Visual Voxel Heatmap Generation

11th International VR Summer Workshop

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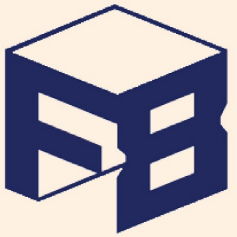
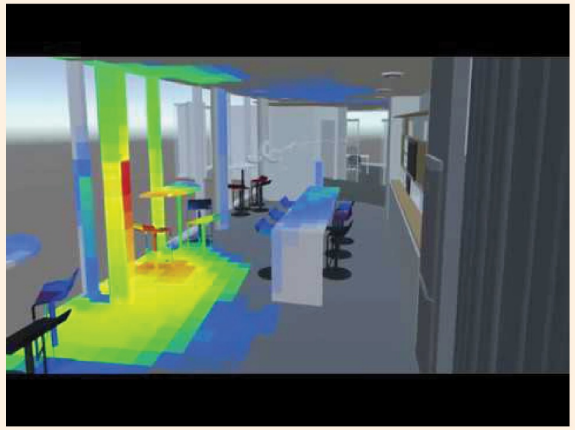
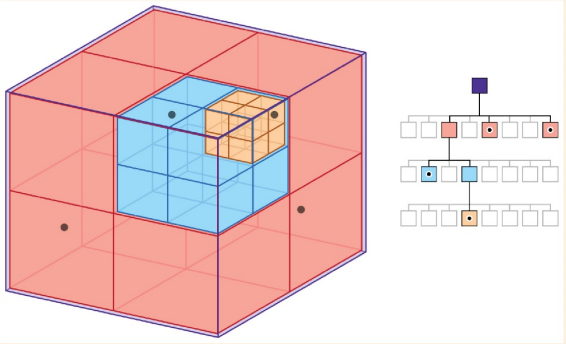


Underlying Concepts

Heatmaps and Octree's

Eye-Tracking, Heatmaps, Voxels, and Octees





- 3D spatial Heatmaps

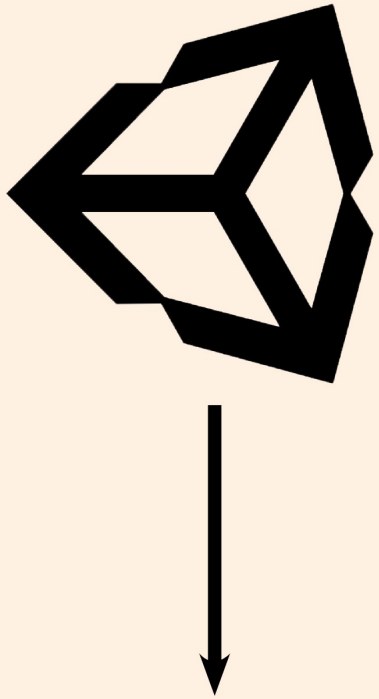
- Octree's and Voxel Visualisations

- Utilising Octree's and Voxels, we can generate Heatmaps that hold the visual data of the particular user - as well as allow for visulisation.

UC-win/Road Integration

Unity3D example to UC/win-Road

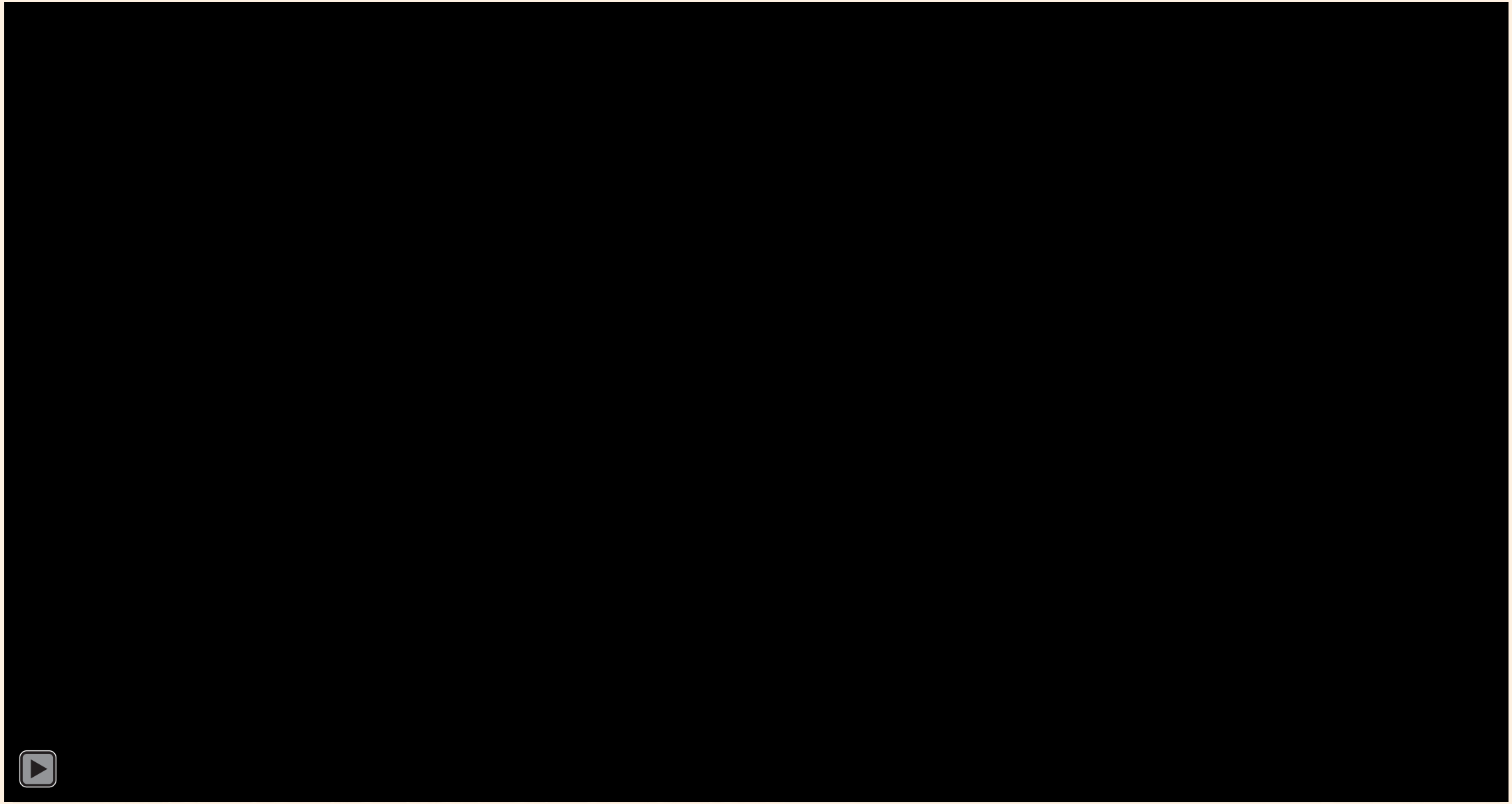
Integration



UC-win/Road

- Octree and Voxel System
- “Eye-Tracking” data input
  - Nose Direction Provider
- Voxel Colour change as per Gaze Time
- Adjustable Voxel Size
- Voxel Modelling

The “Recording Phase” - Unity3D

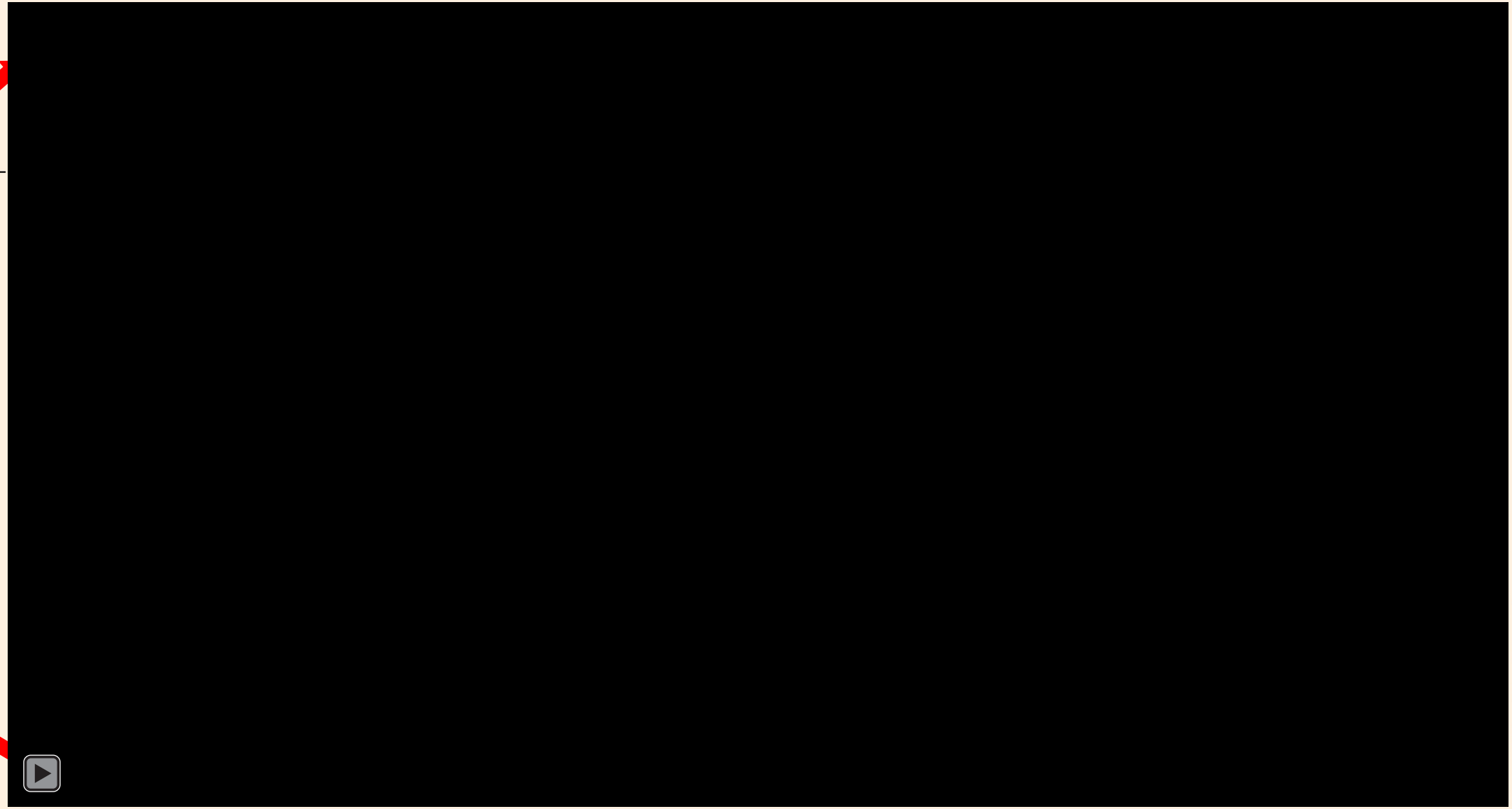


User’s View

Eye-Tracking Rays / 3rd Person View

The “Analysis Phase” - Unity3D

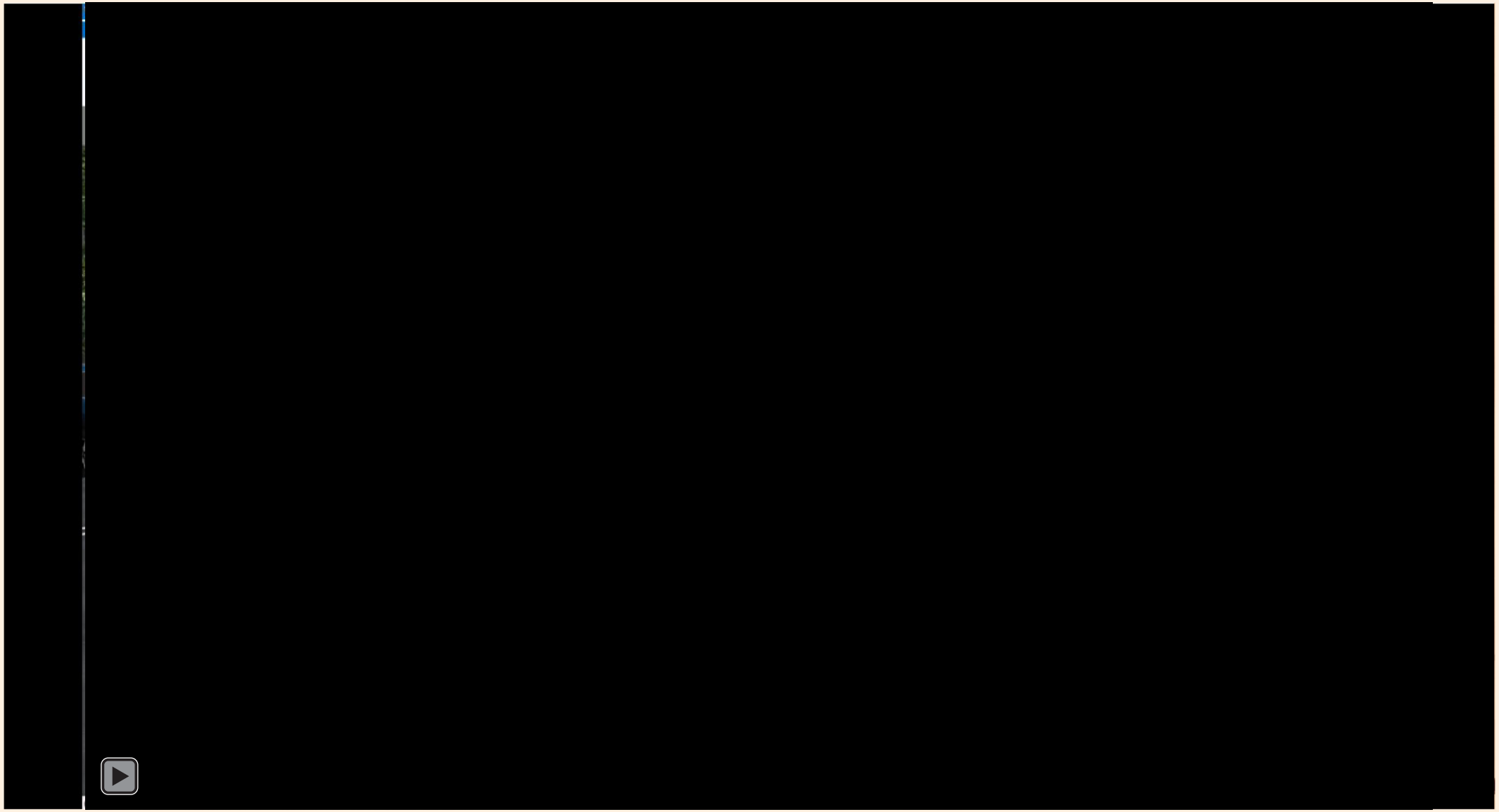
Focus Adjust-ment



Export Data

Time Scale Slider/ Setter

The “Recording Phase” - UC-win/Road



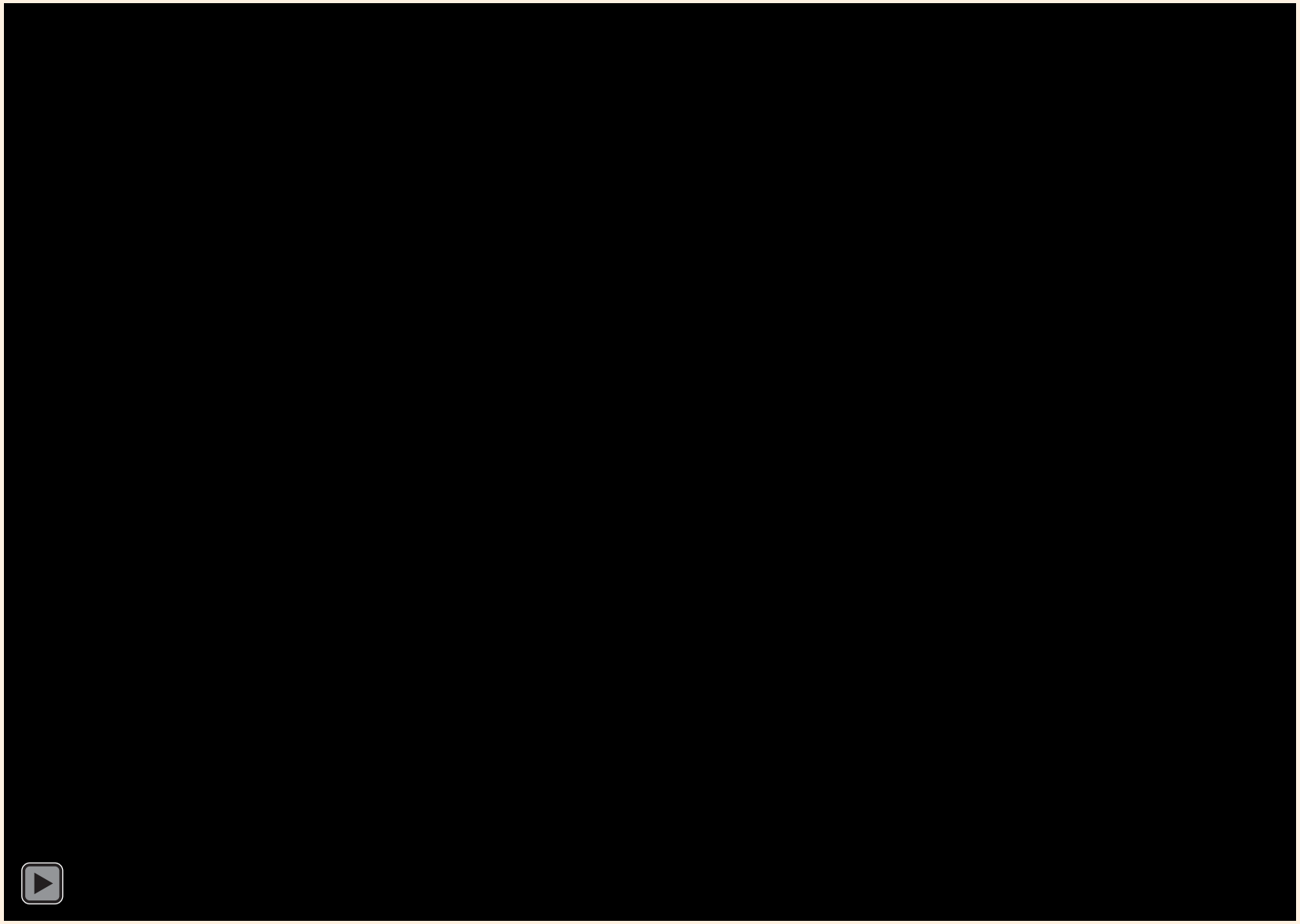
User’s View

The “Analysis Phase” - UC-win/Road

Time Scale Slider/ Setter



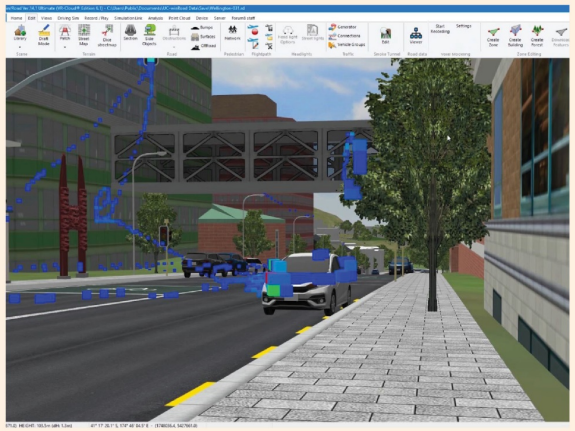
Voxel Modelling



Future

The Next Step

Further Integration into UC-win/Road





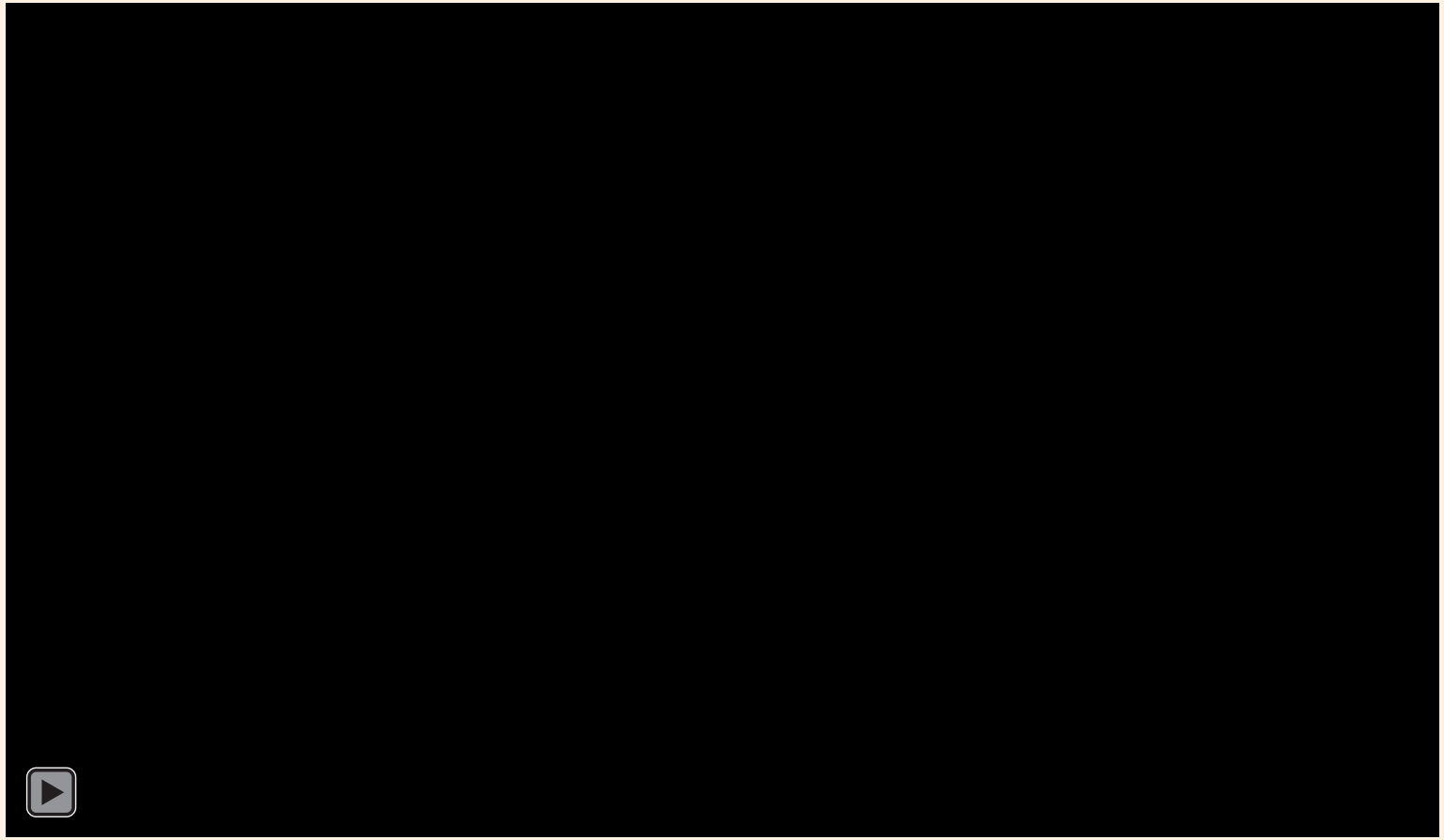
- Per-Voxel data visualisation
    - Pure data when investigating individual voxels
- Octree Data Export
- Gazed Object information input
    - What Object, What Material, What Colour, etc.
- Head Tracking Data
    - Analyse where and where from
- True Eye-Tracking
    - Incorperation of Eye-Tracking Data from HTC's Vive Pro Eye



Back to the Future

The Next Next Step

Designing with Eye-Tracking Data



- Currently Eye-Tracking Data used passively in design
- Passive Usage --> Active Usage
- Using Eye-Tracking Data to actively design environments