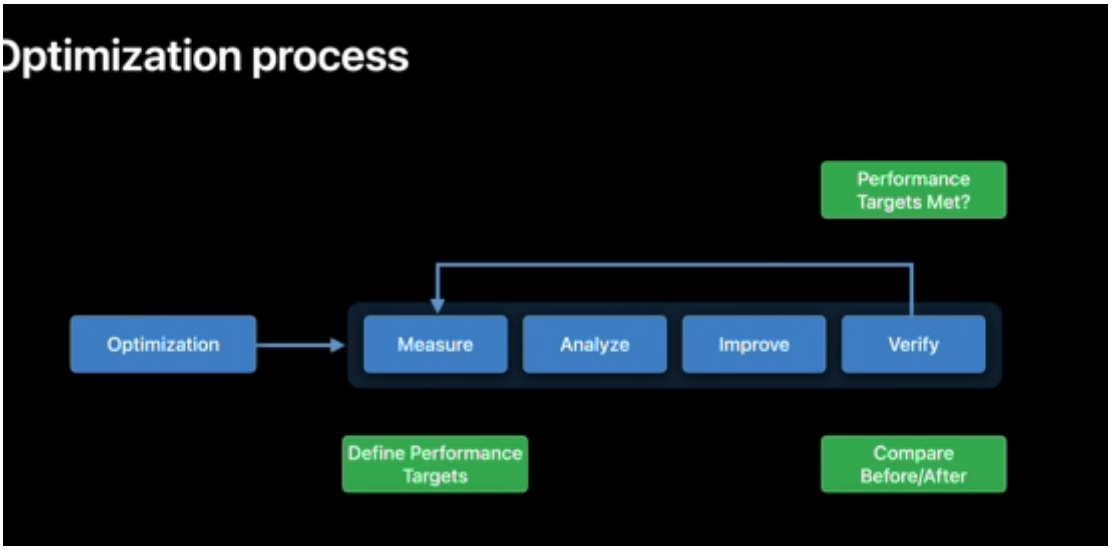
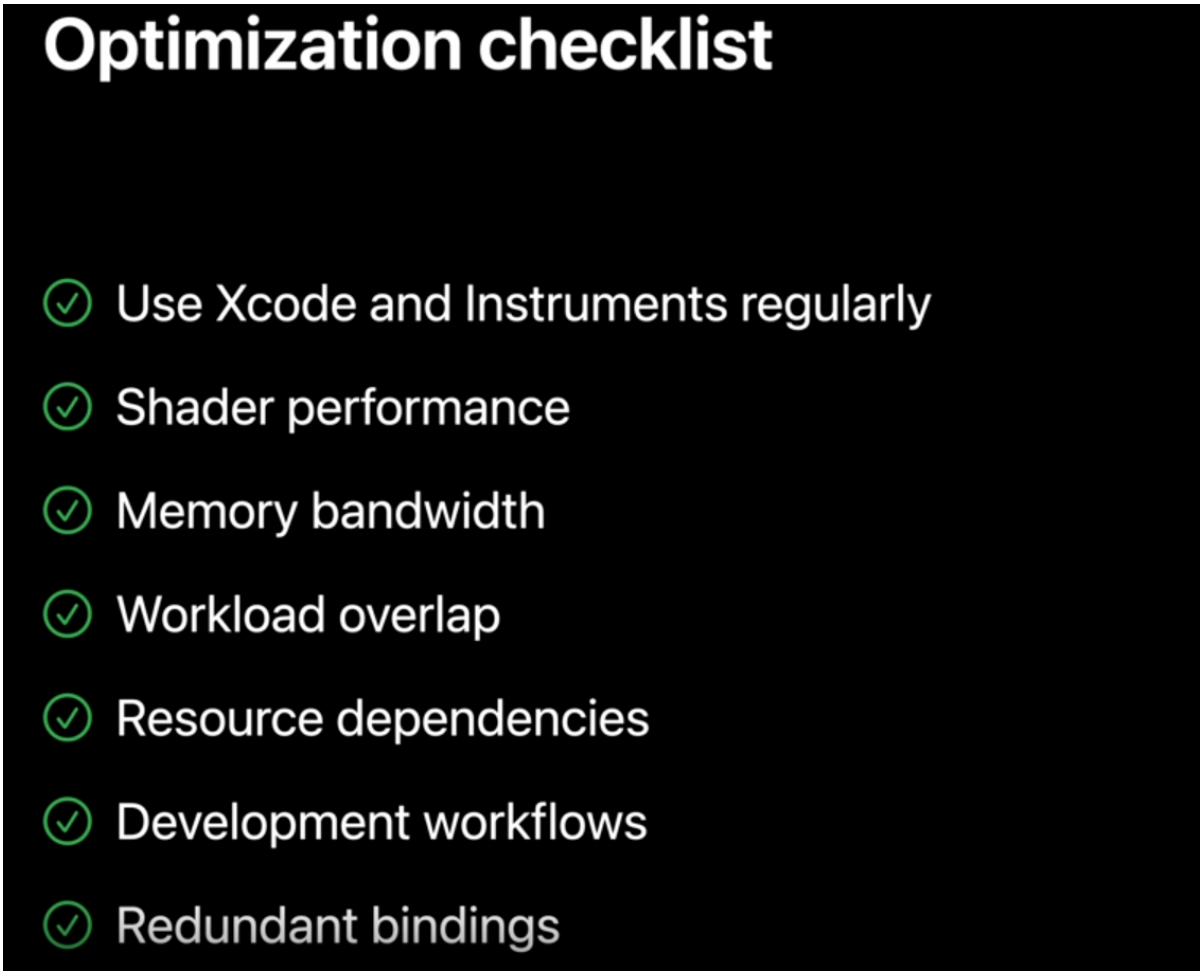
Optimize high-end games for Apple GPUs

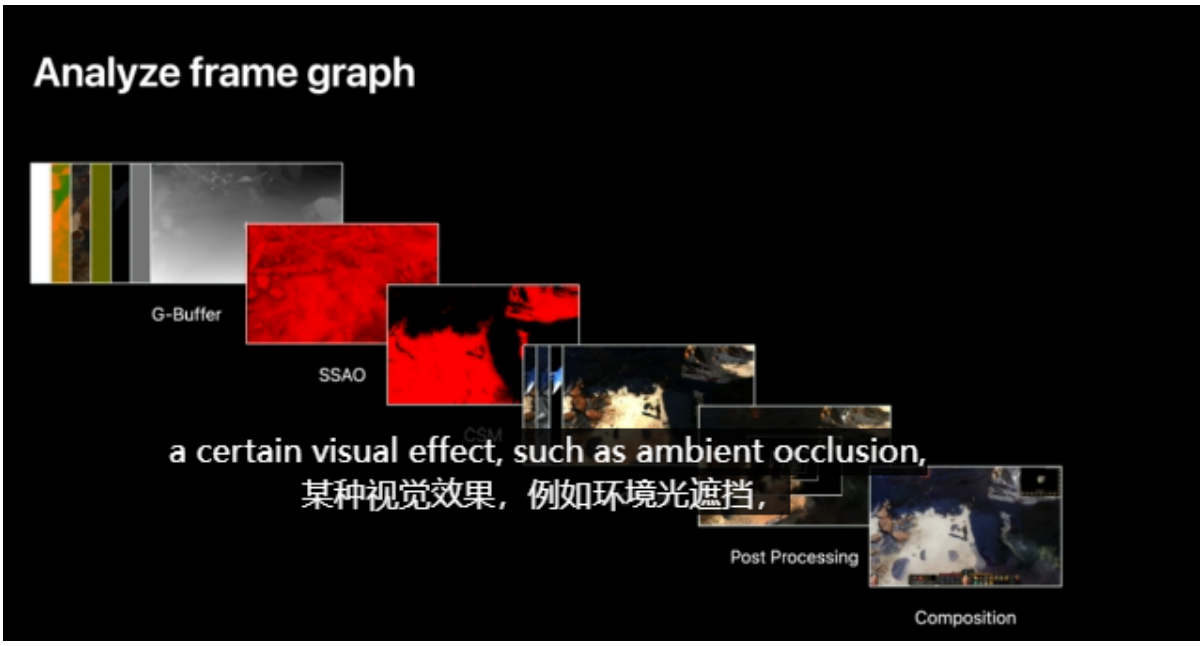
Optimization Process



1. Mearsure
2. Analyze
3. Improve
4. Verify

CheckList





Metal Debugger

Summary页面

Show Dependencies

BandWidth

Loseless Compression Warnnings for textures and Reasons

API

Redundant Bindings

Memory页面

1. Filter by RenderTargets
2. Texture---Usage
3.

Group by API Call

Group By Pipeline State

Function Statistics

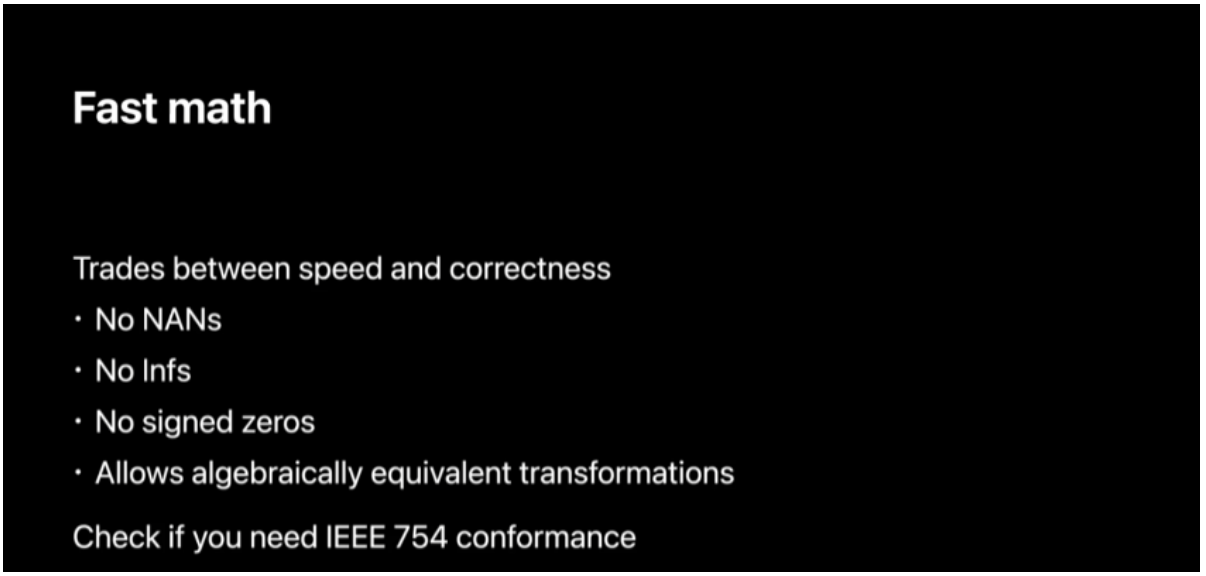
观察指令数

Pipeline Stage

观察计算过程中绑定的资源

Compile Options

Fast math flag



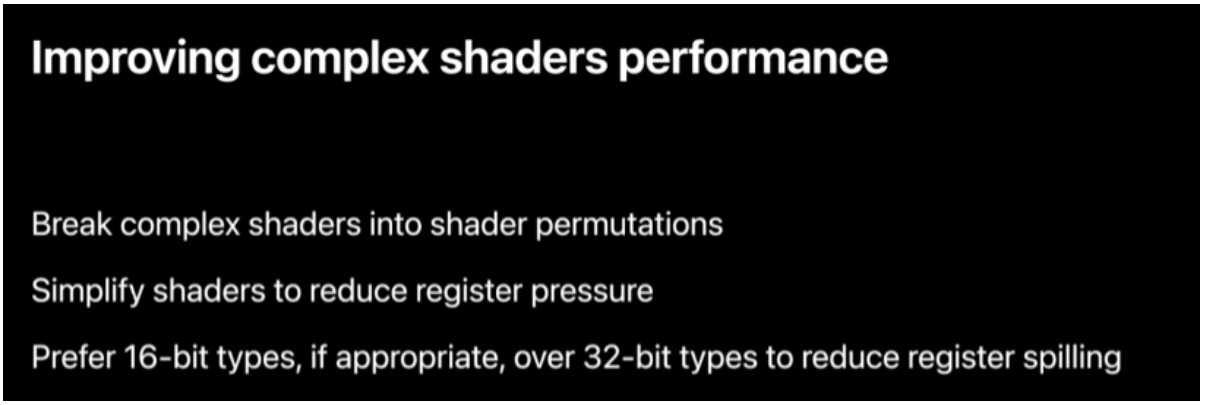
Instruments Tools

Game Performance

Metal System Trace(GPU)

优化

Shader



High ALU + Low shader Occupancy 指示寄存器压力

BandWidth

- Color Attachment不需要ShaderWrite标志

Memory

Redunt Bindings

GPU Timeline

GPU

Fragment

所有pass的时间分布

shader时间

load/store

Encode

一次pass的所有信息

固定ALU和Occupancy两条Timeline

High ALU + Low shader Occupancy 指示寄存器压力

Floating Point Utilization

Shader right click openg shader

Shader Profiler

Counters