Unreal Engine
Best practices

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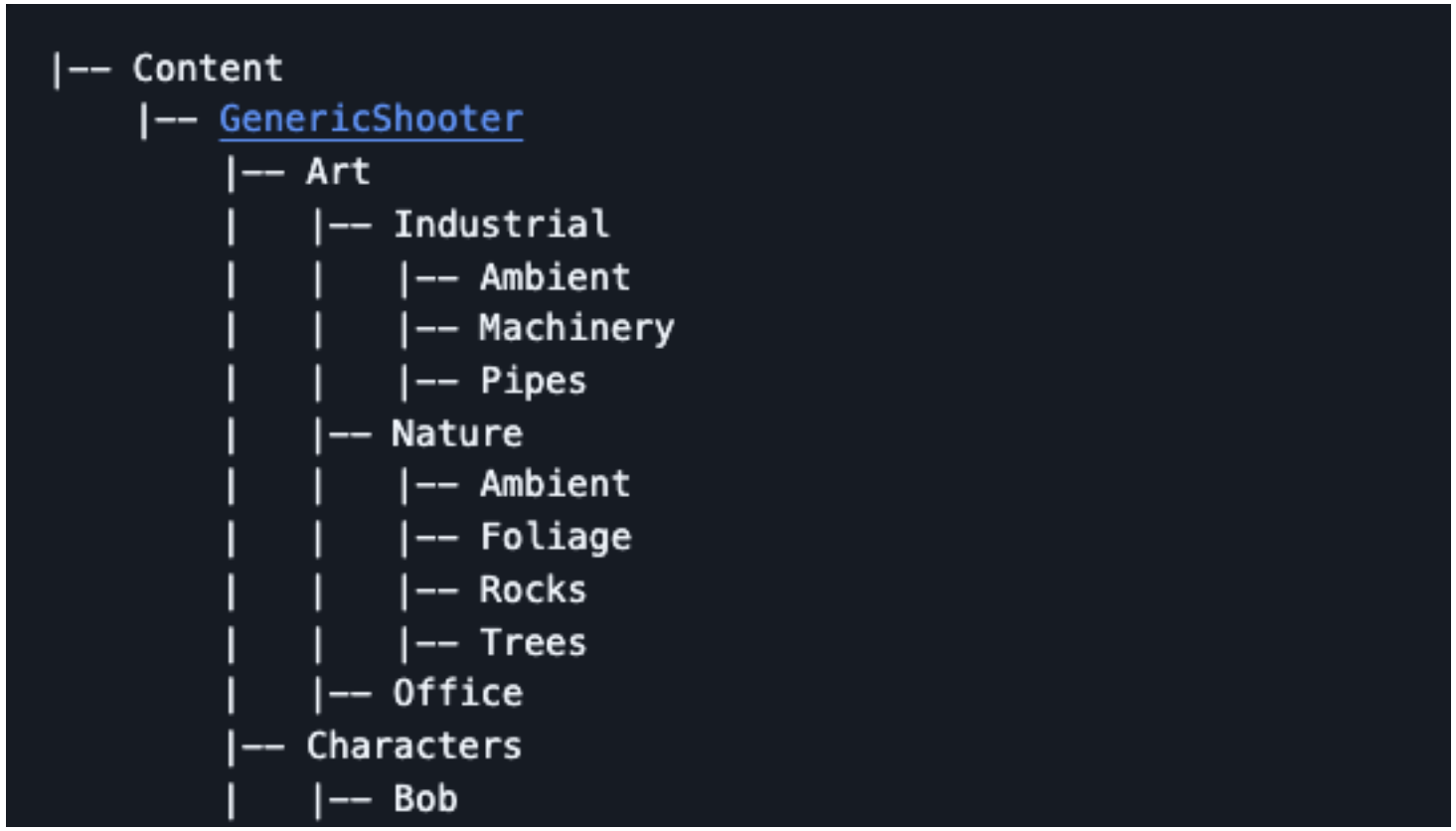
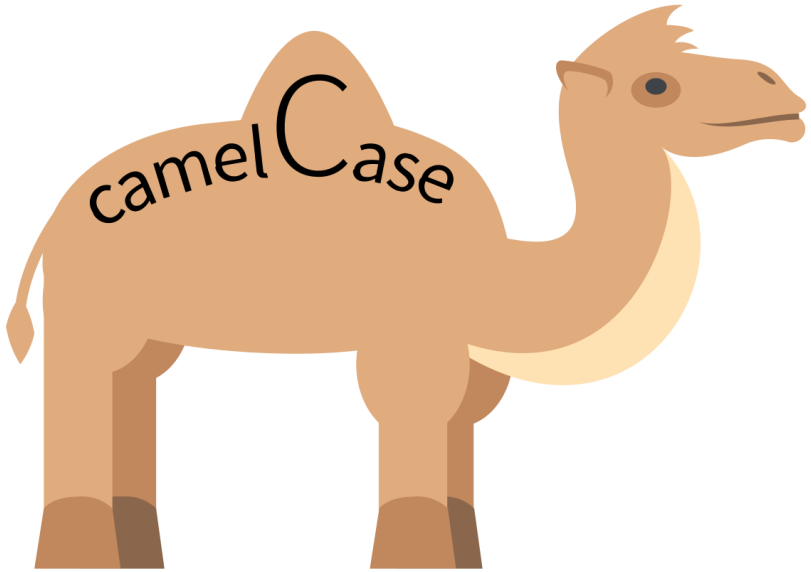
Project Organization

- Consistent folder structure
- Organize assets by logical groups or levels



Naming Conventions

- One naming convention in project



Naming Conventions

- Prefixes based on object type

Asset Type	Prefix	Suffix
Blueprint	BP_	
Blueprint Component	BP_	Component
Blueprint Function Library	BPFL_	
Blueprint Interface	BPI_	
Blueprint Macro Library	BPML_	

Asset Type	Prefix	Suffix
Level / Map		
Level (Persistent)		_P
Level (Audio)		_Audio
Level (Lighting)		_Lighting
Level (Geometry)		_Geo
Level (Gameplay)		_Gameplay

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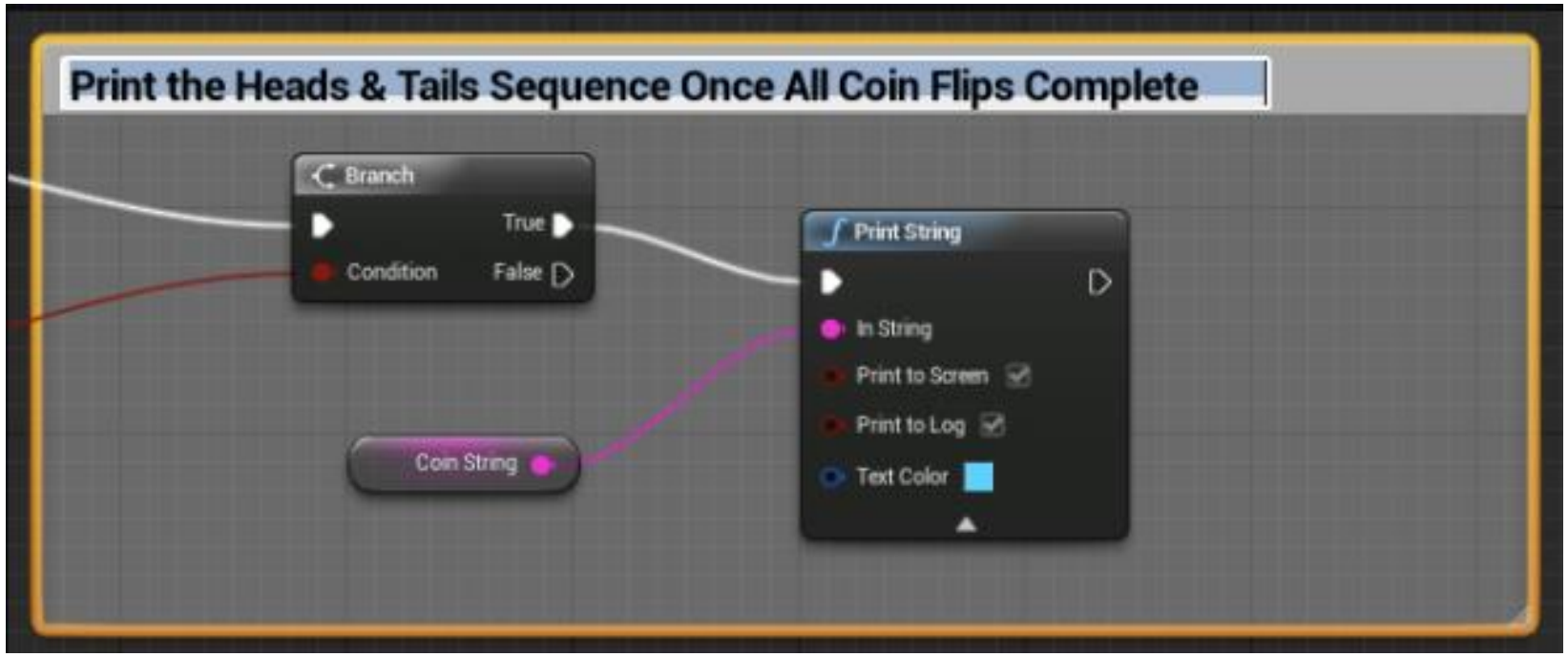
Blueprint Best Practices

- Use comments and comment blocks
- Split logic into small, reusable functions
- Keep logic flow left-to-right, top-to-bottom
- Avoid “Blueprint spaghetti” (complex, tangled graphs)



What NOT to Do in UE

- Avoid using Tick unnecessarily – use Event Dispatchers or timers
- Avoid GetAllActorsOfClass in large scenes – save instances
- Don’t use simple Delay nodes – prefer timers
- Limit casting – use interfaces instead
- Don’t import whole asset packages

Version Control in UE

- Install Git LFS for large binary files
- Set up proper .gitignore and .gitattributes
- Close UE before commiting
- Consider saving plugins
- Merge is not possible

vs

PERFORCE

https://www.anchorpoint.app/blog/version-control-using-git-and-azure-devops-for-game-projects

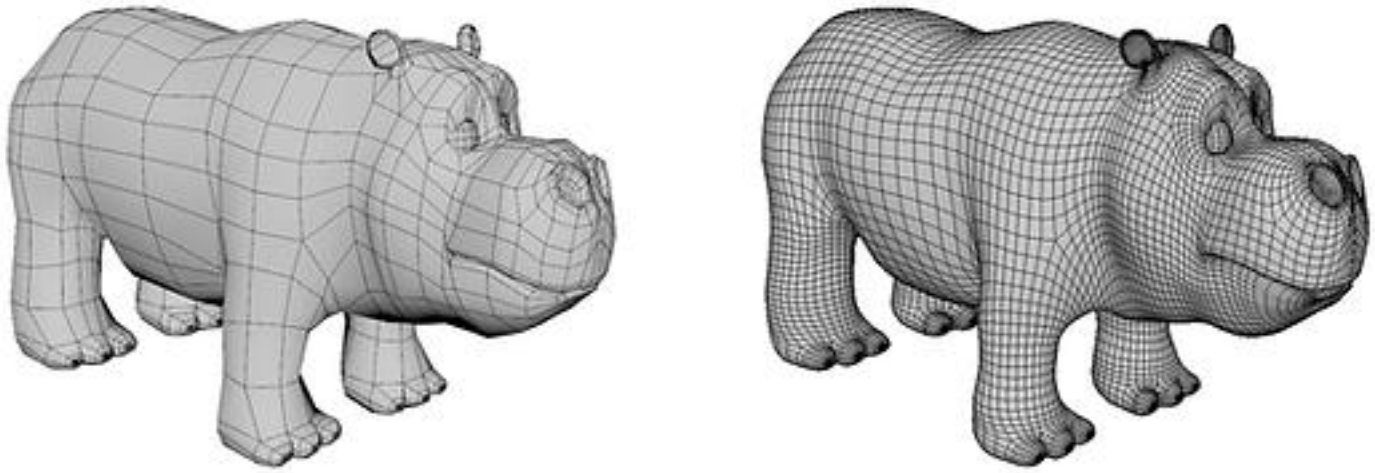
Collaboration in UE

- Define clear roles and responsibilities
- Communicate changes and updates regularly
- Plan work areas to minimize conflicts
- Lock files

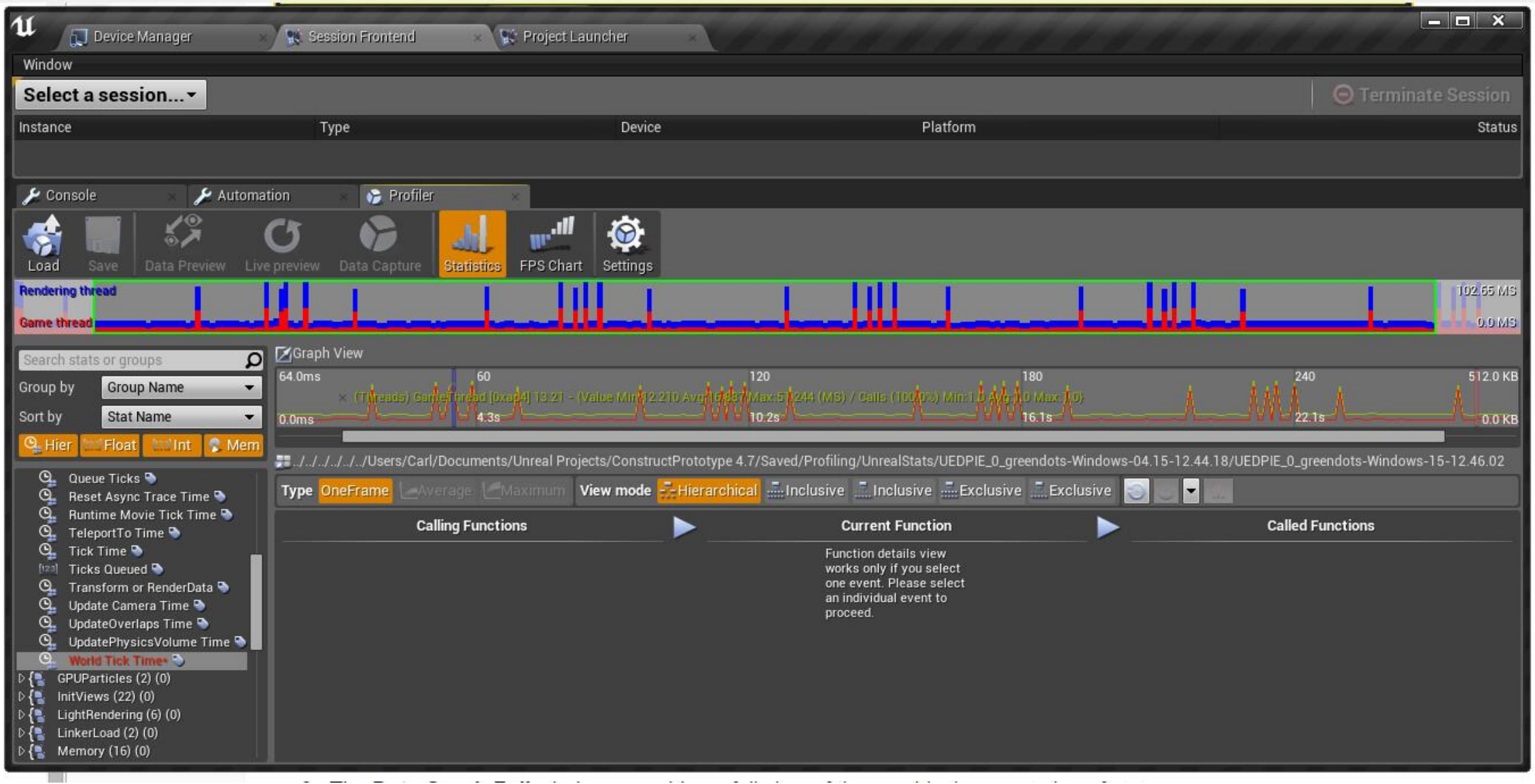
Performance Optimization

- Don’t use gravity and collision if not needed
- Use level of detail (LOD’s)
- LOD’s and calculation of collisions
- Use adequate texture quality

Low poly – High Poly



Performance Profiling



Modern UE Technologies - Nanite

- Virtualized geometry system
- Processes only perceived details
- Automatic LOD’s

High Poly Static Mesh

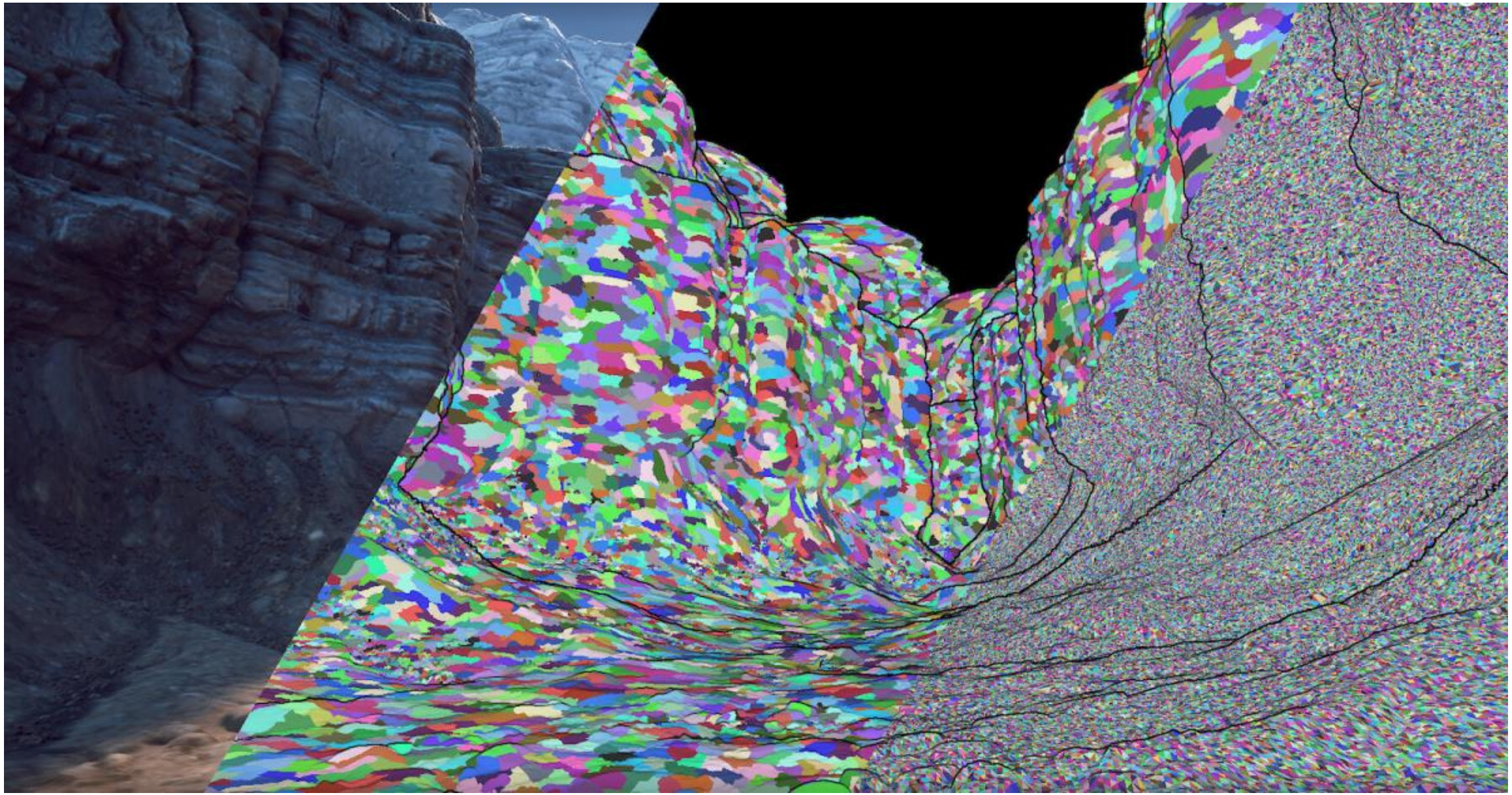
- Triangles: **1,545,338**
- Vertices: **793,330**
- Num LODs: **4**
- Nanite: **Disabled**

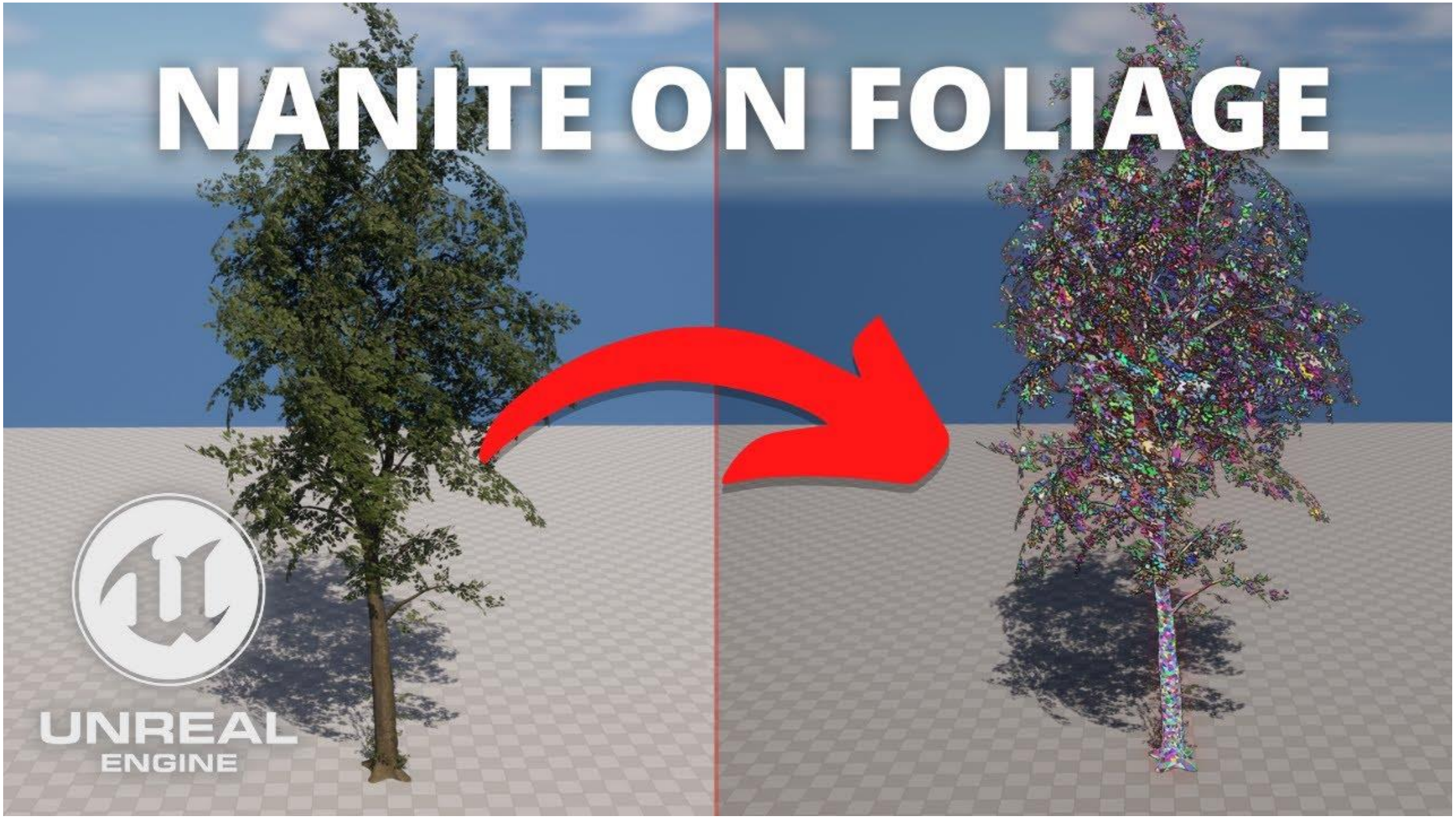
Static Mesh Compressed Packaged Size: **148.95MB**

Nanite Mesh

- Triangles: **1,545,338**
- Vertices: **793,330**
- Num LODs: n/a
- Nanite: **Enabled**

Static Mesh compressed package size: **19.64MB**

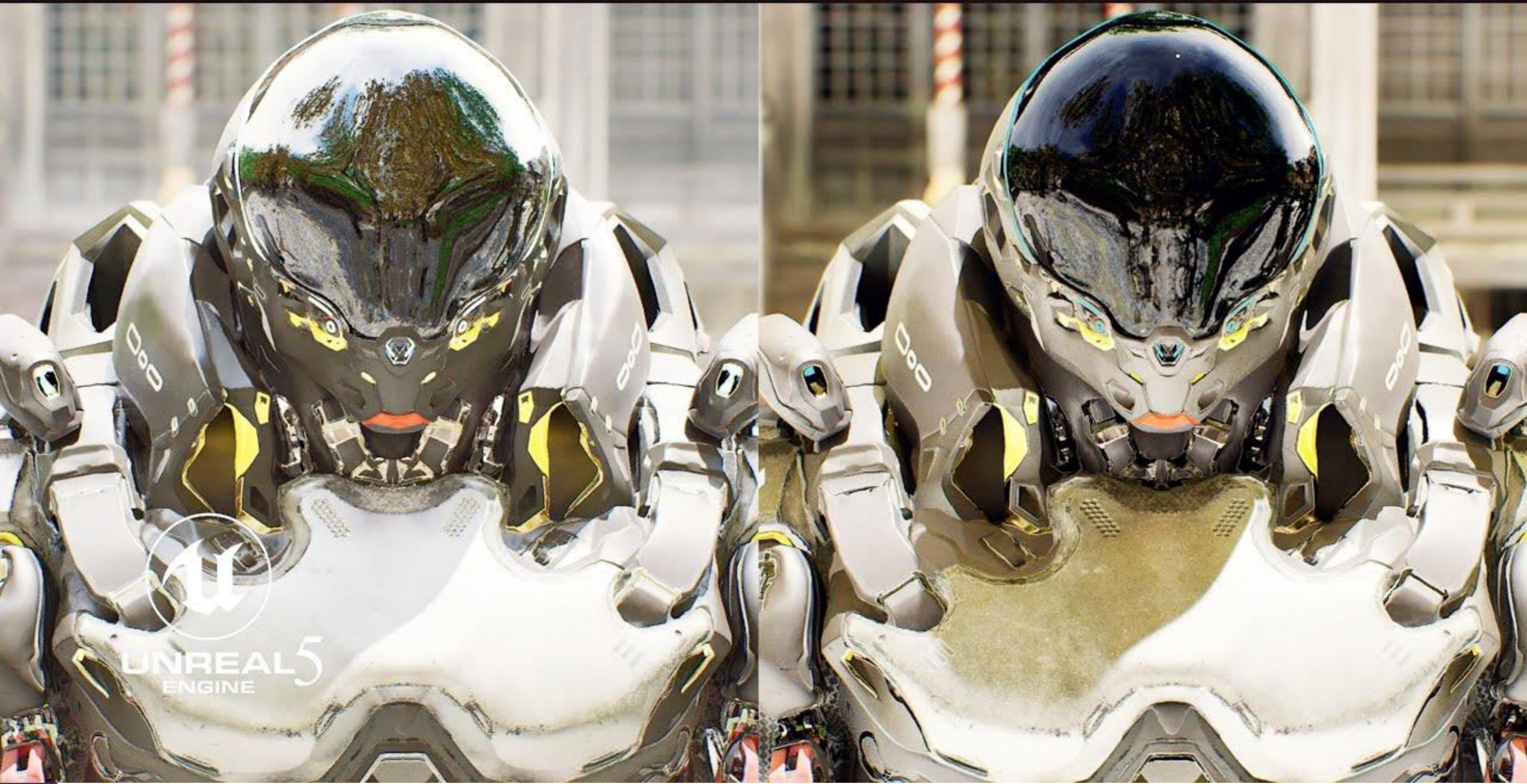



NANITE ON FOLIAGE
UNREAL
ENGINE

Modern UE Technologies - Lumen

- Fully dynamic global illumination and reflection system
- Reacts to changes in real time
- No need for lightmaps

UE5 LUMEN VS OLD RAY TRACING



Useful resources

Style guide:
https://github.com/Allar/ue5-style-guide?tab=readme-ov-file#structure

UE documentation:
https://dev.epicgames.com/documentation/en-us/unreal-engine/blueprints-visual-scripting-in-unreal-engine

UE FAB:
https://www.unrealengine.com/en-US/fabfreecontent

Ali Elzoheiry – games and advanced topics:
https://www.youtube.com/@AliElZoheiry/videos

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Useful resources

Ryan Laley:
https://www.youtube.com/@RyanLaley/videos

DK 3d – procedural content generation:
https://www.youtube.com/@dk_3d