

가상환경의 실제 구현

Virtual Environment

CAERANG 5기 김진홍

■ 가상환경이란

- 사용자를 가상으로 꾸며진 환경에 몰입시켜
가상의 현실감을 체험시키는 것

■ 가상환경이 되려면

- 가능한 사실적인 묘사
- 실시간 동작
- 사용자와의 효과적인 인터랙션 가능

■ 가상환경 제작용 도구들

- 천지창조, SVE, COOLVR, WorldToolkit
- Cosmo3D, DIVE, Do3D등

■ 기본 도구

- OpenGL, OpenInventor, DirectX3D등

외부 CG 모델러

3D Studio Max

3D Object

Authoring Tool

데이터 분석
가상환경구성&유지

외부입력장치

Keyboard, Mouse, Tracker

외부출력장치

Monitor, HMD

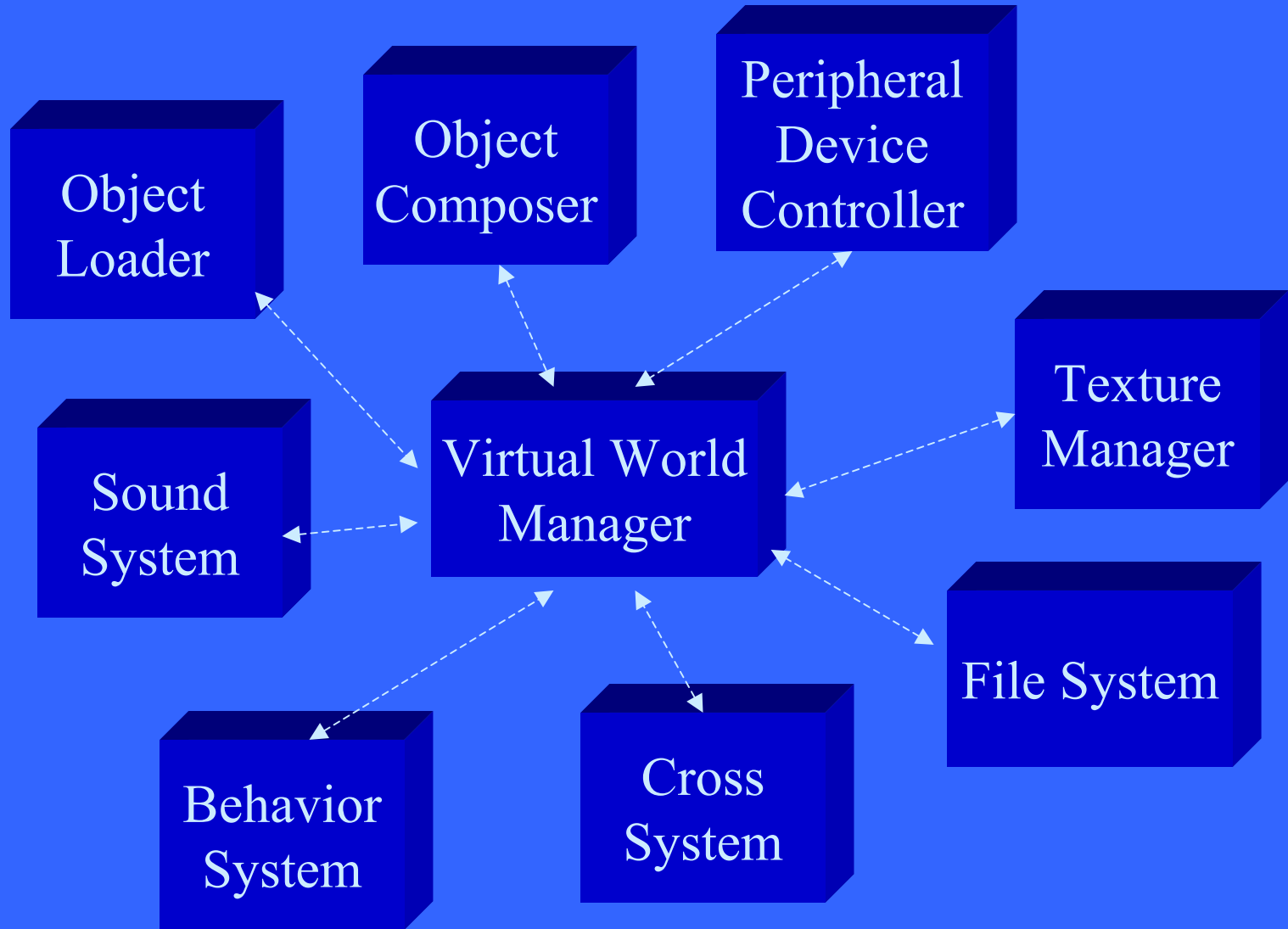
Authoring Tool
Realistica

VR-Engine

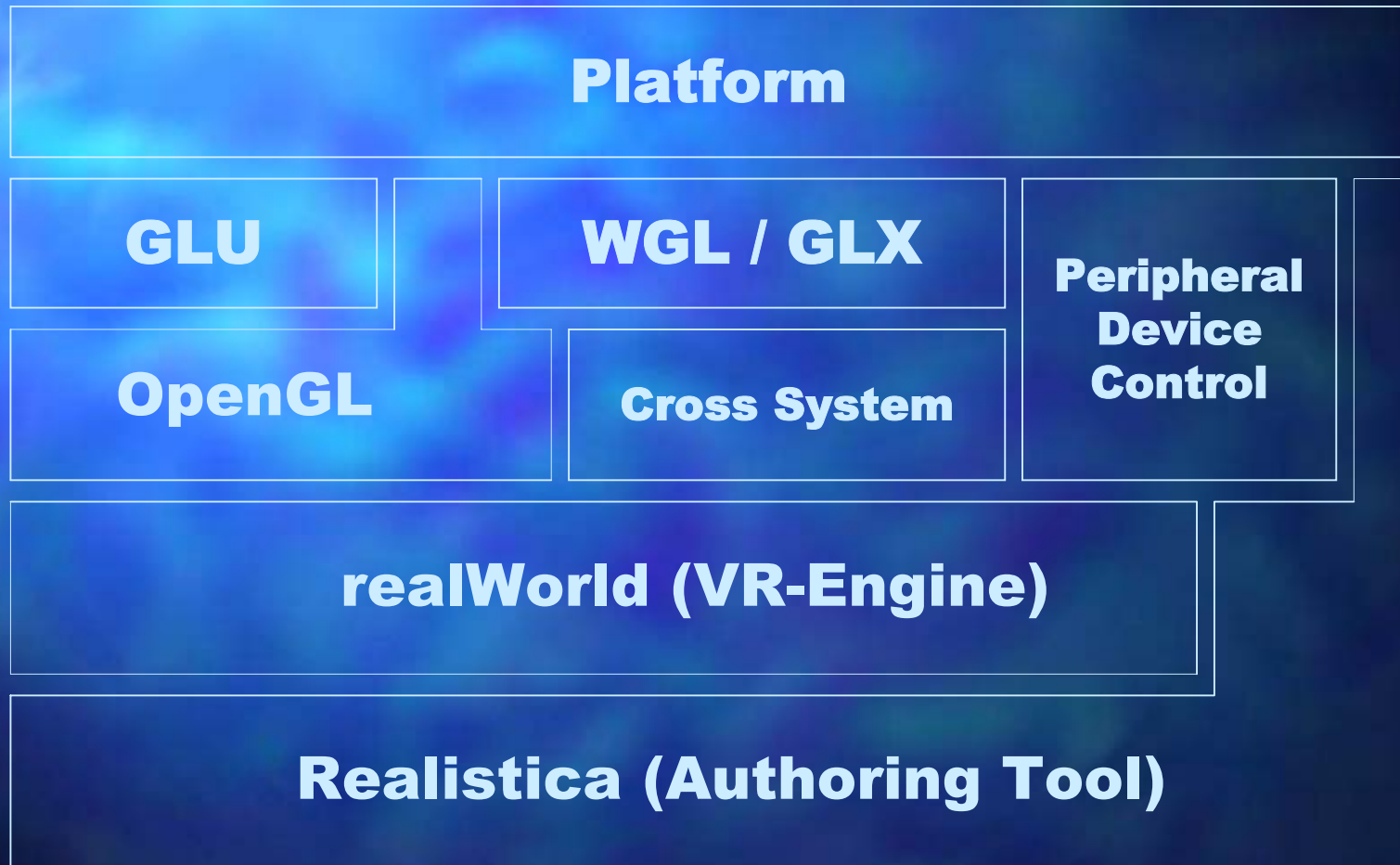
realWorld

- **Platform : Windows NT / 9X**
- **Application Interface : MFC (Microsoft Foundation Class)**

VR-Engine (realWorld)



System Architecture



Functions (1/2)

- 물체생성 및 제거 기능
- Texture Mapping
 - Cylindrical 방식
- Collision Detection
 - Bounding Box
- Object Picking
 - Mouse, Tracker

Functions (2/2)

- Shading
 - Flat Shading
 - Gouraud Shading
- Animation
 - Keyframe 방식
- Blending
- Shadowing

Example Code

...

```
RObjectList *rol;  
realObject *ro = new realObject("Pyramid");
```

```
RThandle hnd;  
RTkeyFrame frm;
```

```
// make a pyramid  
ro->AddVertex(30.0f, 0.0f, 30.0f);  
ro->AddVertex(30.0f, 0.0f, -30.0f);  
ro->AddVertex(0.0f, 30.0f, 0.0f);  
ro->MakeFace(1.0f, 0.0f, 0.0f);
```

...

```
pRW->MakeObjectList(50.0f, 0.0f, 0.0f, 0.0f, 0.0f,  
0.0f,  
1.0f, 1.0f, 1.0f, ro, &rol);
```

```
hnd = pRW->AddObject(rol);  
pRW->Finish();
```

...

Example Code

...

```
hnd = pGA->LoadObject("test.3ds", "test  
object");
```

```
pGA->SetScale(hnd, 0.2f, 0.2f, 0.2f);
```

```
pGA->RotateObject(hnd, -90.0f, 0.0f, 0.0f);
```

```
pGA->AttachGround(hnd, TRUE);
```

...

G 제목없음 - Grapes



File Edit View Help Func



20 frms. 10 S-frms, 32520 polys, 1626 T-polys | Obj:

COLLISION