Clara.io: Full-Featured 3D Content Creation for the Web and Cloud Era

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Abstract

Clara.io is a cloud and browser-based full featured 3D content creation tool that enables collaborative modelling, animation, simulation and rendering for independent and studio-affiliated artists. Our tool democratizes access to technology by making professional grade content creation capabilities and features accessible to all with internet access at a low cost.

Keywords: GUI, WebGL, client-server, collaboration software.

1 Introduction

Clara.io is inspired by Google Docs in both ease of use and collaboration features. Like Google Docs' reimaging of how people create written documents, our tool transforms and democratizes 3D content creation for the web and cloud era. Clara.io is the result of a very successful collaboration between the Center for the Development of Open Technology (CDOT) at Seneca College and Exocortex Technologies, Inc.

2 Architecture and Extensibility

At Clara.io's core is an extensible generative scene graph built using the same ideas that underlie the existing popular desktop-based professional 3D creation tools. But Clara.io does differs from existing desktop solutions in that it stores its data in a true database in the cloud rather than just the current revision to a local file. Thus, instead of local data and desktop-based editing applications, content creating happens through a modern web browser.

With Exocortex Studio there is no installation, configuration or manual upgrading of our software package, just log into your account and you are ready to go with the latest version of our software. Because we are database driven, our software solution automatically stores all versions of your creations and they are all accessible at any time. To render your creations, you no longer need to purchase and configure costly render farms and their software, just click render and your result will render on the cloud and be accessible whereever you are as soon as it completes.

Our core, like existing professional content creation tools on the desktop, is designed to be extensible via a plugin model. Our plugin model already rivals that of desktop-based tools in terms of features. But unlike traditional plugin models, our plugins can, because of our unified data model, utilize both local and cloud resources in order to achieve their results. In tool scripting, for automation purposes, and our plugin model both utilize our unified scene graph. Users can share plugins as easily as they can share their scenes with each other.

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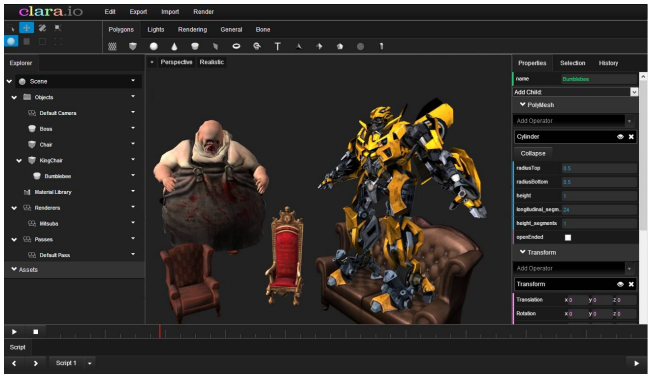

Figure 1: *Clara.io's user interface featuring two characters and three models loaded.*

3 User Interface

As artists move away from desktop-based solutions, they will continue to expect the responsive and polished user interfaces they have been using on the desktop. We have created such a UI for our users using fully W3C standard compliant browser technology combined with WebGL. For handling 3D object display we are using Three.JS [Contributors 2010], a very powerful interaction-oriented WebGL 3D engine. From the UI artists can already import files, import textures, create objects, materials, cameras, lights and apply procedural modifications. For animation, we support keyframed parameters as well as using equations to drive action. For characters we have a bone system with weight-based skinning. Lastly, we have integrated two renderers into our system, including the open source research-oriented Mitsuba Renderer [Jakob 2010].

When sharing scenes with collaborators, our system allows for both the simultaneous editing of the same scene as well as the ability to reference other scenes by versions. Together the features smooth the collaborative creation process.

4 Future

Clara.io's technology and design has the potential to introduce a new era in 3D content creation, an era where everyone has access to the best tools from anywhere, anytime at low cost. Our tool will also allow for the rise of virtual studios, composed of collaborating students and otherwise amateur artists, who are now capable of producing high quality content without costly physical offices or large investments in infrastructure.

References

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