

2003 KOREA GAME WHITE PAPER

Chapter 5

- 1
- 1
- 2 가 |:
- 3 가 :
- 2 S/W
- 1 S/W
- 2 ISO 9000
- 3 PC S/W 가
- 4 S/W
- 3 가
- 1 가
- 2 가 Digital Entertainment
- 3 HCI
- 4
- 1
- 2 3D
- 3
- 5
- 1
- 2
- 3
- 4
- 5
- 6
- 1
- 2
- 3



1

1

가 “ 가 200 37% 가 ”

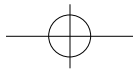
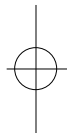
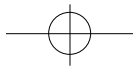
PlayStation 2(PS2), GameCube, XBOX 가

가 가 4가

1.

2001 가. 547

2005 750



가 가 , PS2 가 GameCube

XBOX

가

XBOX

가

가

가 가 가

가

(1) PS2

PS2

2002

가

5

2002 8

PS2

가

PS2

SOCOM: U.S. Network Gaming Service(NGS)

Navy SEALs

ID

SCE-RT

가

가

(2) GameCube

PS2 EVERQUEST

가

2002 10

SCE-RT

API가

PHANTASY STAR ONLINE EPISODE I &

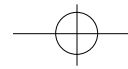
PS2

II

(\$35

5



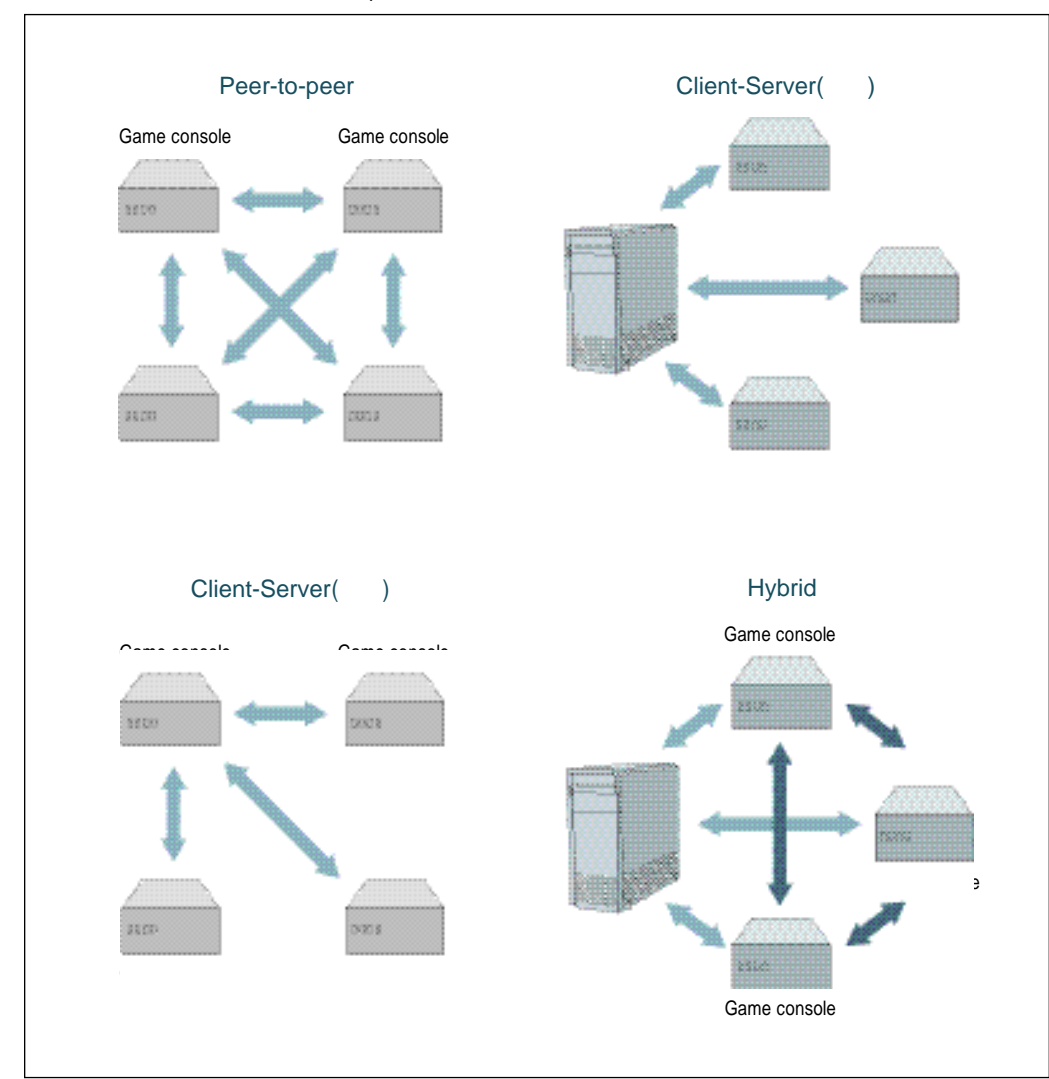


1

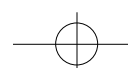
(3) XBOX
 XBOX
 XBOX
 2002 11 XBOX Live
 2003 XBOX 'Gametag' ID
 DSL XBOX Live
 가 가 XBOX Live
 \$50
 (\$50 가 가
 MOTOGP WHACKED in North America 2).
 가 가
 Online Game API 가 가
 가 가 4가
 4가 P2P, C/S ()
 C/S () 3가
 P2P, PS2, GameCube XBOX 가
 가 가
 MMORPG 가
 가 C/S

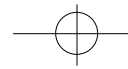
가 C/S
 P-P 가
 C/S 가
 4 Hybrid
 MMORPG PS2 Sony Inet, Sony libeenet, SN System NDK
 Access AVE - TCP 가

< 5-1-1-01 > 4가



5





1

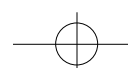
< 5-1-1-01 > (*NAT : Network Address Translator)

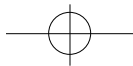
	PS2	GameCube	XBOX
()	2000 10	2001 11	2001 11
()	2002 8	2002 10	2002 11
	/	/	
	(\$40)	(\$35)	
	가		
()			
	SOCOM (\$50)	가 (가)	Starter Kit (\$50)
()			Starter Kit (\$50)
	가	가	가
	가	가	가
	가		(MS)
	가	가	
	Network Startup Disc ()	가	XBOX Dashboard (가)
/	SCE - RT		XBOX network stack
NAT	SCE - RT		XBOX network stack
ID			
	SCE - RT		XDK
P2P	SCE - RT		XDK
			XDK
	SCE - RT		XDK
가	가	가	가
가	가	가	가
Mod	가	가	가
API			()
	UDP, TCP,	UDP, TCP	UDP, TCP
		가	가 (,)

가 . NDK
 가 (GameSpy 가
 GameCube PC).
 PS2
 가 가 . RTime I/O
 SCE - RT
 (clan) . Emotion Engine
 GameSpy CPU(EE) IOP(I/O)
 가
 , P2P ,

BSD API EE CPU
 , XBOX XBOX Live
 AutoUpdate
 ().
 XBOX 1.1
 XBOX
 SCE - RT PS2 가 가
 가 가 . XBOX
 XBOX Software Development Kit PS2
 (XDK) API 가
 가 가 2.
 가 XDK
 XDK
 Microsoft Research
 가
 가 가 CPU
 가 GPU
 XBOX PS2 가 CPU
 가
 XBOX Live 가.
 3D

5

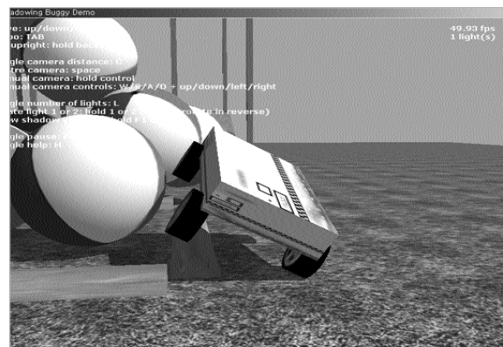




1

가 , 가 가
 가 C++
 가 C
 가 AABB
 가 DynaMechs C++
 가
 가 Linux g++ 2.91.x 2.95.x,
 가 Solaris g++ 2.95.x, IRIX MIPSPro
 가 C++ 7.3.x, NT VC++6.0
 가 2
 가 1 , 3
 가 2
 가
 가
 가

< 5-1-1-02> ODE

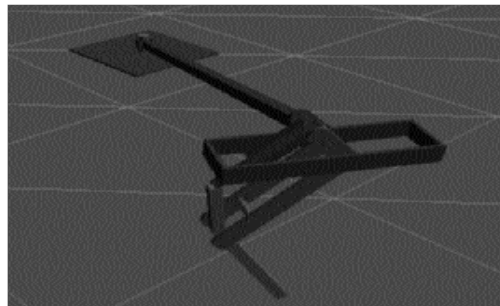


Scott McMillan 1991
 Duane Marhefka가

가
 가
 가 C++
 가
 가 (ROV, AUVs,)

(3) OPCODE
 OPCODE Optimized Collision Detec-

< 5-1-1-03> DynaMechs leg



tion 가
 SOLID RAPID

가
 OPCODE Visual C++ 6.0
 , C++ 가

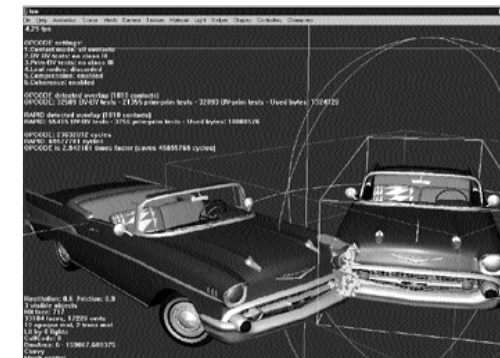
가
 AABB- , 가
 가
 Primitive-Primitive BV-BV

Primitive-BV 가
 first contact all contacts
 RAPID 7.2
 ABBB

OBB
 AI
 3.

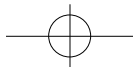
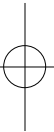
가.
 2002 GDC (Game Developer
 Conference) AI “5
 AI 가?”
 가 speed)

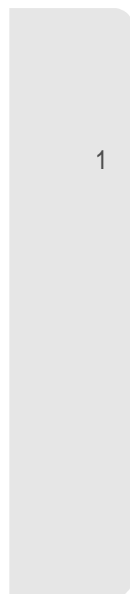
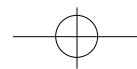
< 5-1-1-04> OPCODE



가
 AI
 가 AI
 AI
 Creature Black & White

AI
 AI
 AI
 (text-to-
 speed)





1

가 AI

CPU

AI

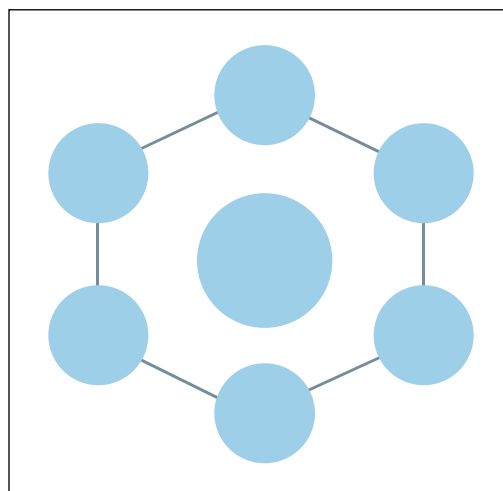
AI

가

AI

AI

< 5-1-1-05 >



(1)

가

AI

가

가

가

가

가

(RTS)

(Online RPG)

가

가

(2)

가

가

가

가

가

(3)

가

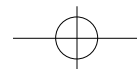
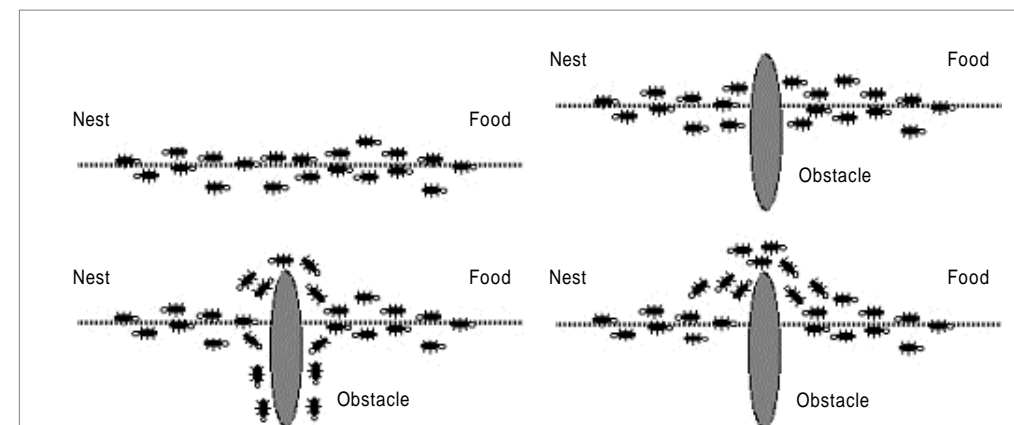
가

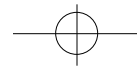
가

가

5

< 5-1-1-06 >





1

2

가 | :

1.

가.

TV,

가 가

,가

가

a.

b.

c.

d.

e.

PC

(

, CD-ROM, DVD)

IT

가

가 ,

c. IT

f.

,가 ,가

d.

가

가가

2.

가가

가가 ,가

가

가

가

a.

가가

가

AVID, Excalber, SGI

, Macromedia,

가

, CD-ROM,

(One-Source Multi-

Use)

가가

b.

가

.가

2004

가

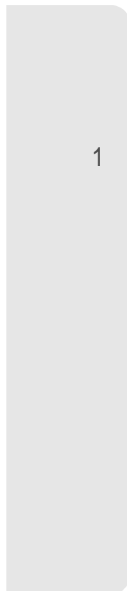
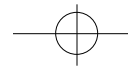
eEurope

가가

가

2000

5



1

(UK Digital Content : Action Plan for Growth)

M&A (Time Warner & AOL, MS & NBC)

2000

• PC

• CodePlay

• 'VectorC,' SN Systems 'ProDG,' MetroWerks 'CodeWarrior'

• 가가

(2)

• 2004 가

eEurope

• 2000

(UK Digital Content: Action Plan for Growth)

• 96 99 6,500 (INFO 2000)

(3)

• CDC(Canada's Digital Collection)

가.

(1)

• 가 (NII), IT for the 21st Century

(4)

• National Center MMCA(Multimedia Content Association of Japan)

(e-Japan)

• NTT i-Mode

• 가()

• (가 (, NC , / :) ,) , ETRI

(5)

• 3D , ETRI

• 가 ETRI, KIST

• 2D , ROM CD- KAIST

• 가 TAG, 20 가 , ETRI,

• 가 가 VR

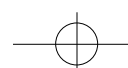
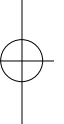
• 가 HTML

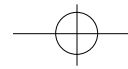
• XML

• XML

• ETRI “ 가 3D ” 2000 X3D

• 가 DTV





1

DSP
Q-Sound 2

- ETRI, ICUBE
- MPEG , 3 가
- DV 가
- () ,
- () - Mio DV300 & Miro DV200 Creative 3
- , DV, Canopus DV Raptor 3
- & DVReX-M1, DVReX-RT)

Victor 2 3

3.

가. () , LG

, 가 PC , Crosstalk

2

(1)

SRS,

RSS, Q-Sound ()

. SRS SoundPro2001¹⁾, CoolEdit

HRTF 2 Pro²⁾ Cakewalk Pro Audio³⁾

MPEG2· AC-3

RSS . Sound Forge

가 Sonic Foundry ⁴⁾ Soft-

1) <http://www.maven3d.com>
2) <http://www.syntrillium.com>

3) <http://www.cakewalk.com>
4) <http://www.soundforge.com>

Encode Dolby AC-3

5.1 2

() AC-3 AAC

2 5.1 가

Digidesign Steinburg 가 가

, SonicFoundry SoundForge

Vegas 2003

Cakewalk Sonar 2004

TV가

TV MPEG2

가

(2)

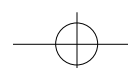
• , 3 2D 3D 가

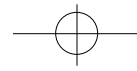
• 2D 3D 가

• 3D 가

• 가

5





1

- 가
- 가 LEGO
- (3) 가
- 가
- 가
- 가
- 가
- 가
- 가

< 5-1-2-01 >

- PC	가	- Crosstalk	2
- HRTF	2	- Dolby AC - 3	5.1 2
- 3	3	- 2 5.1	
- 2	3	- 3 가	가
		- 2009	가 3
		- 가 2004 1mm	
		- 2006 5mm	
- Ray tracing, Radiosity		- 2004	가
- 3D CG		- 2004	가 , 2006
		-	LEGO
가	- Stand alone 가	-	가

< 5-1-2-03 >

	1	2
		AC - 3/AAC Stream AC - 3, AAC MPEG - 4, MPEG - 7
		5.1 Stream

- (1)
- < 5-1-2-02 >

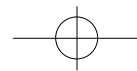
< 5-1-2-04 > 가

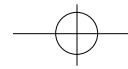
	1	2
가		3 3 가
		가
		가

- (2)
- 가
- 1 2

< 5-1-2-02 >

	2002 - 2005	2006 - 2008	2009 - 2012
	3D		
	2D (, text) / , 3D	(,) ,))가 VR	(, ,), , (,)
		- 3D (+) - 가	





1

가 2 2006 2008

< 5-1-2-08> 1 가

	2002	2003	2004	2005
가	3D			

(3) 3 :

3 2009 2012

(2) 2 :

2 2006 2008

3 2009 2012

2 2006 2008 가

3 2009 2012

< 5-1-2-09> 2

	2002	2003	2004	2005	2006	2007	2008
	AC - 3, AAC				Stream AC - 3, AAC		
	5.1				Stream		

< 5-1-2-10> 2

	2002	2003	2004	2005	2006	2007	2008
	CG						

< 5-1-2-11> 2 가

	2002	2003	2004	2005	2006	2007	2008
가	3D						
					가		

< 5-1-2-12> 3

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	AC - 3, AAC				Stream AC - 3, AAC			MPEG - 4, MPEG - 7			
	5.1				Stream						

< 5-1-2-13> 3

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	CG										

< 5-1-2-14> 3

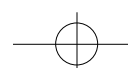
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
가	3D										
					가			가			

5

(1)

< 5-1-2-15>

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	AC - 3, AAC				Stream AC - 3 AAC			MPEG - 4, MPEG - 7			
	5.1				Stream						



1

< 5-1-2-16 >

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	CG										

< 5-1-2-17 >가

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
가	3D										
					가			가			

(2)

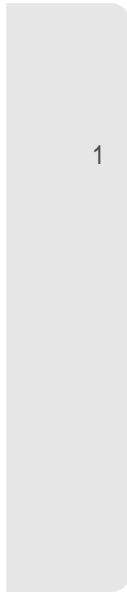
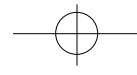
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	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CG											
CG											
CG											
VR	3D VR				VR				VR		
VR											
	2		(HRTF),								
	MREG - 2 (AC - 3, AAC)				Streaming (AC - 3, AAC)				MREG - 4, MREG - 7		
	2				DVD						
	3D										

4.

가 , .2 가 , 3D 가 , 가 , 가 , 가 , 가 , .가 , . 2005 가 , 가 , 가 , 가 , , Aug -

5



1

mented Reality

•

가

3D

• 2005
, 2005

Feedback,

Feedback,

•

가

가

S/W

2005

70%

40%

60%

CG

CG

가

가

가

3

가

II:

가

가

1980

()가
가

가

가

NPC(Non Player Character)

5

1.

가.

가

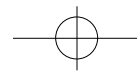
. 3

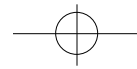
(Features)

가

3

, 3





1

3D

3D

-
-
-
- ()
- (Ganimation)
- 3D
- (Gamemovie)
-

3.

가.

(가 가)
2002 가 가 (, 2)

CPU Time 40%

Game Middleware

2006 5%

(2)

가10
MMOG

•1 (2005) 가

•2 (2008) 가

•3 (2009)
- Game Middleware
Product (3)

4.

가.

(1)

3

가 가

(4)

- 3 (4) 3D
- (Clipping), LOD (Level Of Detail) (Support Buffer) 3

- 3

가

가

5

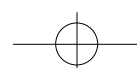
3D 가

가

3D

가
SDK

5



1

가 , , 2

가

가

가 , ,

(5)

, AC3, AAC, MPEG-2, MPEG-4, MPEG-7)

< 5-1-3-01 >

Math library	- Vector, Matrix
Architecture	- Scene Graph - Multiprocessor pipeline - Multithreading
Renderer	- OpenGL/DirectX support - Terrain - Level of Detail - Flat/Gouraud/Phong shading - 2D Graphic support - Hierarchical View - Frustum Culling
Animation	- Vertex/Polygon/NURBS support - Motion blending - Linear/Bezier/TCB interpolation - Inverse kinematics - Facial Animation
Texture	- Bump/Environment/Mip mapping - Multitexturing - Multipass - Palette Texture - Volume Texture
Hardware rendering	- Hardware T&L - Programmable Vertex/Pixel shader

< 5-1-3-02 >

(Performance Target)

(3)

< 5-1-3-03 >

(1)

< 5-1-3-01 >

(4)

< 5-1-3-04 >

(2)

< 5-1-3-02 >

Server Architecture	- Hybrid and Distributed - Transparent - Fault Tolerant - Port Mapping - Load - Balancing - Security
	- Unlimited World
	-
	-
	- (Centralized Repository)
	- (Dead Reckoning)
	-

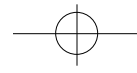
5

< 5-1-3-03 >

	-
NPC	- NPC
	- / 가

< 5-1-3-04 >

(Rigid Body)	- Open/Closed chain
	-
	-
	-



1

< 5-1-3-05 >

		<ul style="list-style-type: none"> - AAC, - Dolby Digital (AC-3), - Extensible Wave, - MPEG-4, MPEG-7, -
		- ±180 ()
		- ±90 ()
	(%)	- 90% ()
	(%)	- 90% ()
		-
		- DTMF, Tones, Morse,
		- SMPTE, MTC,

(5)

5.

< 5-1-3-05 >

가.

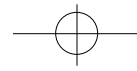
< 5-1-3-06 >

	- (Features)	
	- 가	
	- 가	
	- 가	
	- 가 (PC)	가
	- 가	
	-	
	- 3	, 3 3
	- 가	
	- 2	, ,

< 5-1-3-07 >

	-	- (Keyframe Animation)	
	-	- (Interpolation Animation)	
	- 3D	- (Hierarchical Animation)	
	- 3D	- (Inverse Kinematics)	
	-	- Animation)	
	- 3D	- (Skinning Animation)	
	- (Texture Mapping)		
	- (Shading) & (Lighting)		
	-		
	- (Clipping), (Culling)		
	- LOD (Level Of Detail)		
	- (Support Buffer)		
	- 가		
	- (Shadow)		
	- (Terrain)		
	- NPC		
	- (Rigid Body)		
	- (Collision Detection)		
	2		
	- 2	, 가 ,	
	- (Crosstalk)		
	-		
	-		
	-		
	- DTMF, Tones, Morse		
	-		
	-		
	- Undo/Redo		
	-		
	- SMPTE MTC		

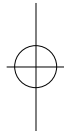
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< 5-1-3-08 >

1	2	3
		Point
		Vector
		Color
		Line, Line Strip, Line Loop
		Triangle, Triangle Strip, Triangle Fan
		Quad, Quad Strip
		Polygon
	Math	Vector
		Matrix
		Quaternion
	shading	Flat Shading
		Gouraud Shading
		Phong Shading
	Texture Mapping	Texture Mapping
		Multitextureing
		Bump Mapping
		Displacement Mapping
		Environment Mapping
		Sphere Mapping
		Cube Environment Mapping
	Lighting	Lighting
		Point light
		Directional Light
		Spot Light
		Ambient Light
		Projective Texturing
		Shadow
		Fog
		Particle System
		Sprite
		Billboard
		Vertex Animation
	LOD	Static
		Dynamic (continuous)
	Advanced DS	BSP
		PVS
		Height Field
	shader	Vertex Shader
		Pixel Shader
	Blurring	Focal Blur
		Motion Blur
		Bone animation
		Keyframe animation
		Skinning animation
		Skeletal animation
		Facial expression
		Collision Detection



< 5-1-3-08 >

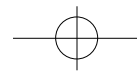
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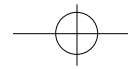
1	2	3
		Character Studio
	()	3D Studio MAX
		3D Studio MAX Plug - in
		Peer - to - Peer
		Client - Server
		Hybrid
		Distributed
		Zoned World
		Seamless World
		Unlimited World
		Drop - in
	NPC	NPC
		NPC
		/ 가
	(Rigid Body)	Join
		Multi Resolution
		Open/Closed chain
	2	3
		가
		, SMPTE, MTC

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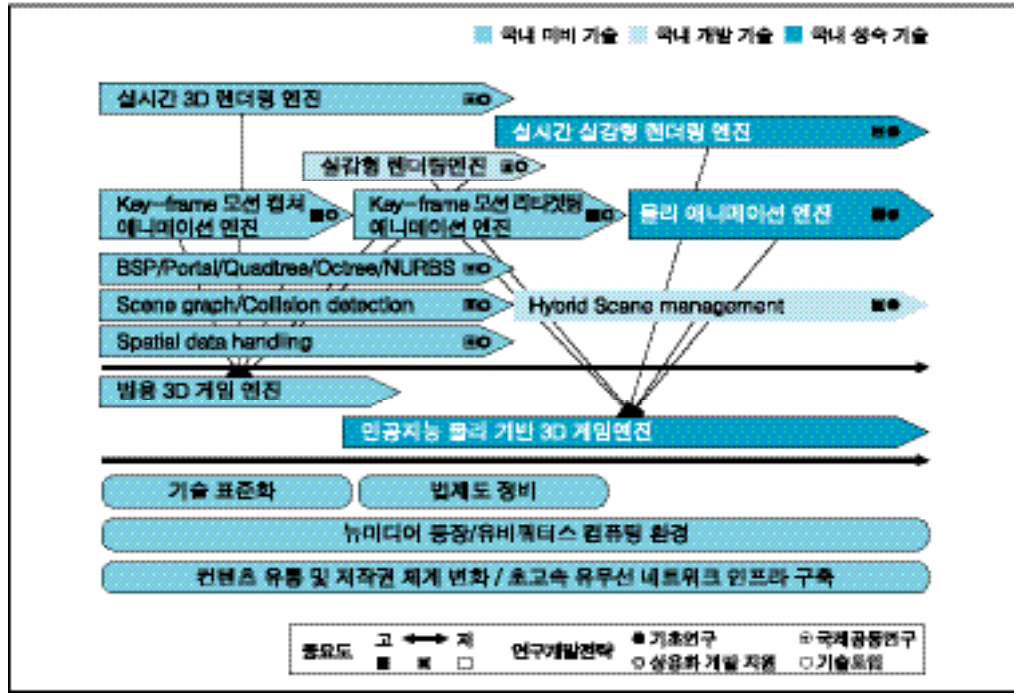
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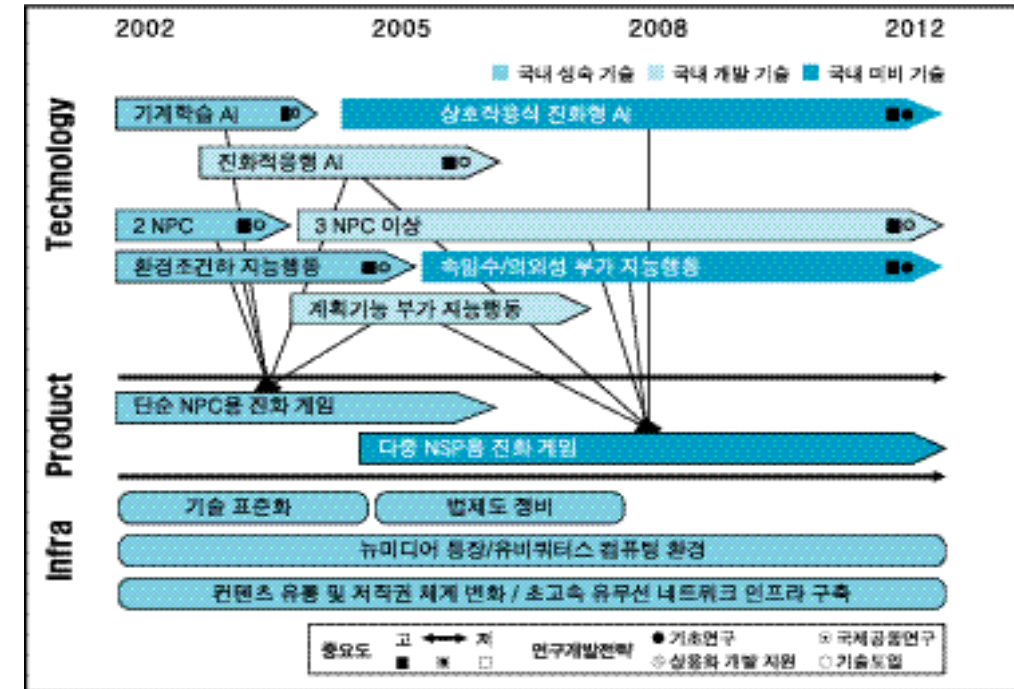




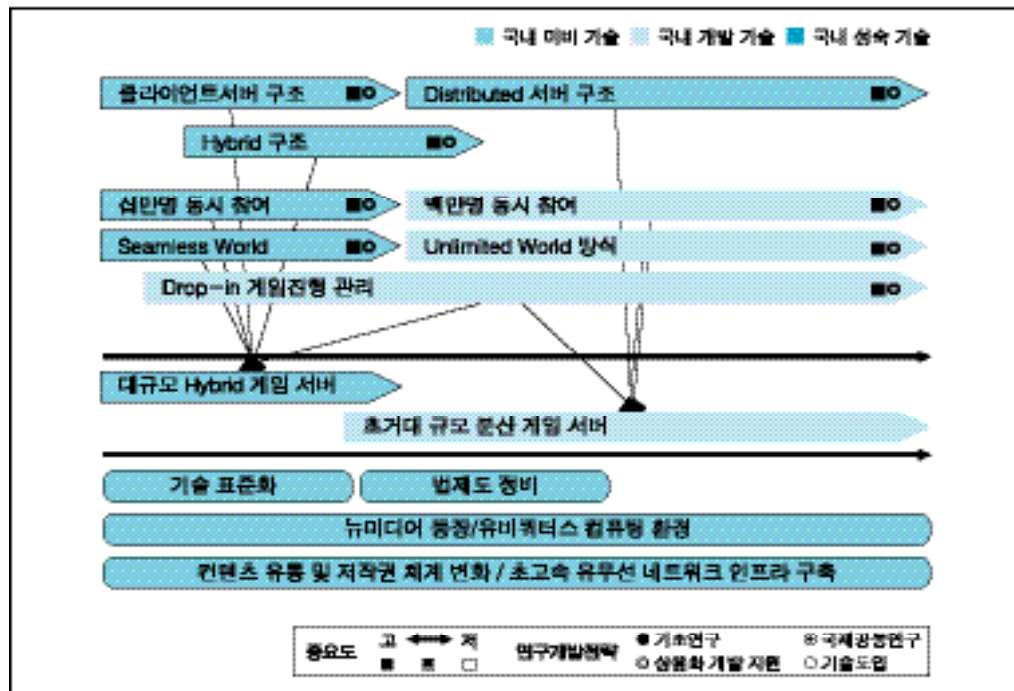
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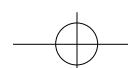
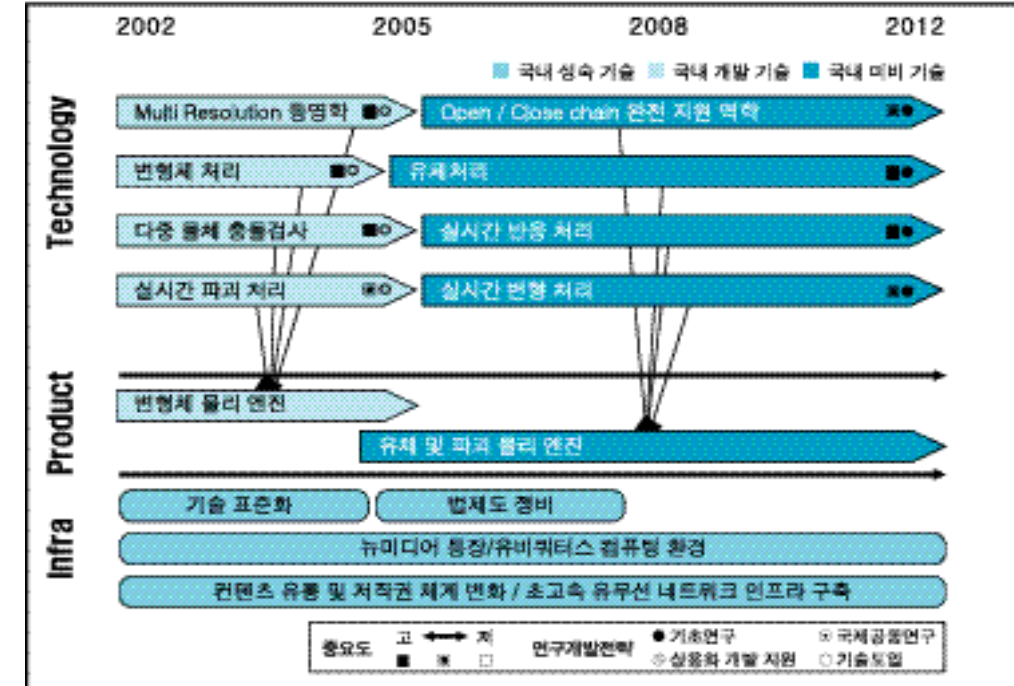
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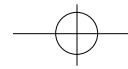


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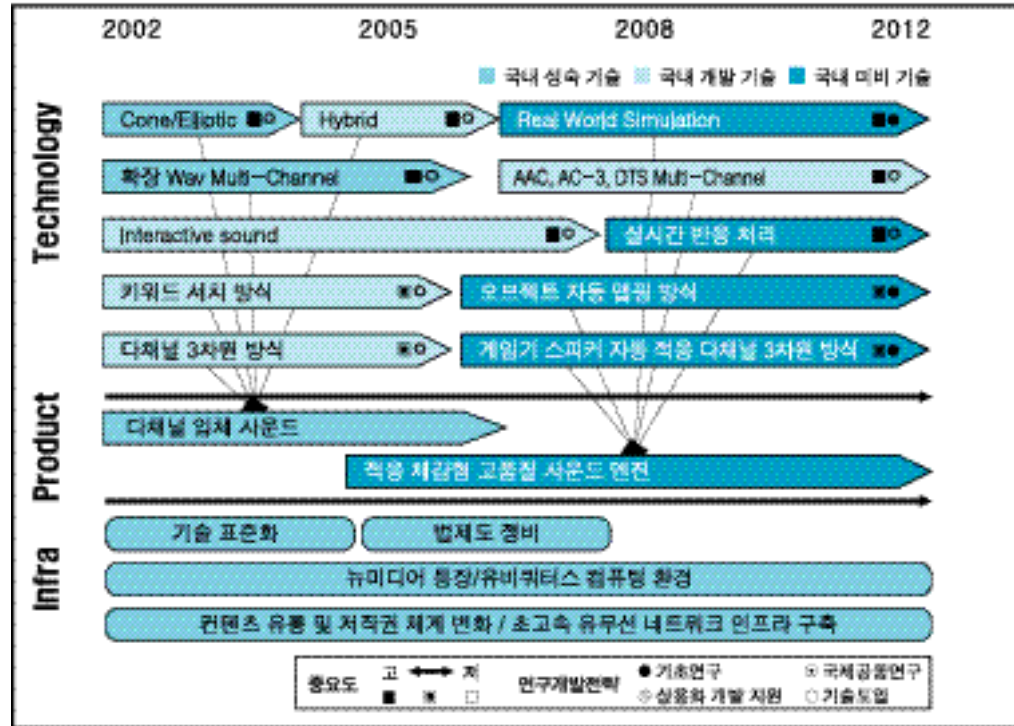
< 5-1-3-04>





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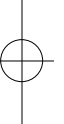
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- (5) : 2 (2)
- : HDTV
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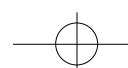
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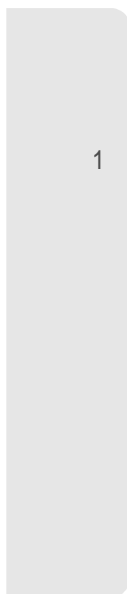
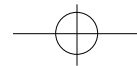
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