Overview

• Getting Started
• Design
• Haptics
• High-end Rendering
• Simulated Effects
• Audio
• Performance
• Tools
• Modding
In the Beginning
The Tech

FleX

PhysX Destruction

Flow

www.gameworks.nvidia.com
Early Design Decisions

- Design for your target platform
- Experience
  - Real Buttons
  - Haptics
- Determine an art style and stick to it
  - Realistic Rendering with non-realistic design
  - PBR Materials and Photogrammetry - intentionally stylized
Theme
Haptics
Haptics - Rigid Joint

- Great Feedback
- Constant buzzing while inside an object
- Overwhelming
Haptics - Overlap Event

- Doesn’t buzz constantly
- Less responsive to friction
- Tied to velocity

Visible Mesh

Object
Haptics

• Bow
  • Every tick - check for distance between the hands
  • Added a tiny buzz when bow is drawn to max
Haptics

• User Options
• Material Based Haptics
• Greater fidelity in the controller
High-end Rendering

- Unreal Engine 4
- Use Shadows
- Eye-catching
- Don’t hold yourself to a Min Spec

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High-end Rendering

• Destroys your Min Spec
  • Have a high Min Spec OR
  • Visual Quality suffers
Simulated Effects - FleX

- Simulated fluid in 3 dimensions at 90hz!
- Simulate what you can do well.
Simulated Effects - FleX

- Collision
- Expensive
- Limited Direct Interaction (from code)
Simulated Effects - Turbulence
Simulated Effects - Flow

- Need real-time, volumetric emitters for Flow
- Be mindful of your simulation
Simulated Effects - HairWorks

• Editable in UE4
• Use limited dynamic lighting
• Place assets mindfully
• Temporal AA is your friend
Simulated Effects - Destruction

• Mind your chunk levels
• Swap for static meshes?
• Utilize only what you need
Audio

- Motion Tracking
  - Hit impulses
  - Component Velocity
Audio

- Simulated Physics - FleX
  - No Hit Events
  - No Overlap Events
  - Use Containers
Performance

• Targets for VR
  • 90 FPS (~11.11ms/frame)
  • Give the platform 1 ms of buffer
Performance

• FCAT VR
• Perf recoding system
Performance

- Make sure all individuals in the pipeline are testing on an HMD
Performance

• Automated playback system
Performance

• Settings
  • Define your Low, Medium, High
    • Screen Percentage
    • MRS (Multi-Res Shading)
    • Post Process AA
    • Shadow Quality
Performance - MRS
Performance

• Settings
  • Define your Low, Medium, High
    • Screen Percentage
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Performance

• Doubt about which system to blame:
  • GPU
  • Driver
  • SteamVR/Oculus
  • UE4
  • UE4 integrations
  • Content
  • OS (TH2, RS1, Win7)
  • Settings
Performance

• Find a way to isolate the issue
  • Automate builds
  • Swap Drivers
  • OS Images
• Form good relationships with external developers

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Tools

• Unreal Engine 4
• 3D Coat
• HairWorks
• PhysXLab
• Lightwave
• Autodesk 3DS Max & Maya
• Adobe Products
Modding

• Give it all away!
Modding

• Steam Workshop Support
  • Asset/Map Override System
  • Fetched User Generated Content
Modding

Mod Kit includes:
• Editor
• All assets
Final Notes

• Look for ways to improve the player’s experience
  • Added teleport and long-distance grab
• Design
  • Repeatable gameplay
Go make a VR experience!

• VRWorks
  • https://developer.nvidia.com/vrworks

• GameWorks
  • https://developer.nvidia.com/gameworks

• Epic Games Launcher
  • https://epicgames.com/

• Mod Kit Information
  • https://developer.nvidia.com/vr-funhouse-mod-kit
QUESTIONS?

ASK THEM MEOW

memegenerator.net
Contact us!

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