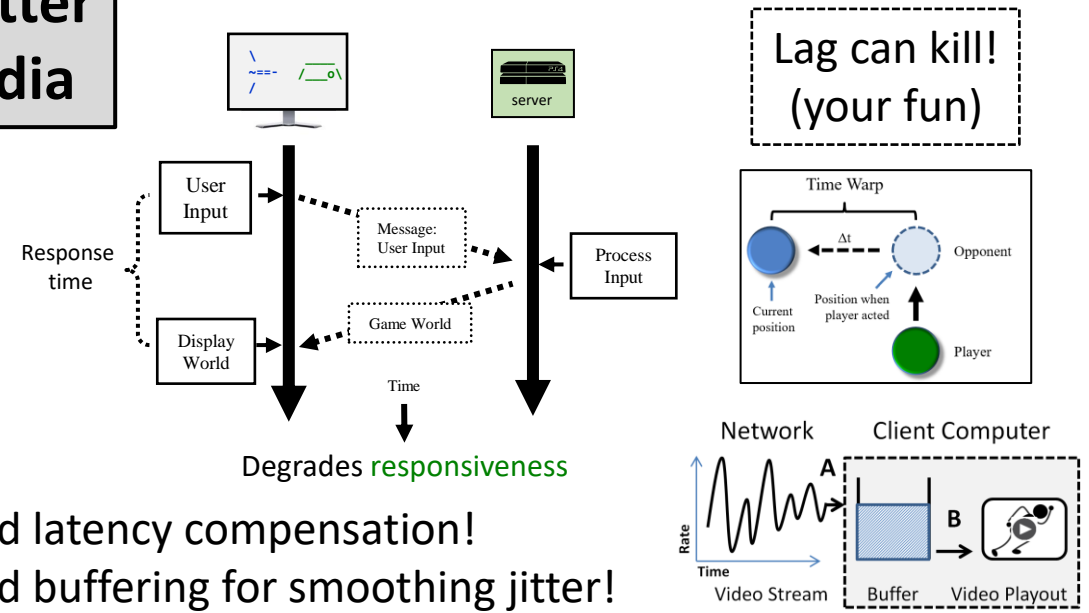
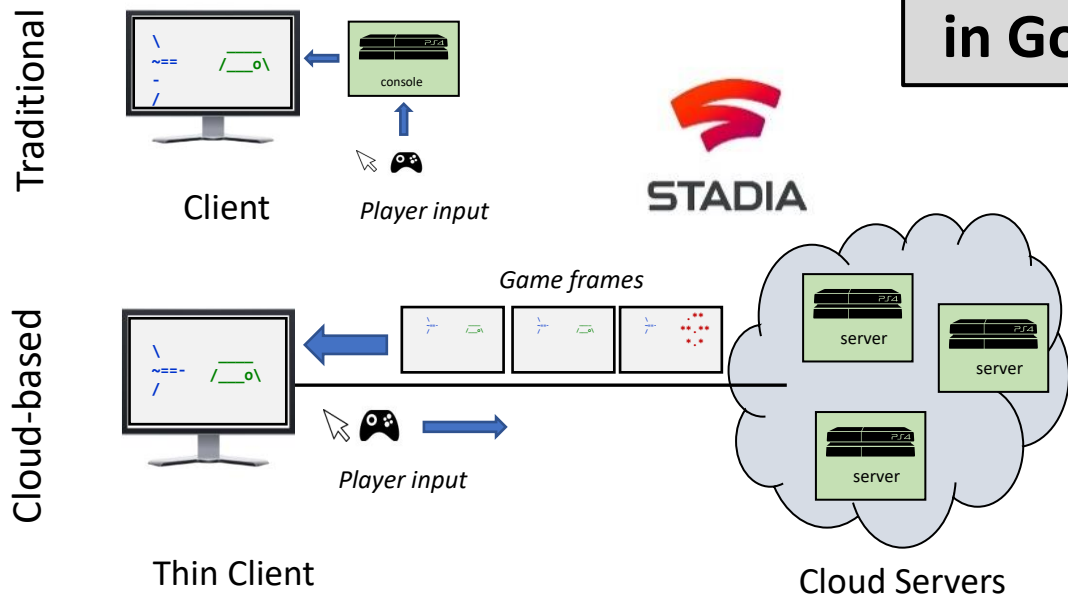


# Latency and Jitter in Google Stadia



## Methodology

- Build latency compensation & buffering
- Evaluate with user study experiments
  - ✓ Measure and model benefits
- Provide API for game developers
- Build game to demonstrate
- Deploy to **Google Stadia cloud!**



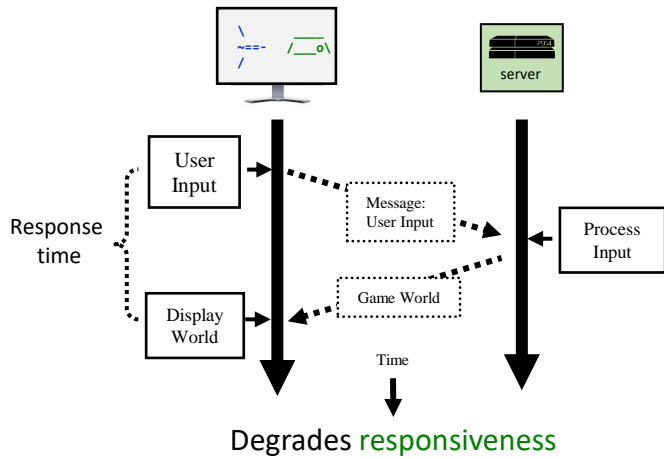
## Network Games

Mark Claypool

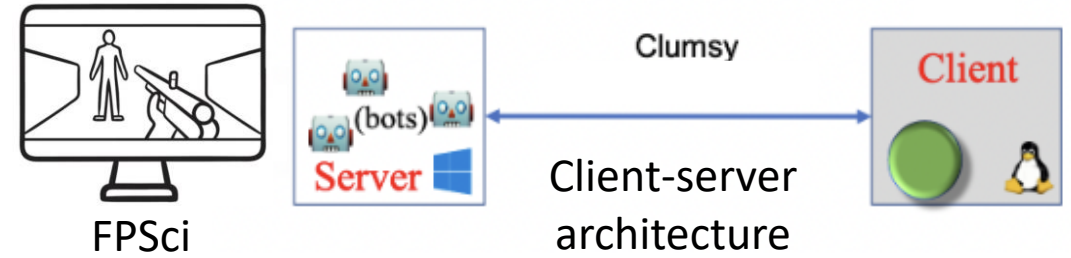
claypool@cs.wpi.edu



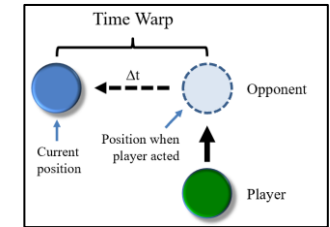
# First-Person Science - Exploring FPS Games and Latency



Lag can kill!  
(your fun)



Need networking!  
Need latency compensation!



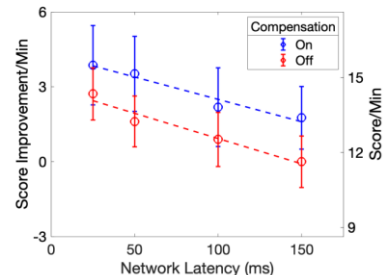
## Methodology

C++

g3d



- Build networking
- Add latency compensation
- Evaluate with user study
- Analyze



Thin clients



Cloud games

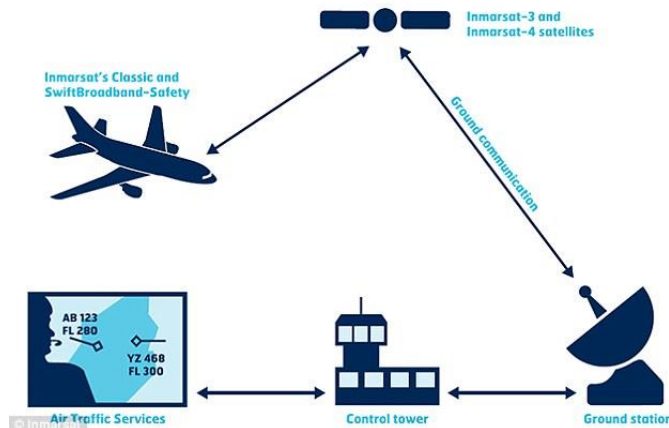
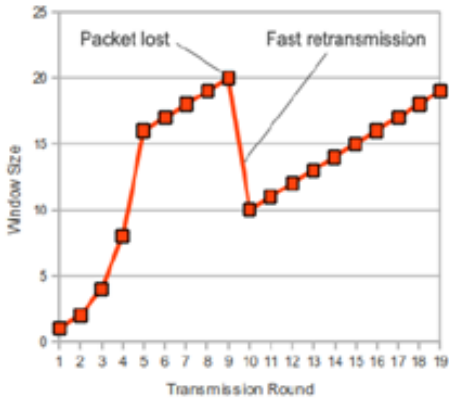
## Network Games

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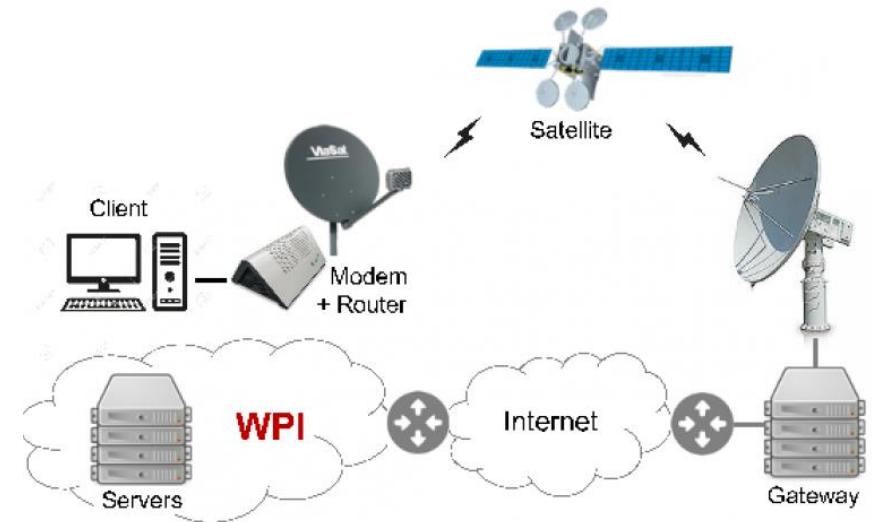


# TCP Performance



Suffers when high round-trip time → **Satellite Internet!**

# Satellite Testbed



# Methodology

1. Read and discuss research papers on networking
2. Design and run experiments (programs sending network traffic)
3. Analyze the data (stats and drawing graphs)
4. Improve congestion control algorithms
5. Repeat 2-4, as needed → publish!



Mark Claypool  
[claypool@cs.wpi.edu](mailto:claypool@cs.wpi.edu)

