GAMETOOLS PROJECT NEWSLETTER

Description of the GTP Technology

Computer graphics libraries play a key role in providing computer games and other high-end 3D applications with the visual quality crucial for commercial success. The GTP advances three key areas in modern computer graphics:

1. High quality, automated visibility for dynamic scenes, exploiting modern computer graphics hardware, enables the rendering of larger, more impressive scenery without costly human pre-processing.
2. Intelligent geometry complexity reduction allows for unprecedented detail in the rendering of highly complex objects such as plants.
3. Real-time global illumination gives previously unseen visual quality in dynamic lighting.

For computer & videogames, this allows for larger, more realistic and impressive worlds to be presented to the player, which leads to a stronger emotional immersion in the game and therefore a better gaming experience. For non-gaming high-end 3D applications, such as interactive architectural walkthroughs, the GTP library allows for a highly realistic visual representation, previously not possible in real time.

The GTP libraries are being developed in OGRE and Shark3D for next generation PC hardware, with videogame consoles - PS2, XBox, PS3, XBox 360 - planned as additional hardware platforms.

GTP Scientific outputs

GTP Geometry

The GTP Geometry Lib supplies a multi-resolution LOD solution that addresses the shortcomings of previous approaches by giving developers access to a complete package of solid technology which offers a continuous multi-resolution model for static and animated meshes that includes connectivity information, avoiding those annoying interruptions between the different resolution levels for each model, and uses basic primitives like triangle strips. These features reduce dramatically the amount of information stored and overcome the bandwidth bottleneck between the main processor and the memory of the modern high performance graphic cards.

A new multi-resolution model specially suited for the real time rendering of trees and plants, allowing an incredible amount of close up detail. The model is able to show each leaf when the user is closer and gives automatically simplified representations when the observer moves away.


GTP Illumination

The GTP Approximate ray tracing module delivers ray tracing effects, such as reflections, refractions and caustics at few hundred frames per second due to their GPU implementation. The method is based on special environment mapping when the distance information is also stored in environment map texels, from which accurate localized reflections can be obtained. Exchanging the roles of the camera and light sources, the same approach is also good for rendering real-time caustics. This method brings physically correct rendering to the domain of real-time graphic.

Effects included:
- Soft Shadow / Light-effects
- Dynamic Light-sources
- Indirect Illumination
- Reflections
- Real-time Radiosity
- High-Quality Materials
- Cloud Rendering
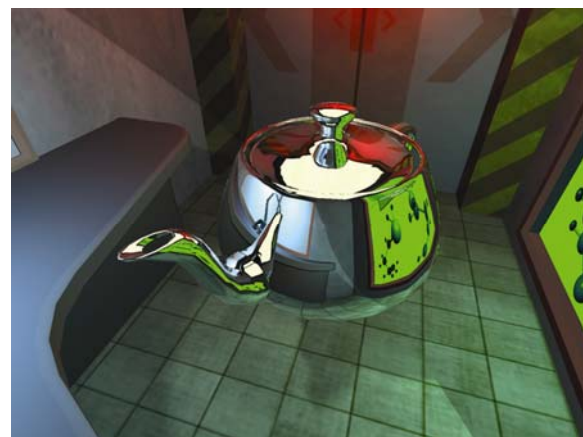
GTP Visibility

The focus of the visibility is on a practical solution to visibility that can readily be used in computer games. The complexity of the content displayed in the computer game, makes very import to

ensure that only the actually visible parts of a game environment are sent to the graphics pipeline.

The Visibility Lib renders faster by only displaying the visible objects in the scenes, through:

- Fast pre-calculated visibility based on modern visibility research.
- Efficient visibility for dynamically changing scenes employing modern graphic hardware.

Both approaches work for indoor & outdoor scenes and are much faster and flexible than existing techniques.

The GTP Visibility Library offers two robust solutions for visibility. The first solution is based on hardware occlusion queries and can therefore cope with heavily dynamic scenes by calculating visibility on the fly. The second solution is tailored towards huge scenes with large static parts and is based on pre-computing potentially visible sets for regions of space.
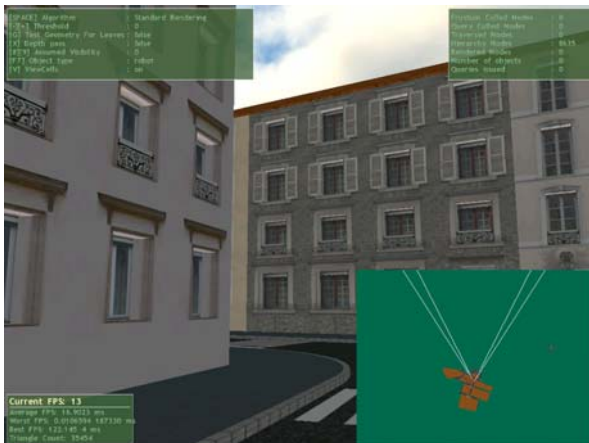
GTP Demonstrators

GTP industry members have implemented the scientific outputs and demonstrate them in the following way:

DIGITAL LEGENDS ENTERTAINMENT (DLE)
www.digital-legends.com

DLE represents the videogames industry. Therefore the purpose of demonstrator has been focussed on proving to developer's community that:

1) GameTools libraries can be integrated into a real game and this even when using proprietary technology
2) GameTools libraries bring a competitive advantage as they increase visual quality and/or improve performances

In that sense the GameTools libraries have been implemented in a real game currently in development called Soccer Fury (www.soccerfury.com).


INFOWERK
www.infowerk.at

Infowerk develops multimedia based learning products. The aim of Infowerk Xplain is the development and marketing of edutainment products for end- consumers.

Infowerk demonstrator application is a realistic simulation program to get the needed experience in standard and distress situations at open sea and in coastal waters. The application will be commercialised under the name Seamulator.
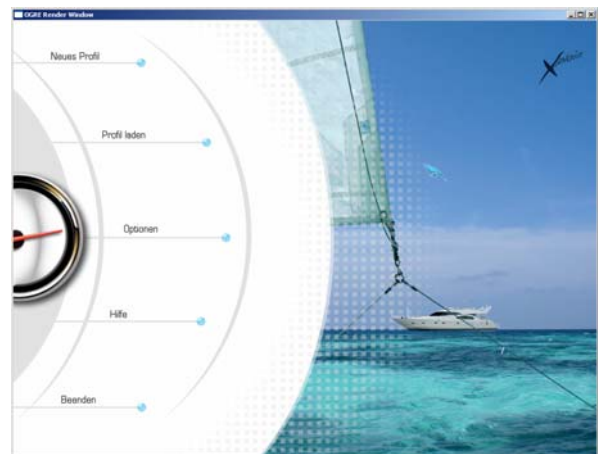
T-SYSTEMS Iberia
www.t-systems.es

One of the demonstrators made by T-Systems will be a medical simulator. The medical field has been chosen as the main theme of the demonstrator because in this field Virtual Reality has had a lot of impact and will have even more in the near future.

The goal of the demonstrator inside this project is to show in a clear way and without any doubts that the new libraries developed can improve the visual quality of any game or application with a 3D viewer module.

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GTP Centre of Demonstration

GTP Centre of Demonstration took place at AIJU in Ibi, Alicante, Spain, on the 20th of April 07. Various representatives from relevant economic field from Europe were invited to this event.

The demonstrations presented in the workshop were supported by the industrial partners of GameTools project that helped AIJU to install the prototypes in the RV Centre.

GTP SIG Members

GameTools counts 26 member companies from Europe, which are using its technology. Those companies are:

Animante Baleares; Sproing; Brainstorm Multimedia; Invictus; TAB-Austria; VIS Visual Imagination Software; LMR Institute Laboratory for Mixed Realities; bouncing bytes; Elektra Project; Blue Space Media GmbH; Bogengang GmbH; Candella Software LTD; Framework Studios; Over the Edge; Tragnarion; Carintia; Vizrt; Nemesys; Phoenix interactive; Project: Syntropy; vr3 virtual production; Cohort Studios Ltd.; Ai 42; Vertex 4; Greentube; Trinigy; City Interactive
http://www.gametools.org/html/gtp_sig.html

GTP at IBC2007
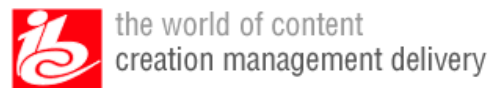
GameTools will present its results at the New Technology Campus during the IBC 2007 conference. IBC is committed to providing the world's best event for everyone involved in the creation, management and delivery of content for the entertainment industry. IBC2007 will take place at the RAI Congress Centre, Amsterdam between the following dates:
Conference: 6 - 10 September
Exhibition: 7 - 11 September

GTP Spin Off

The GameTools Project is officially finished by the end of May 2007. After this date the involved universities as the owner of the developed knowledge will set up a Spin off company with its headquarters in Girona. The staff of the GTP Spin off will be manned by experts from Austria, Hungary, France and Spain. Once the project is finished, the GTP Spin off will be ready to provide Consulting services to possible customers.

The possible services include:
   ° Bug Fixing
   ° Extension of the libraries with new functionalities
   ° Customisation
   ° Formation – Education

The libraries are and will be Open Source. Therefore we will not sell licences to allow the use of the libraries to third parties. An additional commercial, optimised version will be released at the end of the project. Possible GTP customers will be able to use the Open Source non-optimized libraries for free, or to buy the commercial optimised version.