

Why?

- Projects main application is high speed, low latency data streaming
- loRL project requires use case demonstrations
- Next generation of internet working towards the next generation of media platform

VR is the most demanding media service for users

Thus VR exploits and highlights the advantages of 5G and loRL

Recap: What have we managed up to now

- 360 Streaming via Ethernet and Wi-Fi to mobile/PC VR
 - High Latency (average 32 seconds)
 - Poor quality of video



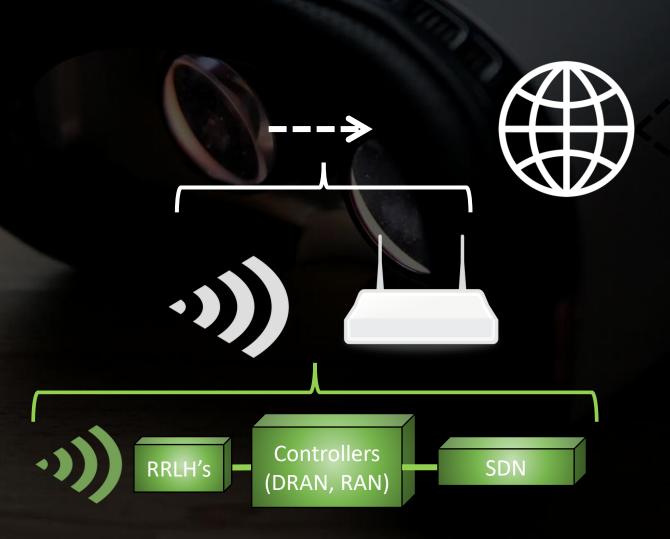
Pros - simple and existing systems

Cons - requires encoder, induces large delays and requires paid for services

Recap: Where this is going?

Retrofitting existing Wi-Fi connections with entire IoRL network

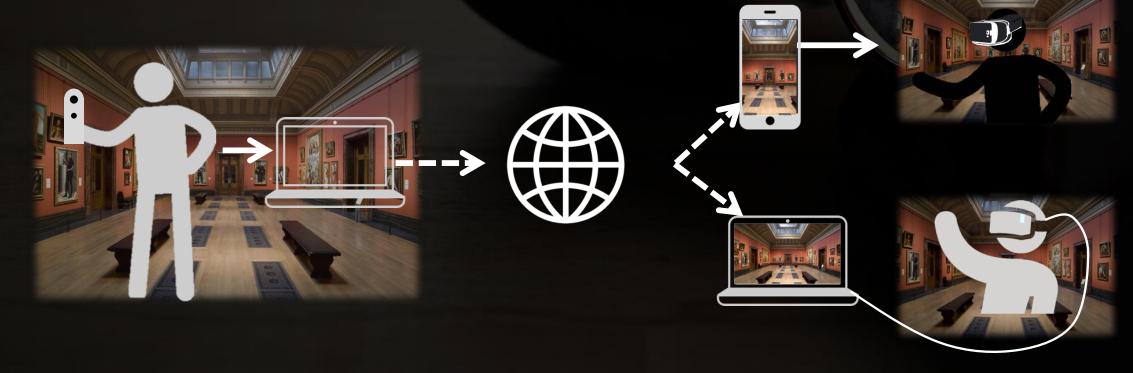
Streaming all applications this way



UC 1: Remote tourism

User video streaming surroundings live from theta V camera to multiple PC and mobile VR users

Also accessible on tablet and PC



UC 2: Virtual tourism - Dystopian London



UC 2: Virtual tourism – Globe theatre



UC 2: Virtual tourism

Currently these systems are direct applications run from a computer

In order to be relevant to IoRL must implement streaming from central server

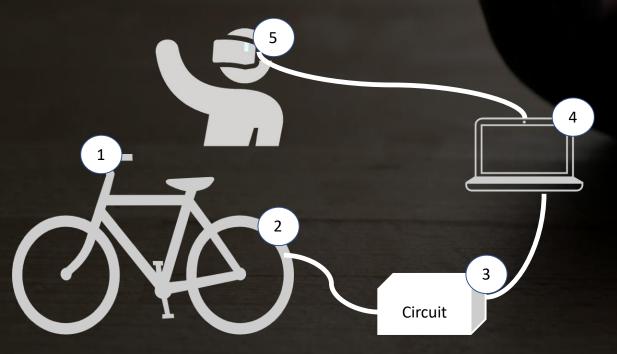
Challenge: allow all users to control individual streams

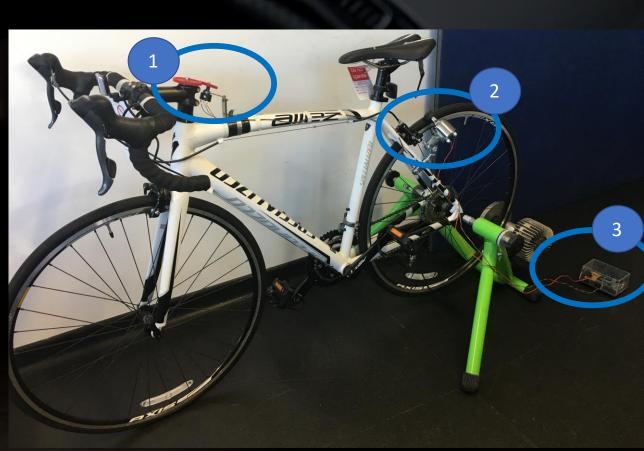
Central Server Globe theatre **Dystopian London**

Possibility to run as multiplayer environments

UC 3: VR Bike game

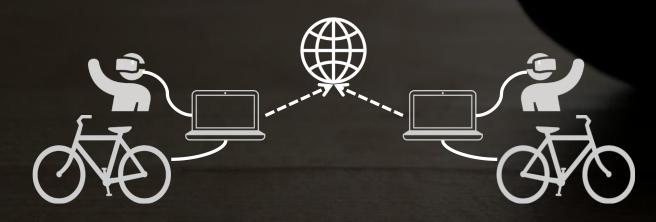
Current steering and speed inputs to VR game control



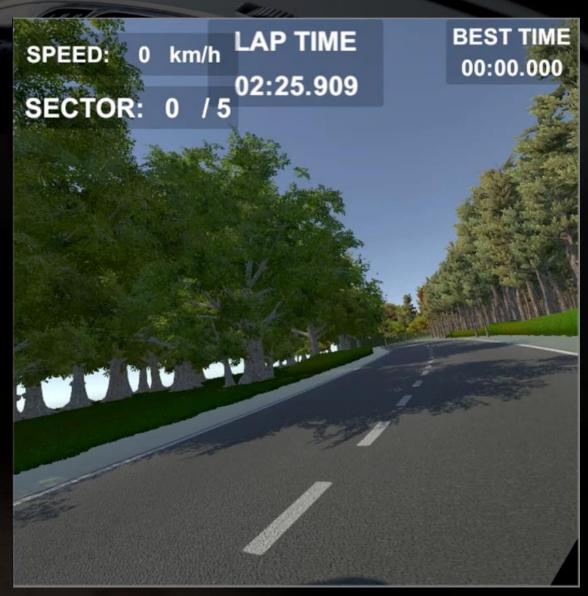


UC 3: VR Bike game

This is the single player system that must be made multiplayer to demonstrate loRL technology



This has already been achieved



VR bike game 2.0

 Moving platform rises to provide sensation of ascending and descending virtual environments

• Bike can roll side to side





6DOF

The final use case not only utilizes the IoRL high data rates but also location sensing

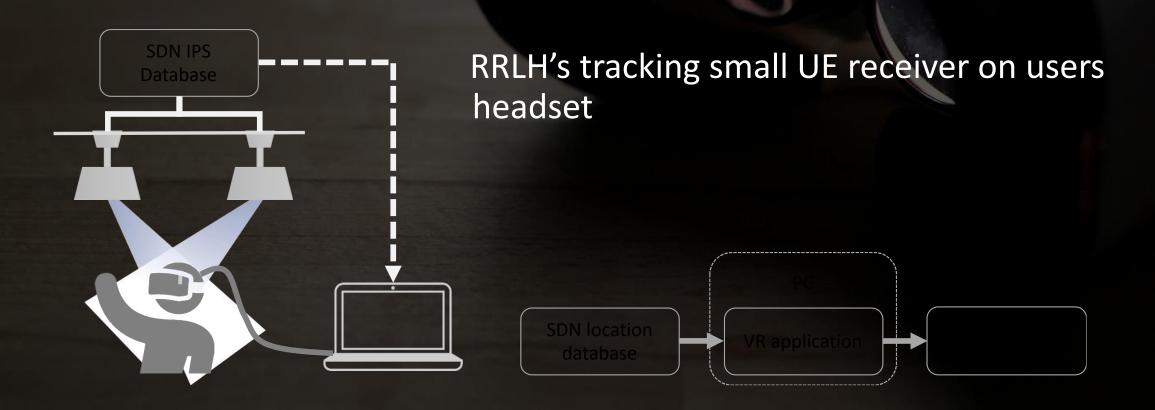
Conventional PC VR systems offer 6DOF using IR external trackers

Delivering positional data to the application to change the users visual and audio data accordingly



6DOF

By using IoRL IPS – bypassing the existing positional data with our own It should be possible to track the user in much the same way



6DOF - Challenges

Current VR systems precision in the region of 0 .2mm loRL precisions estimated:

VLC = >2cm

mmWave = <10cm

☐ Possibility to combine and use inbuilt sensors for better accuracy

Large dimensions of user dongle

☐ Possible extension for actual receiver terminal

Summary

Achieved streaming through existing networks and applications

- Looking into possible new methods

3 Use cases almost ready to retrofit with IoRL

- Remote tourism
- Virtual tourism
- VR bike game

- 6DOF challenges

