GEOMETRY – VISIBILITY – ILLUMINATION

GAMETOOLS

GameTools

ADVANCED TOOLS FOR DEVELOPING
HIGHLY REALISTIC COMPUTER GAMES

TEST REPORT ON INTERFACES

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Leading Partner:	**PGM Trading**
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Abstract: The Test Report on Interfaces is an initial validation of the visibility, geometry and illumination work packages. It tests the interfaces between the plug-ins and platforms provided by the companies.

Delivery Slip

	Name	**Partner**	**Date**	**Signature**
From	Andrey Iones	PGM Trading		
Reviewed by	WP Managers	All		
Approved by	WP Managers	All		

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Issue	**Date**	**Comment**	**Author**
1-0	07-08-2005	First Draft	Andrey Iones
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Word	gametools-ist-2-004363-6-d6.1.1-02-2-0-test report on interfaces.doc

CONTENT

1. INTRODUCTION

1.1. OBJECTIVES OF THIS DOCUMENT

This document is the first deliverable of the "Project Integration, Evaluation and Test" Work Package. Its aim is to describe the initial validation of the visibility, geometry and illumination work packages. It summarises the tests of the interfaces between the plug-ins and platforms provided by the companies.

1.2. METHODOLOGY

In order to write this report, the PLs of WP3, WP4 and WP5 were asked to write a short questionnaire about the possible problems the companies could have to deal with regarding the integration of the visibility, geometry and illumination modules respectively. Therefore, this report summarises the answers of this questionnaires.

1.3. DOCUMENT AMENDMENT PROCEDURE

Any project partner may request amendments but each amendment must be analysed and approved by the WP6 Leader and the GTP Coordinator or Project Manager.

1.4. TERMINOLOGY

Glossary

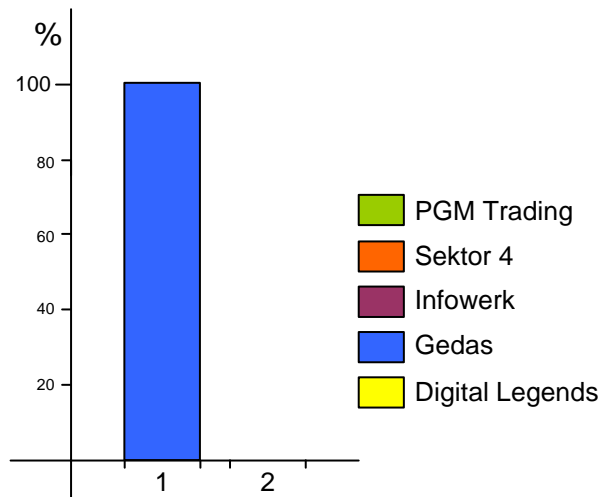|	
GTP	GameTools Project
PC	Project Coordinator
PM	Project Manager
PL	Partner Leader
WP	Work Package
SIG	Special Interest Group

2. VISIBILITY

We see no problems integrating Visibility modules with our framework.
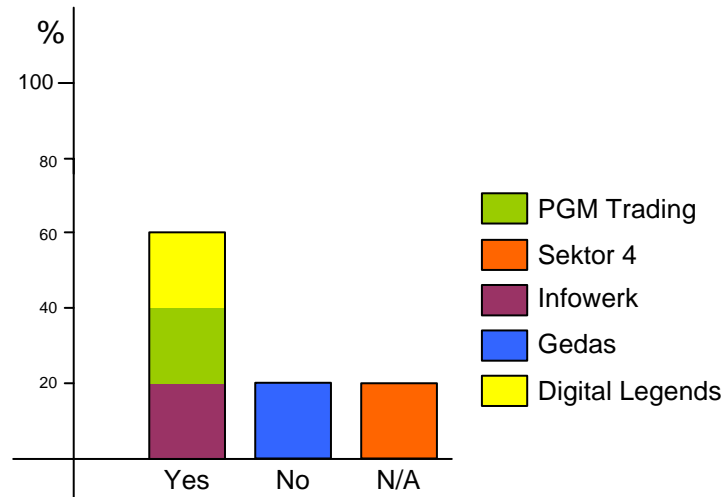
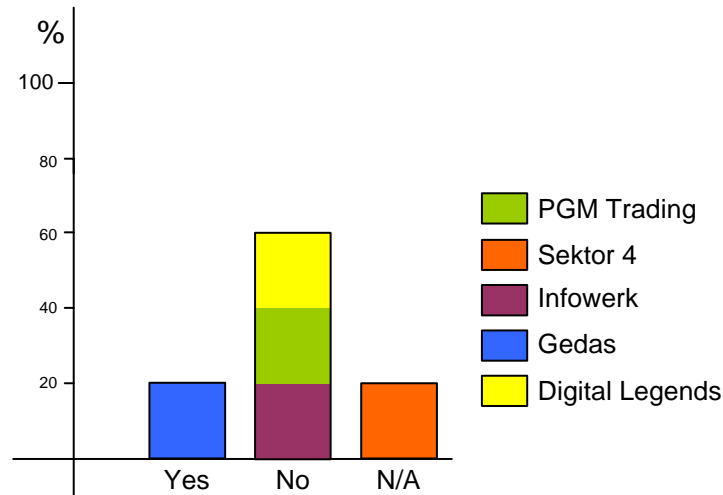If yes, in which of the following areas do you see problems:
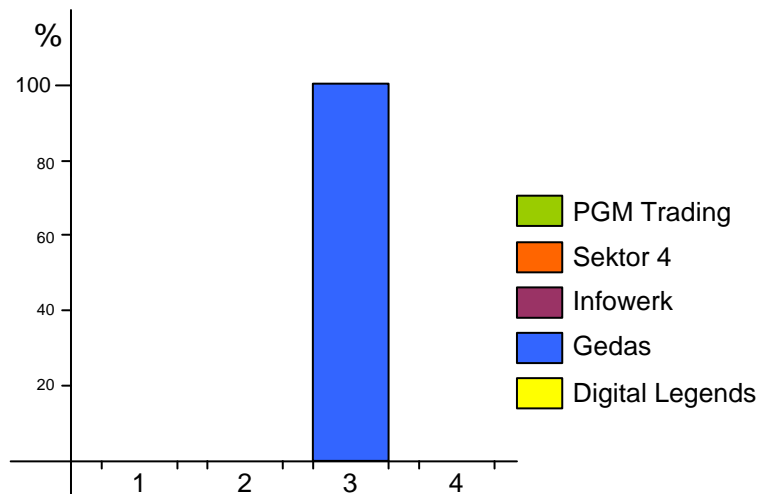1. Online Visibility
2. Offline Visibility

3. GEOMETRY

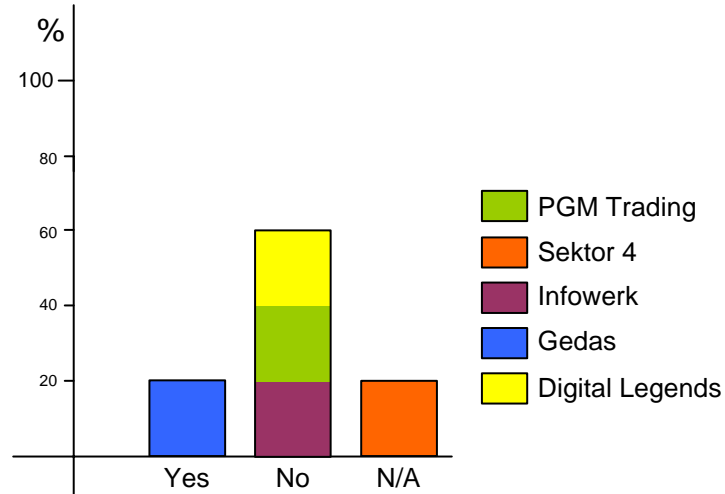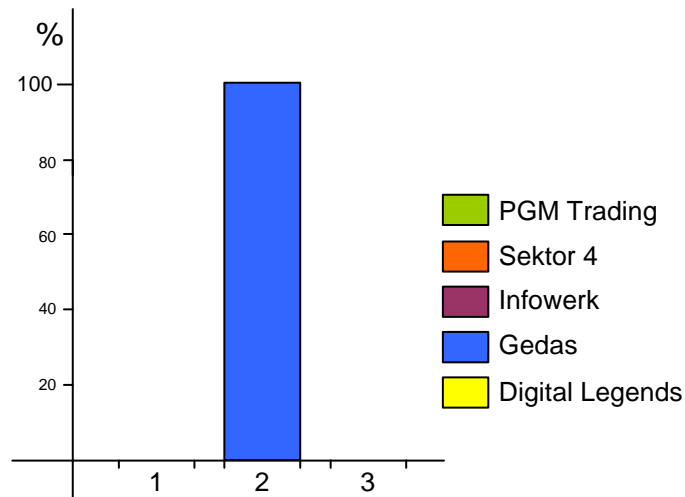We see difficulties in integrating the continuous level of detail model for general meshes.

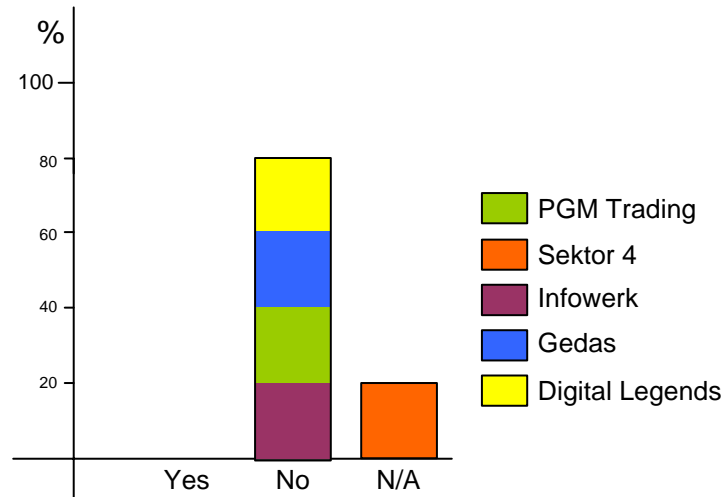If yes, in which of the following areas do you see problems:

1. Using triangle strips
2. Simplifying the 3D models
3. Constructing the multiresolution model
4. Using the resulting multiresolution model

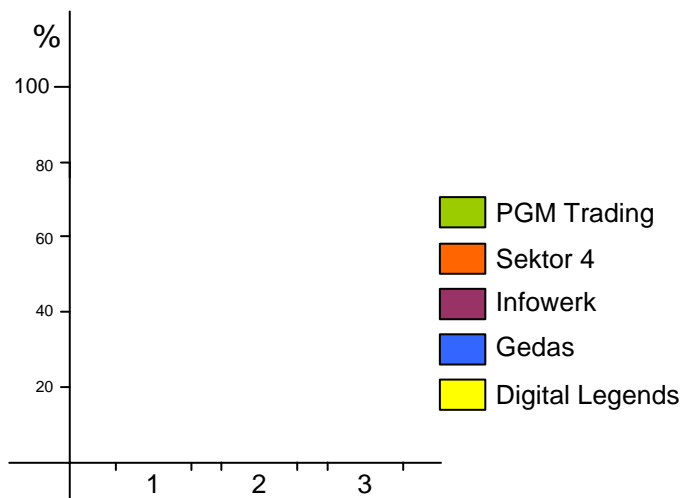We see difficulties in integrating the continuous level of detail model for plants and trees.

If yes, in which of the following areas do you see problems:

1. Simplifying the 3D models
2. Constructing the multiresolution model
3. Using the resulting multiresolution model

4. ILLUMINATION

We see difficulties in integrating real-time reflection and refraction computation that runs on the GPU and reads floating point environment maps also storing distance information several times.
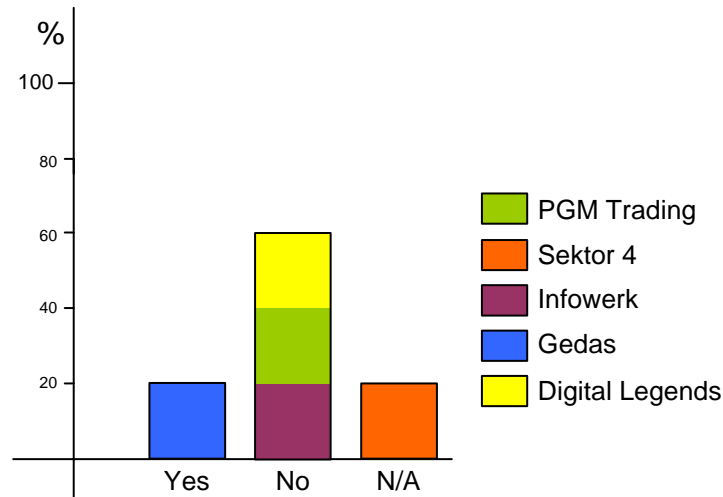

If yes, in which of the following areas do you see problems:
1. Incorporating the pixel shader program
2. Requiring shader 2.0 support
3. Handling floating point cube maps

TEST REPORT ON INTERFACES

We see difficulties in integrating real-time caustics computation that runs on the GPU and reads floating point environment maps also storing distance information several times.

If yes, in which of the following areas do you see problems:

1. Incorporating the pixel shader program
2. Requiring shader 3.0 support
3. Handling floating point cube maps
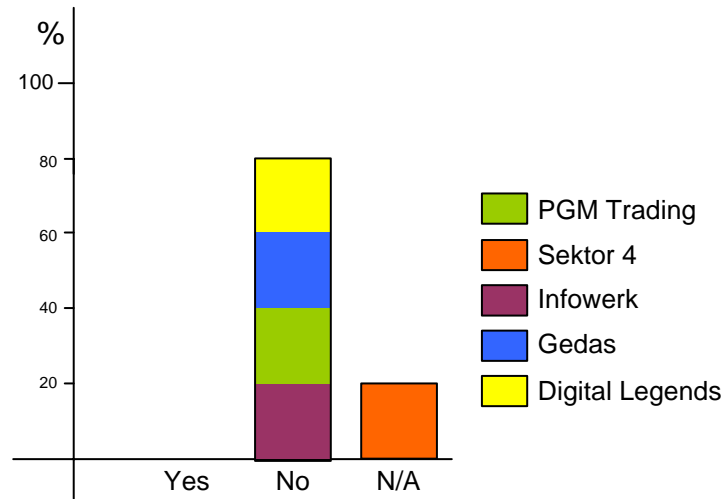4. Generating light maps reading the photon texture in the vertex shader
5. Generating light
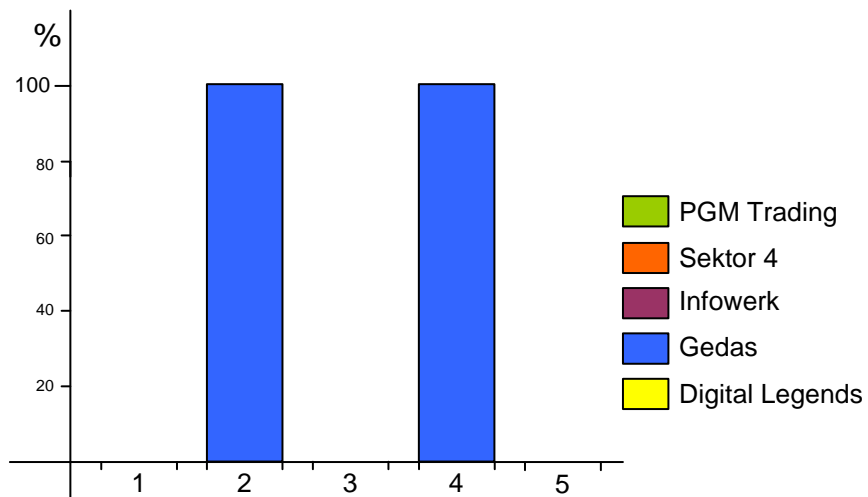
We see problems of incorporating hardware supported obscurances that require rendering the scene objects several time in every global direction.
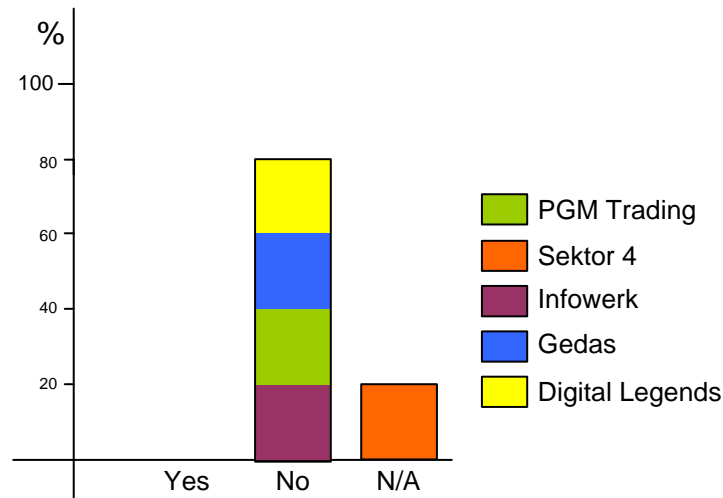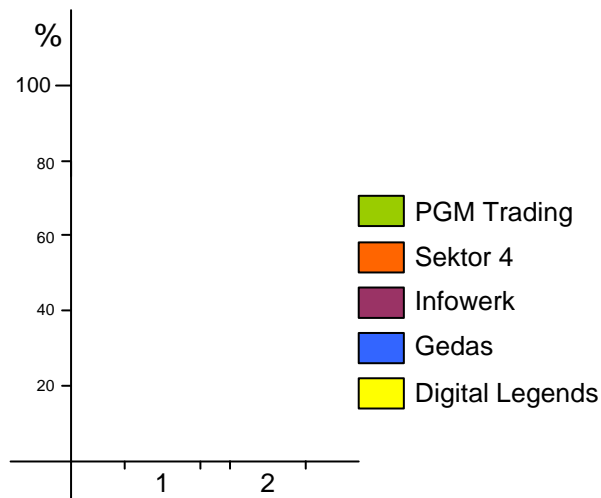
We can see problems to implement the dynamic particle system module composing blocks of particles and building the volume from the blocks, and eliminating billboard clipping artefacts with shader programs.

If yes, in which of the following areas do you see problems:

1. Incorporating the pixel shader program
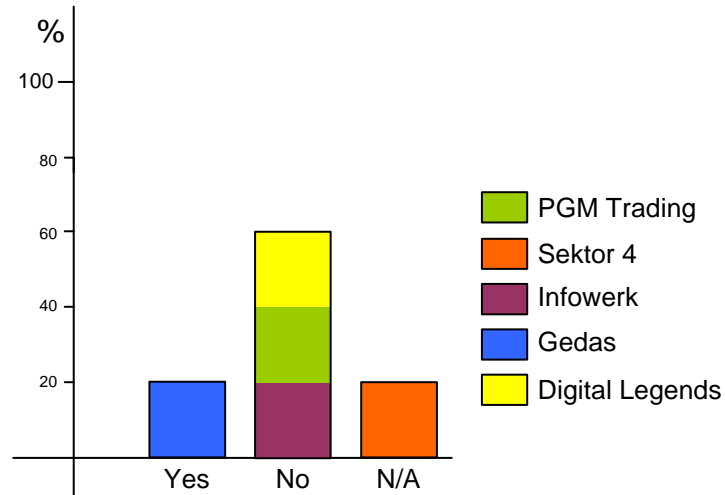2. Building volumes from block or particles
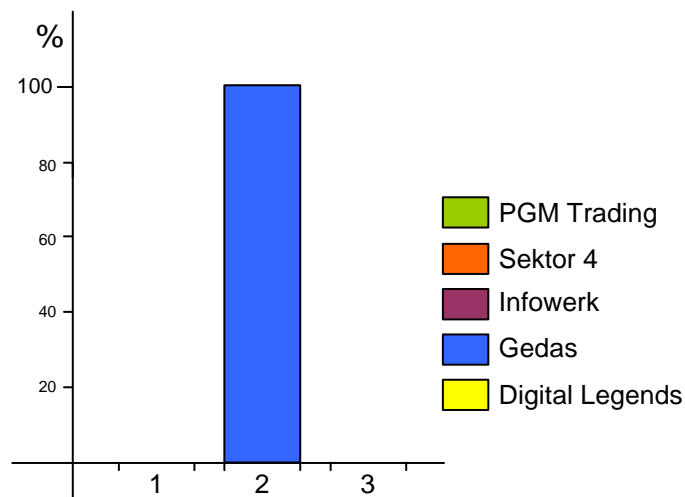
We can see problems to implement the global illumination participating media module.
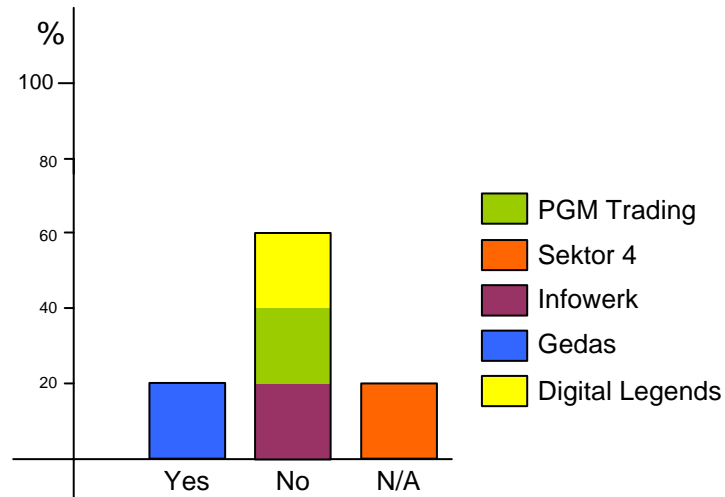

If yes, in which of the following areas do you see problems:

1. Limiting the volume to a few thousand particles
2. Setting the opacity, albedo and phase function parameters
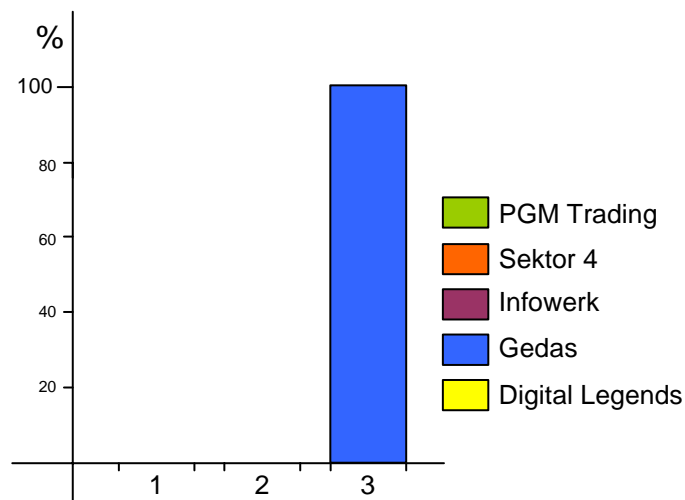3. Implementing the shader

We are interested in implementing a pre-computed radiance approach that allows for dynamic camera and light animation in static scenes.
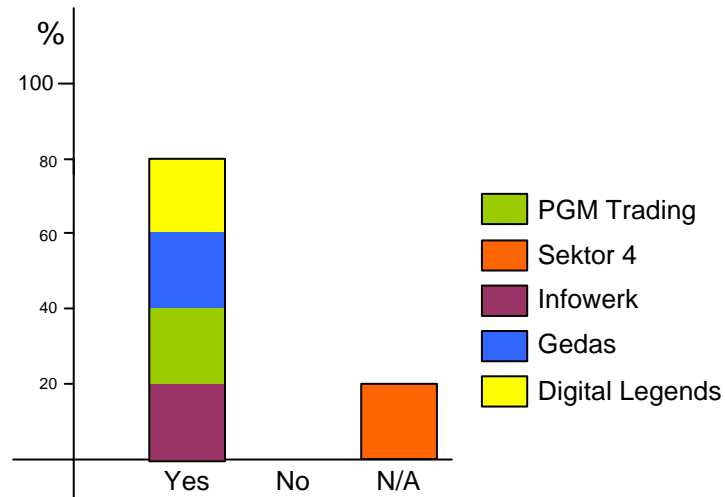

If yes, in which of the following areas do you see problems:

1. Limiting the effect of dynamic objects to casting shadows
2. Storing the larger pre-computed radiance maps in textures
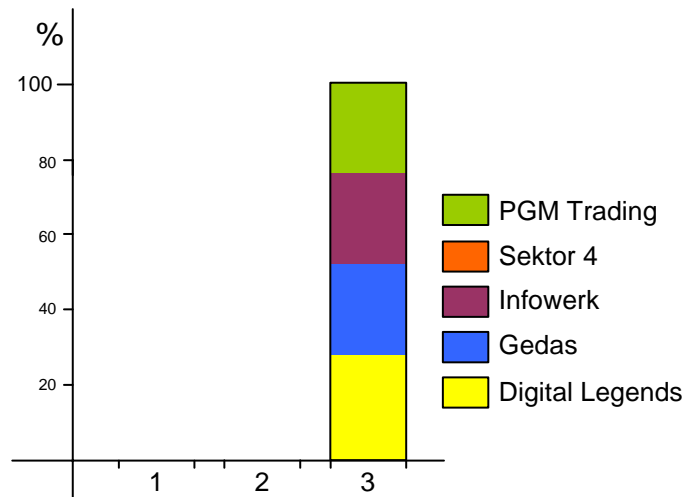3. Putting all objects in a single texture atlas

We are interested in implementing the photon map global illumination approach.
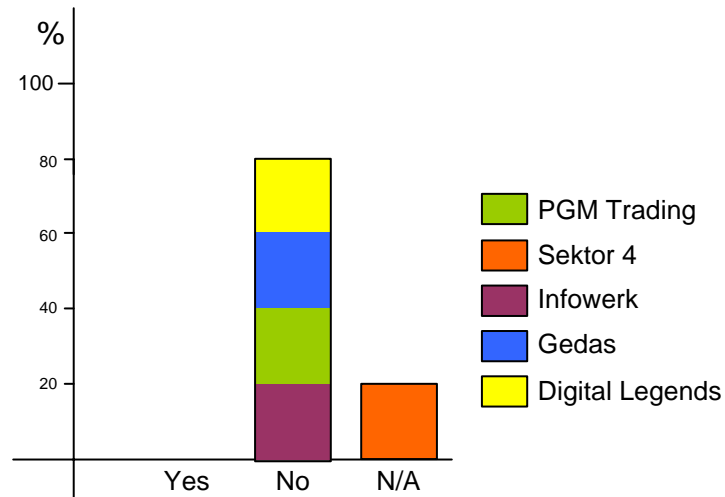

If yes, in which of the following areas do you see problems:

1. The partial re-computation of the photon map by ray-tracing
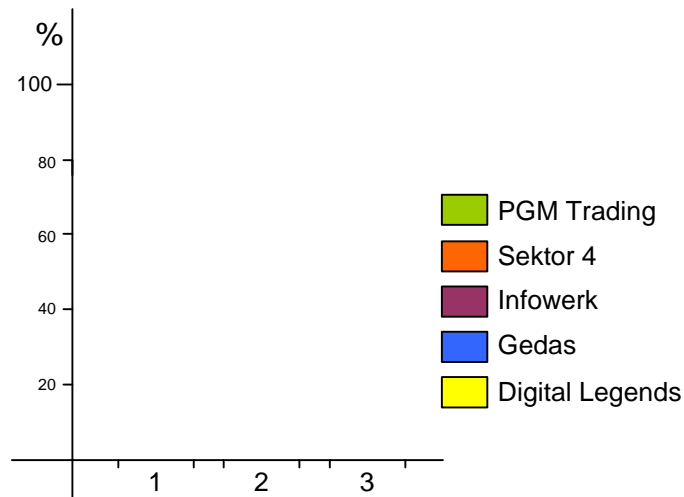2. Putting all objects in a single texture atlas
3. None

We can see problems to implement the image based illumination module with shadows.

If yes, in which of the following areas do you see problems:

1. Limiting the shadow maps to 32
2. Limiting the frame rate to 30
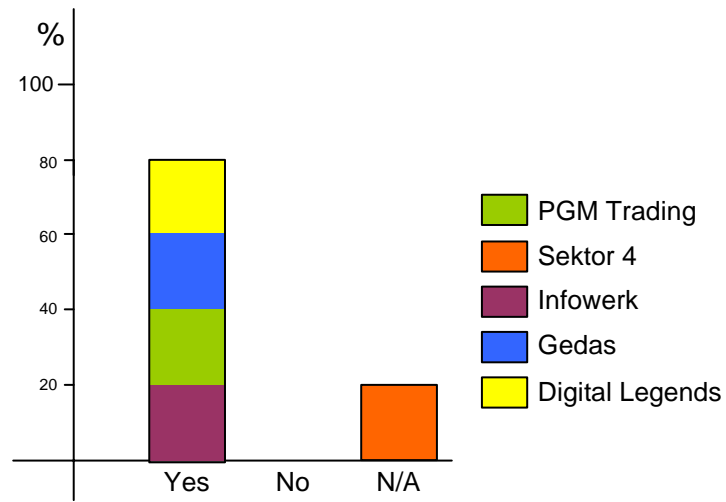3. Implementing the shader

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We are interested in integrating the clustering algorithm for image based rendering for trees.

5. CONCLUSIONS

This report summarises the problems that the industrial partners have found on the integration of the GameTools module interfaces with their own platforms.

One of the partners, Sektor4, has not been able to answer the questionnaire. They will do it on the following weeks.

Three partners, namely DLE, PGM Trading and Infowerk, have not found any problem on the integration up to now.

Finally, one of the partners, Gedas, has identified several problems when testing the interfaces of the GameTools modules with their engine. They will perform some modifications to adapt their engine in order to solve these problems.

The partners only have worked with the interfaces of the modules. At month 20, academic partners will deliver the first version of the working modules and then industrial partners will do the tests again with complete modules. The new problems which may arise then will be reported at month 24 on the following WP6 report: "Test Report on Release Plug-ins Prototypes".