

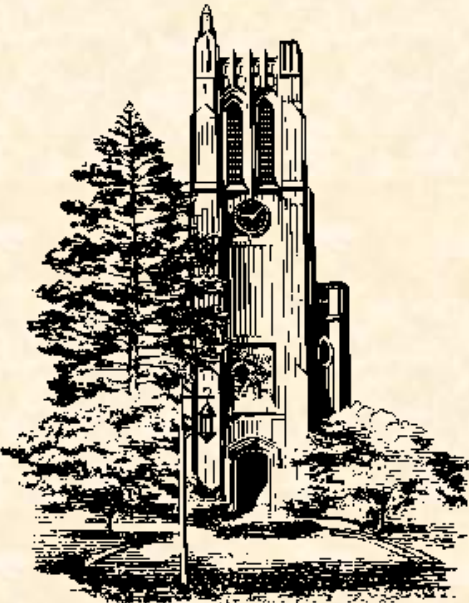
# Beta Demonstration Sparse Virtual Texturing

Team 2. Boeing  
CSE 498, Collaborative Design

<Team Member 1>  
<Team Member 2>  
<Team Member 3>  
<Team Member 4>

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# Project Overview



- Create an OpenSceneGraph plug-in
  - Utilizes sparse virtual texturing techniques
  - Efficiently use high resolution textures
- Create an Application
  - OSG example
  - Demonstrate functionality



# Problem



- Using High Resolution Textures
- Graphics Card Requirements
  - Wants entire texture to draw the scene
  - Wants textures that fit in memory
- Current Methods
  - Tedious
  - Inefficient



# Solution



- Pre-process Image
  - BSVT format
  - Stream from disc efficiently
- Pre-render Scene
  - Check used parts of texture
  - Stream needed, non-present parts



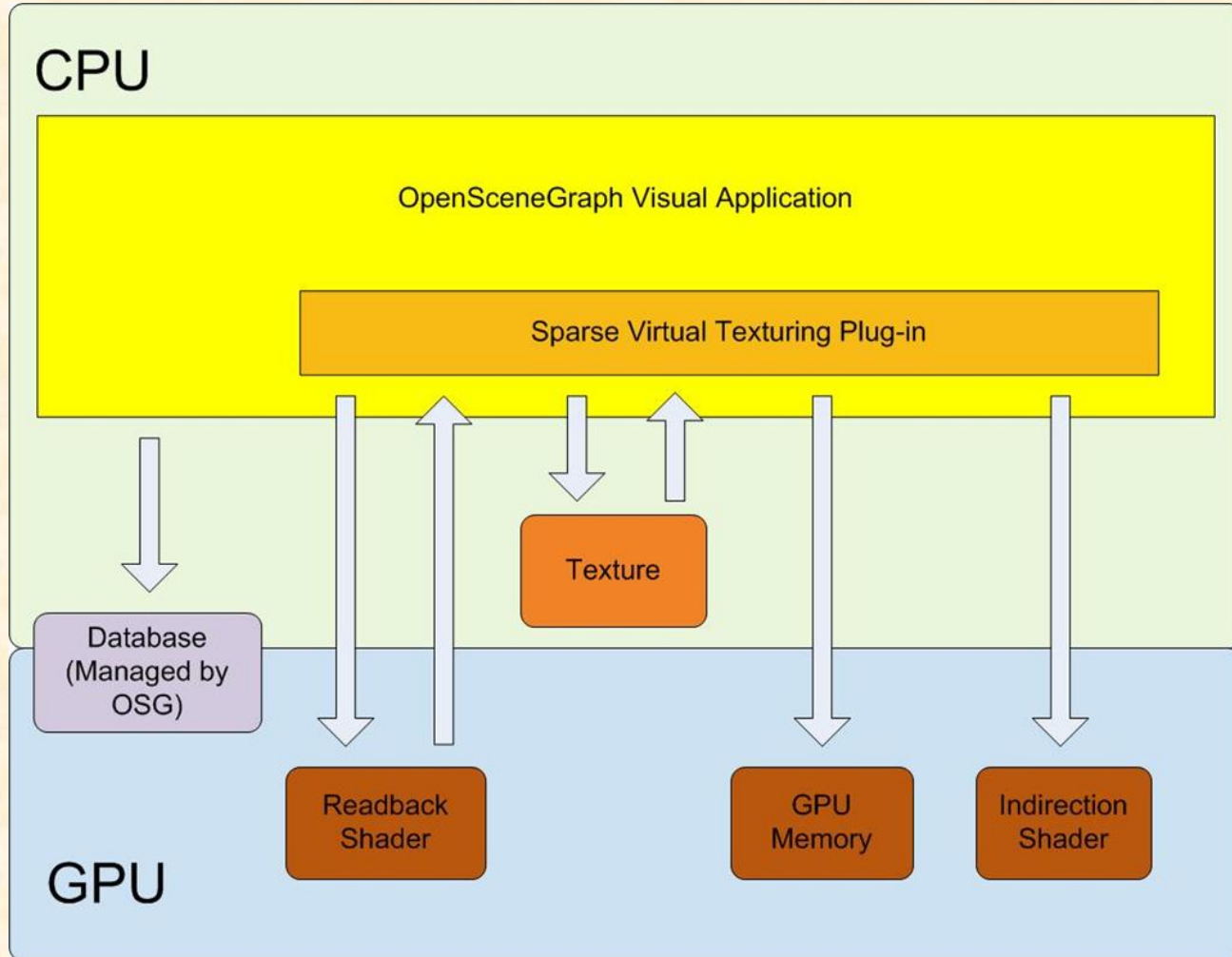
# Solution



- Update Scene Texture
  - Replace present, unused parts
  - Pass updated texture to indirection shader
- Indirection Shader
  - Contains page table
  - References scene texture
  - Corresponds texture coordinate with scene texture

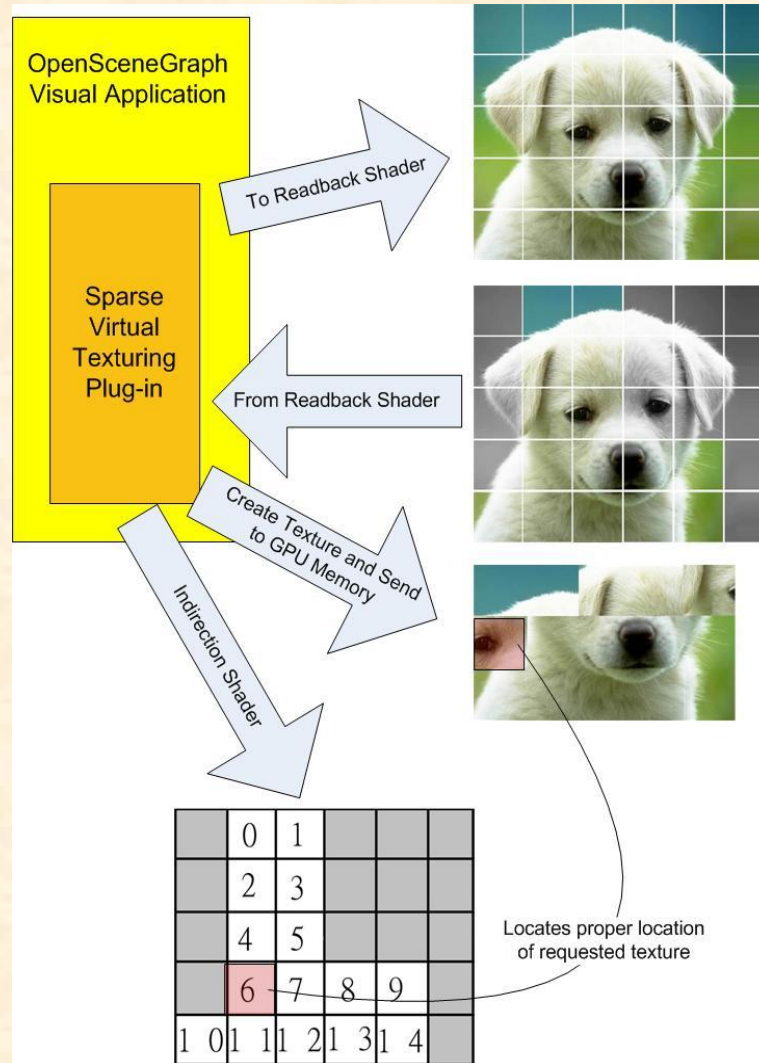


# Architecture





# Architecture







# Screen Shot



FPS: 55 DT: 0.0165989 Page Requests: 75/256/682

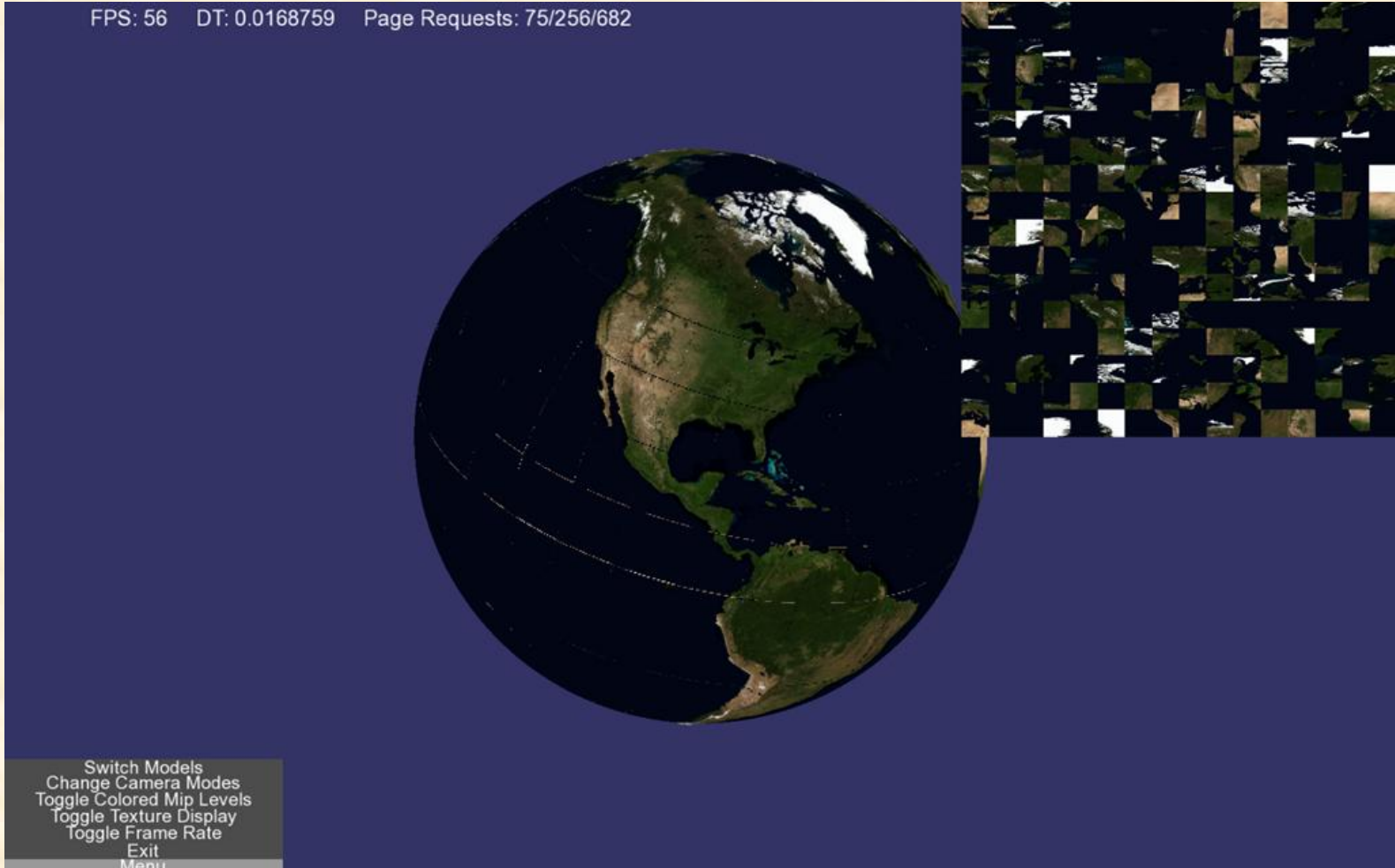


Switch Models  
Change Camera Modes  
Toggle Colored Mip Levels  
Toggle Texture Display  
Toggle Frame Rate  
Exit  
Menu



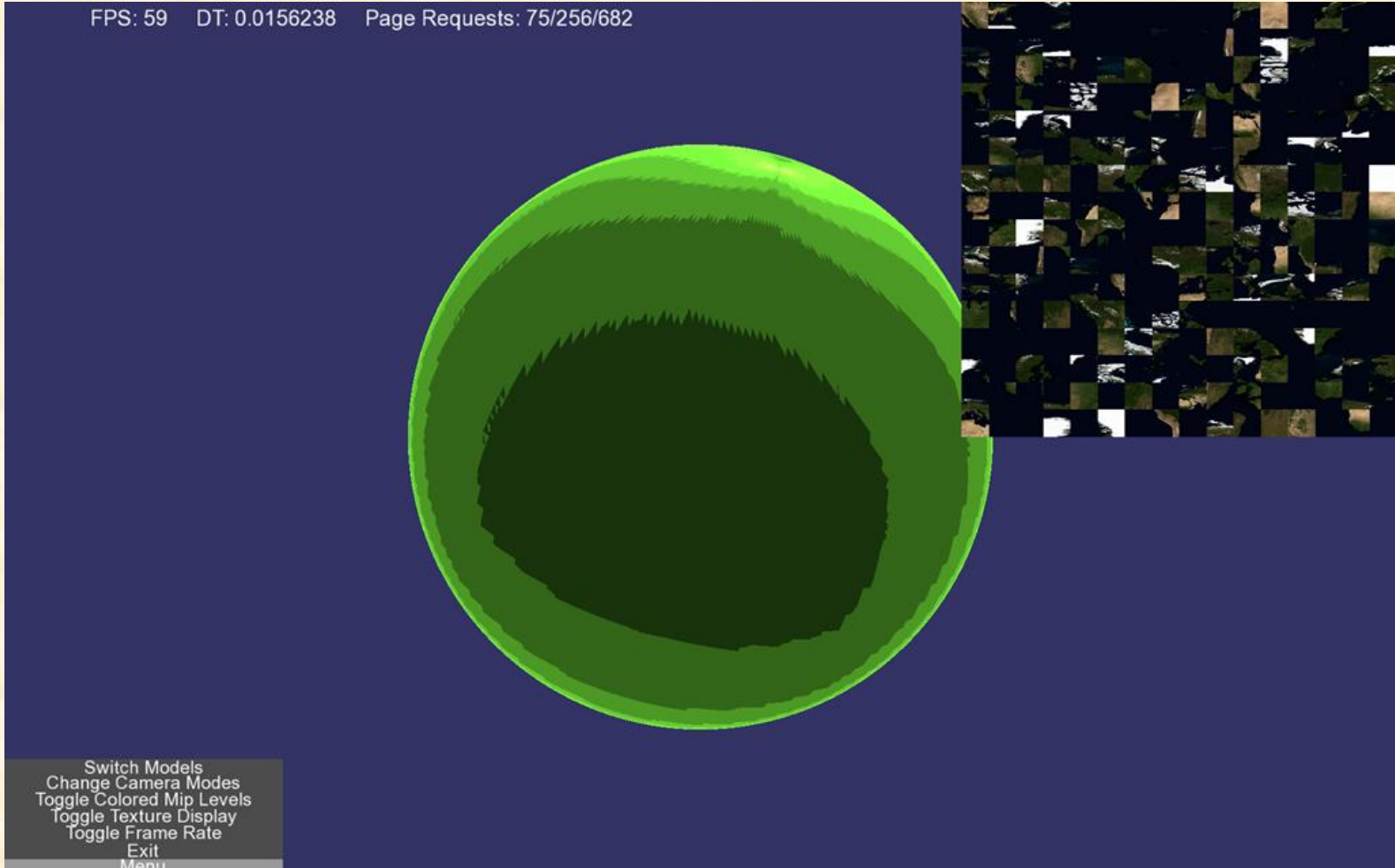


# Screen Shot



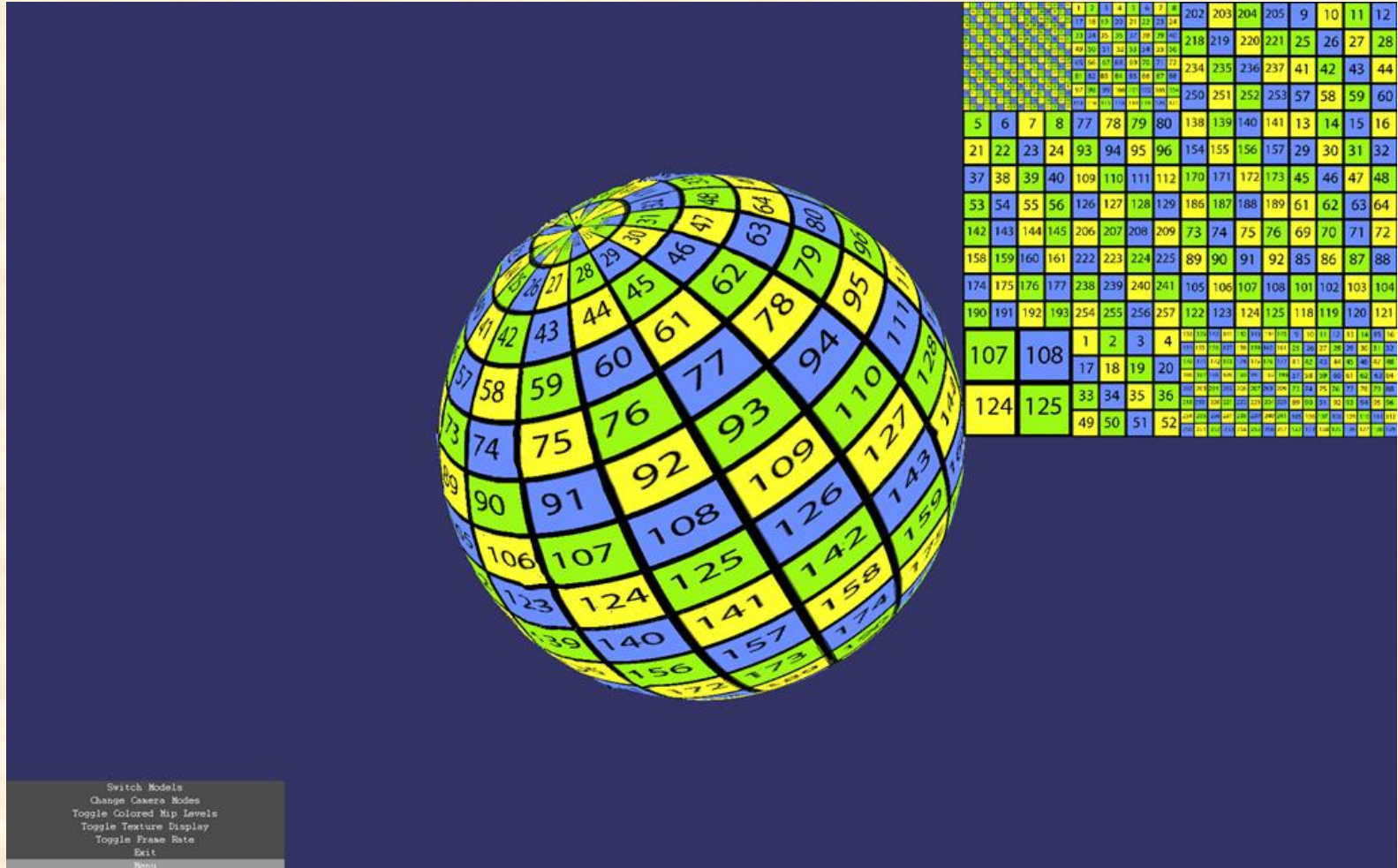


# Screen Shot





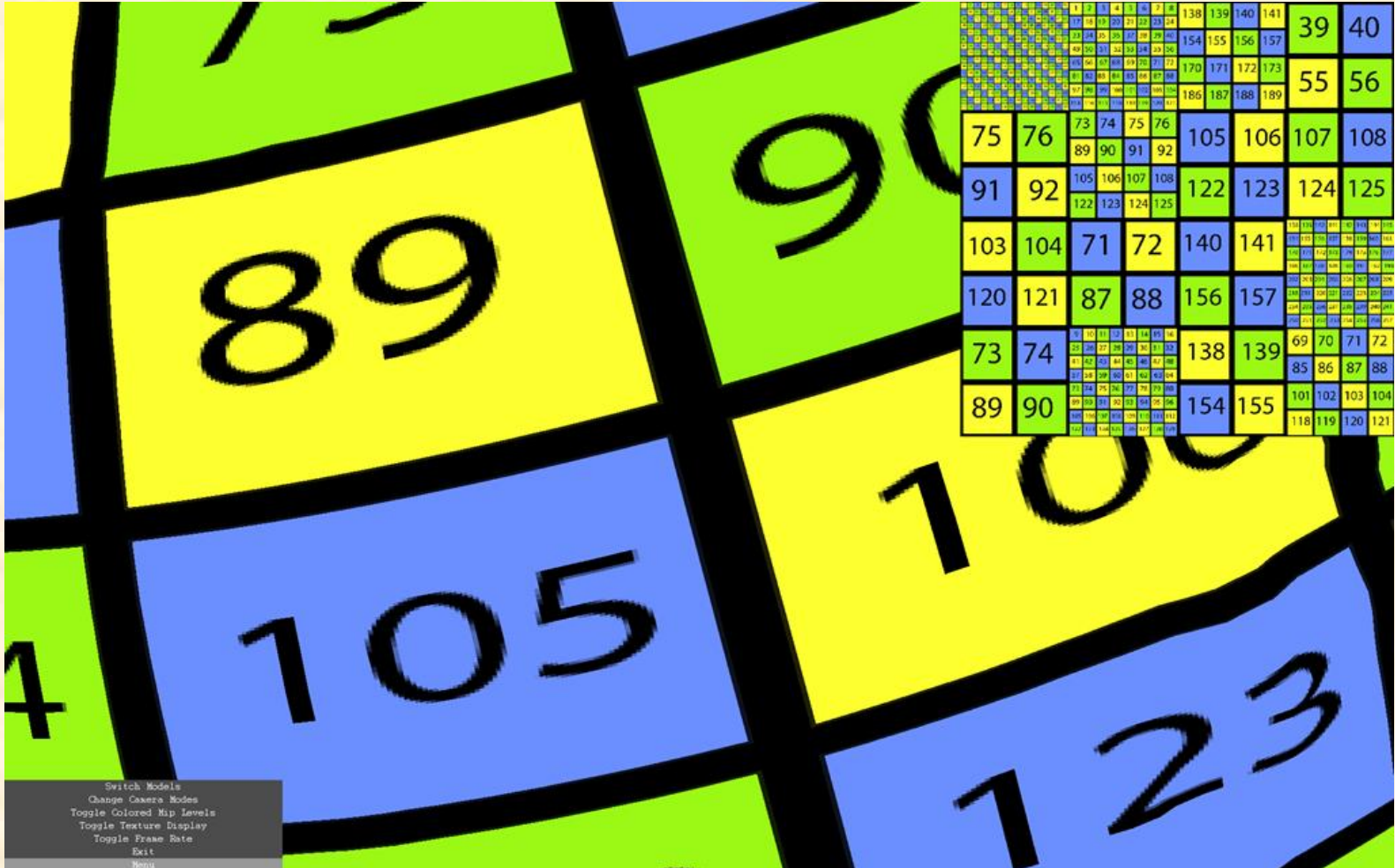
# Screen Shot





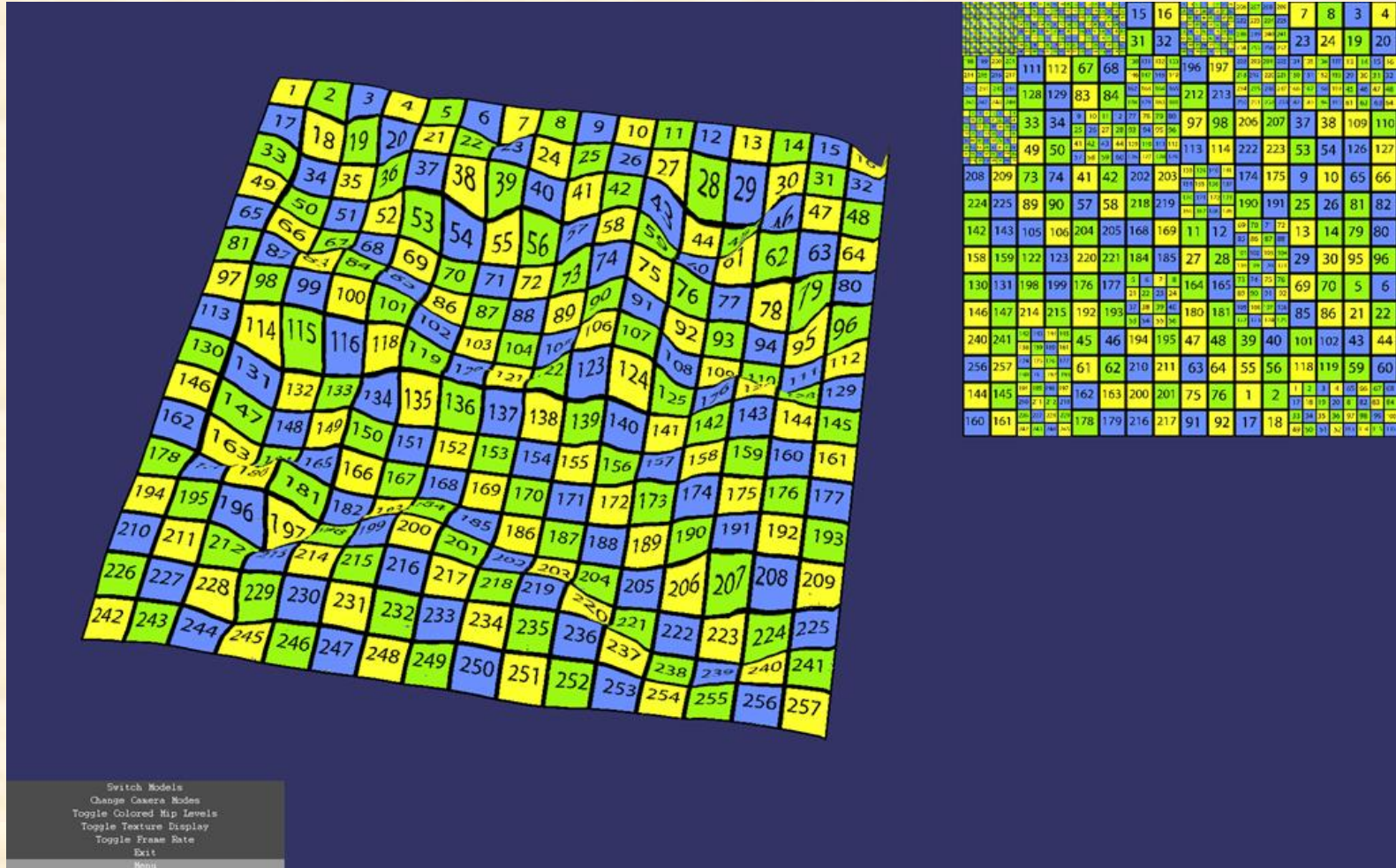
# Screen Shot

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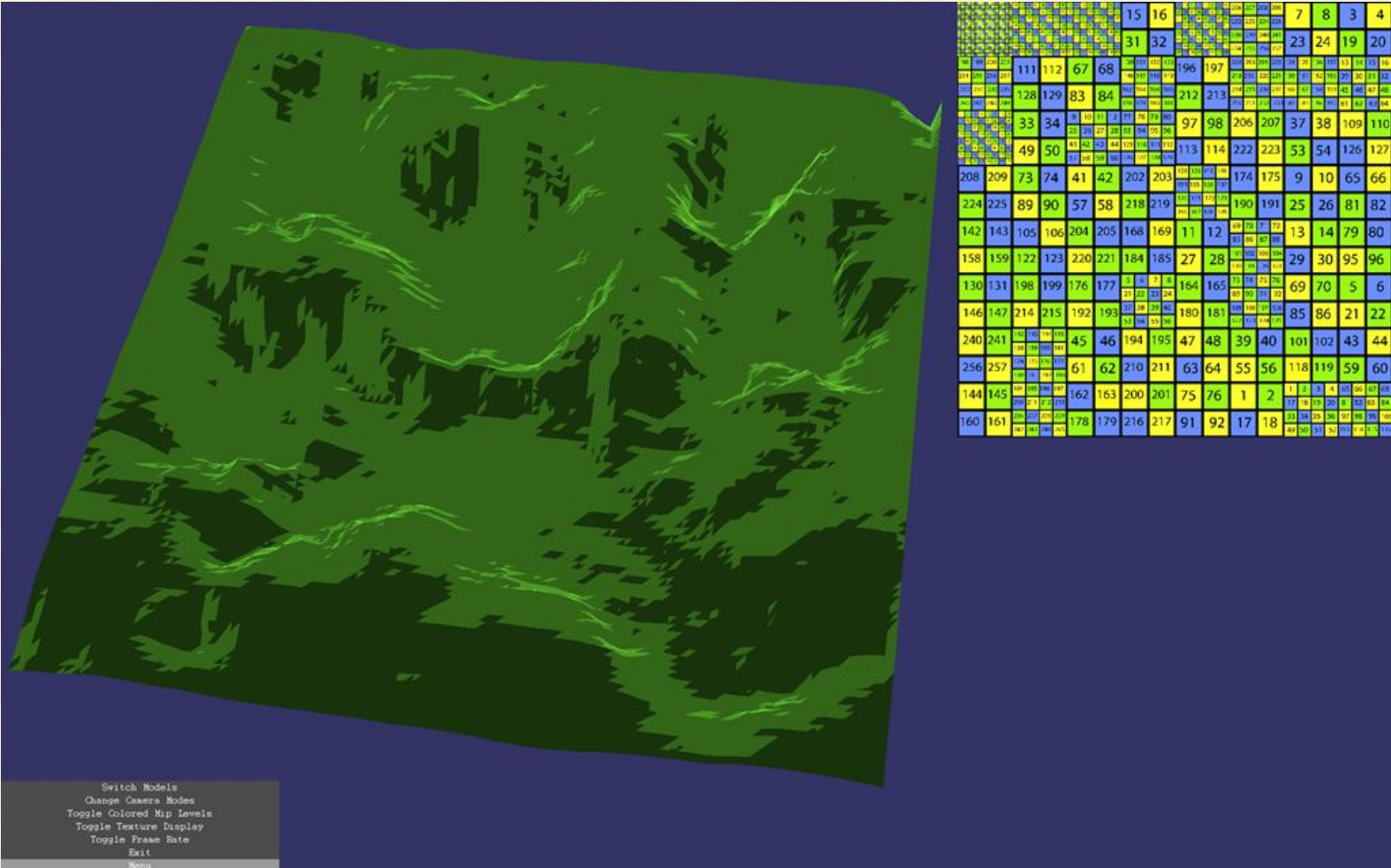
# Screen Shot



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# Screen Shot





# Building The Page Table



- For each mip level :

If the page is present in the scene texture:

- Record its location in the scene texture
- Set the “bias” to 0

Otherwise:

- Iterate through subsequent mip levels until the requested page is present
- Record lower resolution page's location in the scene texture
- Record the “bias”

-



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**S**

Frame 117

