We are developing a multimedia project in Blender which consists of an interactive ride in Brasilia, the capital city of Brazil. The game will feature all the monuments, commercial and residential buildings of the city.

The main purpose of the project is to serve as an historical resource for educational research. It gives a wealth of information that is useful for tourism and regional development. It shows a vision of the city and the urban life in a way never seen before, using tridimensional immersion and interactive resources to strengthen areas such as civic tourism.

The project is also focused on the cultural diffusion of Brasilia as a Humanity Patrimony city (ONU-Unesco).

The Ride
The project can be seen on CD-ROM or on the Internet. Any person using a web browser with Blender’s web plugin can take the virtual tour through the city driving a car. The user controls the destination with keyboard controls or chooses locations or routes using a menu or a map interface. Whenever a user comes close to a monument, historic and other contextual information pops up on the dashboard panel.

The game can be visualized on two different approaches: by car or by helicopter. The car view has three points of view of the 3D scene, while the helicopter visualizes a 2D image map of the whole city.

Target Audience
The public that has been showing more interest for the ride is composed of tourists, students and architectural professionals.

The ride and accompanying texts will be written in four languages: Portuguese, English, Spanish and French.

Tourists will soon be able to take home the CD-ROM as a gift.

Photographic Research
The positioning of the buildings is oriented by a high resolution satellite photograph of Brasília (8K pixels). Besides that, we are taking many digital pictures to get the proportions and shapes of the monuments. Our database has two thousand 2K photos up to now.

The pictures also help to get the textures and the lighting. We often darken the shadow side of buildings with vertex colors.
3D Software Choice
We initially tested a combination of two programs: Alias Maya 4.0 with Shockwave exporter and
Macromedia Director MX. We gave up this because of software crashes, high licences prices and the
lack of support for Linux (the Shockwave exporter has also been discontinued by Alias). We also would
need very powerful workstations to run Maya with reasonable performance.
After some more research, we chose the open source application Blender. It had all the qualities we
were expecting for our main 3D program and game engine:
- Fast interactive performance at modeling time for complex models.
- Multi platform playback of content (Windows, Linux and Mac OS X).
- HTML publishing via the Blender web plugin.
- Fast workflow with screen customization and use of keyboard shortcuts.
- Community support and documentation.
- Affordable.
- Easy programming.
- The Python integration as a scripting language that can generate highly customized solutions.
Modeling
The crafting of the models is being done in two applications: Blender and Newtek Lightwave, a program our modeler Arthur Cordeiro is very fond of. The integration is done via the Blender included LWO scripts by Anthony D’Agostino (Scorpius).
Whenever modeling in Blender, we made heavy use of the loop cut and selection tools to model the intricate road network. We were able to use the 3D view with a 2048x2048 pixels PNG background and the interactivity was very fast (running on a nVidia GeForce4 128MB). The fast workflow inside Blender made possible to pinpoint and position literally tens of thousands of vertices.

Texturing
All pictures go thru a processing in Adobe Photoshop before going to the Blender scene. We do color corrections, perspective tweaks and scale the textures of each building to fit into a square image file (256x256 or 512x512 pixels, depending of the model importance).
Optimization
Because of the enormous size of the scene, all of the models have only the minimum vertex count to tell its shape and not slow down the engine. The whole city model has already 50,000 vertices. The recommended configuration to run the game is a processor above 1GHz, 256 MB RAM and 3D graphics acceleration (GeForce 2 card or better).

Interactivity
The logic programming is being implemented with Blender’s logic bricks and a few custom Python scripts. Blender has been showing itself very powerful, because we had no trouble in turning our ideas into functions of the game (multiple cameras, animations, overlay menus, instant destinations, animated routes...).

The Control Panel
We developed a dashboard control panel on a separate Blender scene, added on top of the main scene. The panels shows information about the monuments near by and has controls for the cameras and the pop up menu and interactive 2D map.

Secondary Animation
The passage of the main car triggers a few animations on the scene:
- Birds flying
- Other cars and bus traffic
- Stop lights
**Sponsorship**
We are trying to find governmental and corporate sponsors for the project. Among the companies we are approaching are schools, banks, hotels, travel agencies... Sponsors will be able to show their logos associated with the project as well as customize some parts of the ride, making their points of interest more detailed or with more interactivity resources.

**Project Status**
The ride will be finalized in 2005, in time for the commemorations of the 45th anniversary of the city.
A beta version is already functional and can be seen at our web site: www.3Dzine.com.br

**Credits**
Alexandre Rangel  
Concept, project coordination, modeling, photography, texturing, animation and programming.

Arthur Cordeiro  
Modeling and programming.

Pa Furijaz  
VW Golf model.

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