.