

# Immersive Air Traffic Control Operations and Training in Virtual Reality



- ADS-B aircraft positioning (WGS94 precision)
- Integrated time-synced ATC audio
- Scale up/down: Scale from 1:1 to 1:1000
- Teleportation: Controller navigation point-to-point.
- Geo-referenced Sun lighting.
- Aircraft modeling and rendering:
  - Aircraft models of the actual planes
  - Flight strip data billboards above each aircraft including flight number, ground/air speed, etc.
  - Ground-track line (airborne aircraft)
  - Separation envelope on/off (airborne aircraft)
  - Scaling models up or down for visibility
  - Brightness adjustments for visibility
  - Breadcrumbs: Prior positions at specified intervals
- Menu operations:
  - Rewind, Fast forward, Re-start
  - Lighting, Volume
- Multi-user operations:
  - Audio communication with separate volume control (separate from ATC audio volume)
  - Avatars representing the other analysts' name, position and scale
  - Synchronized playback including play/rewind/fast-forward
- All phases of training/operations:
  - Local, Ground
  - TRACON
  - ARTCC

## Incident Investigation



Transcript "bubbles" displayed above each incident party (ATC, aircraft)

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Augmented Reality  
 Virtual Reality  
 Mixed Reality  
 Design  
 Development  
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