GAMETOOLS PROJECT NEWSLETTER

Welcome to GTP

The GameTools Project is an EU-funded project that brings together **leading European computer graphic experts** from universities in Austria, France, Hungary and Spain with **European industrial partners** from the fields of computer game development and virtual reality.

The GameTools Project bridges the gap between academic research and the software industry, by creating leading edge 3D graphics libraries based on current computer graphics research, and making them **available to the European software industry for free, as members of the GameTools Special Interest Group (GTP SIG)**.

Interested in GameTools?
Visit the GTP website www.gametools.org for more on developments in the GTP field. For further information please send an e-mail to helpdesk@gametools.org

The GameTools project newsletters are also published on the project website at www.gametools.org/news.

This issue
- Current developments on Geometry, Illumination and Visibility
- Project promotion activities
- Case Study

GAMETOOLS -STATUS

Current developments on Geometry
GPU Friendly Level of Detail, Geometric LOD, Automatic Image Based Simplification...

The **GTP (Game Tools Project) Geometry Lib** supplies a **multiresolution LOD solution** that addresses the shortcomings of previous approaches by giving developers access to a complete package of solid technology which offers:
A continuous multiresolution model for **static and animated meshes** that includes **connectivity information,** avoiding those annoying interruptions between the different models from resolution different from 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 multiresolution 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.

Current developments on Illumination
Fast Online Visibility Culling, Incremental & Exact Visibility Precalculation, Visibility Scene Analysis...

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.

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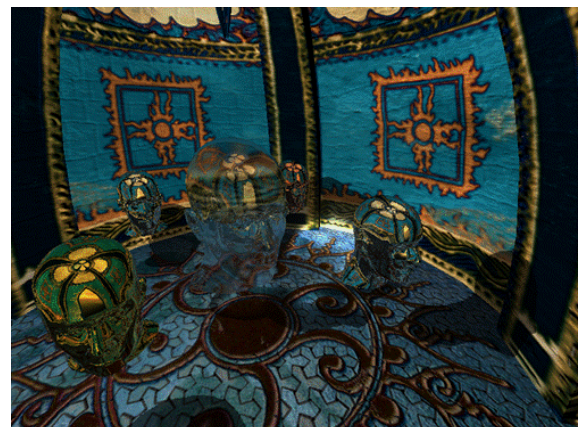
This method brings physically correct rendering to the domain of real-time graphic.
Effects that will be included:

- Soft Shadow / Lighteffects
- Dynamic Lightsources
- Indirect Illumination
- Reflections
- Realtime Radiosity
- Hight-Quality Materials
- Cloud Rendering

Based on the general concept, special fire and explosion models were also developed.

Current developments on Visibility
Volumetric Particles, Caustics, Realtime Raytracing Effects, Realistic Materials, Local Density Fog...

The focus of the visibility workpackage 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 **VisibilityLib render faster by only displaying the visible objects in your scenes**, through:

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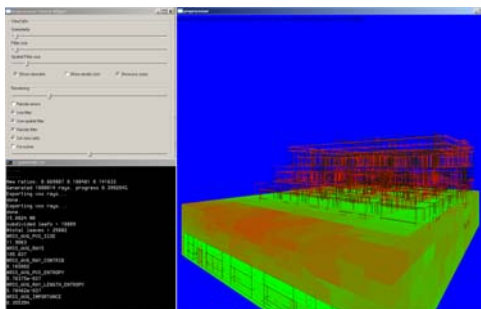
PROMOTION

Since results from GameTools project are now available, an updating of the website has carried out, including the GTP poster, the leaflets used in dissemination activities and a project presentation that can be downloaded from the website:
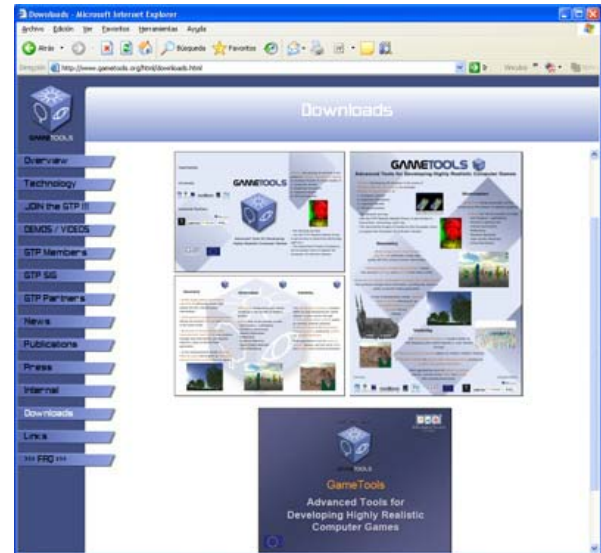
Visit our website: www.gametools.org

CASE STUDY

The SME Brainstorm Multimedia has integrated in its e-Studio software for 3D graphics in real time some results obtained in GameTools Project. Some libraries has been used to enhance geometric and illumination aspects.

GTP Consortium supports videogames and graphics industry in the implementation and integration of libraries developed in the project.

For futher info, please contact:

helpdesk@gametools.org