Can My WiFi Handle the Metaverse? A Performance Evaluation Of Meta's Flagship Virtual Reality Hardware

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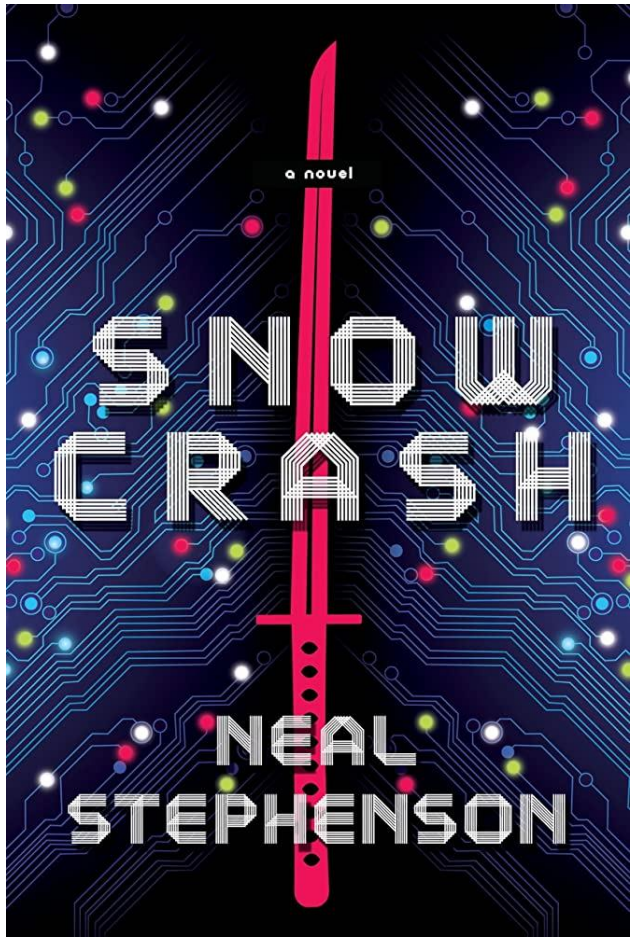
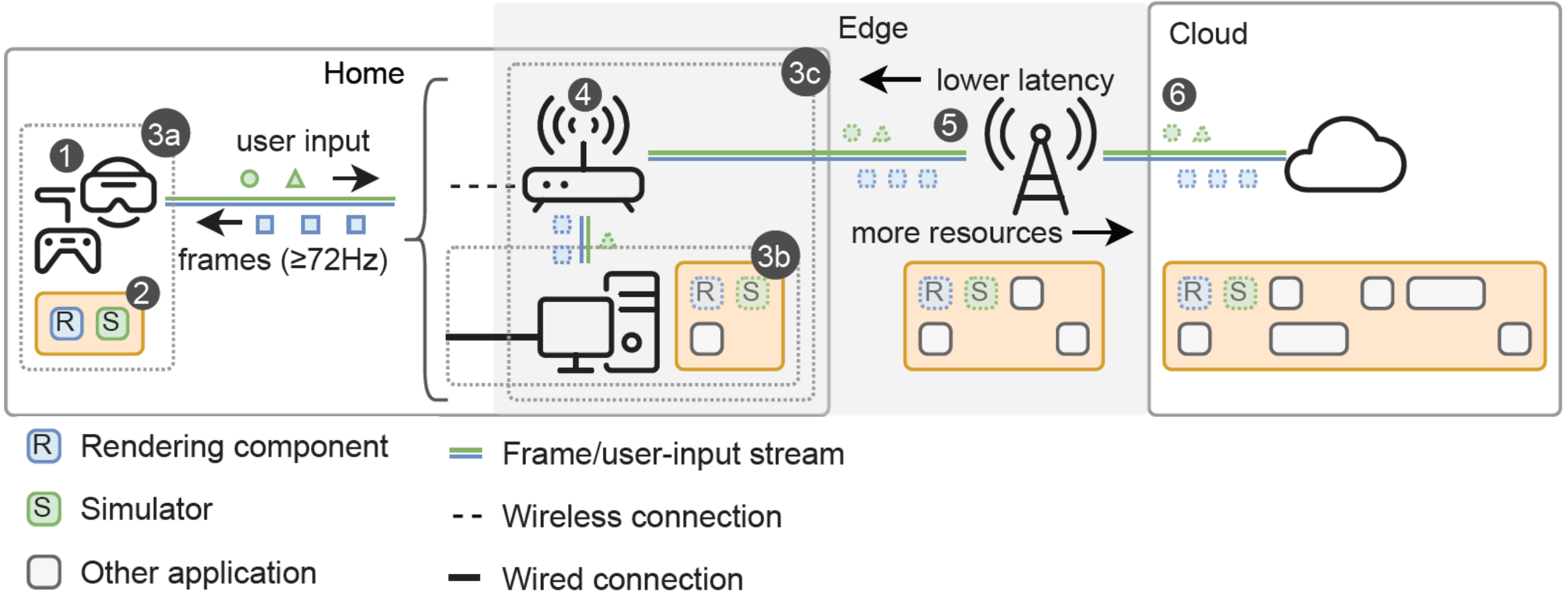
NEUROMANCER
WILLIAM GIBSON

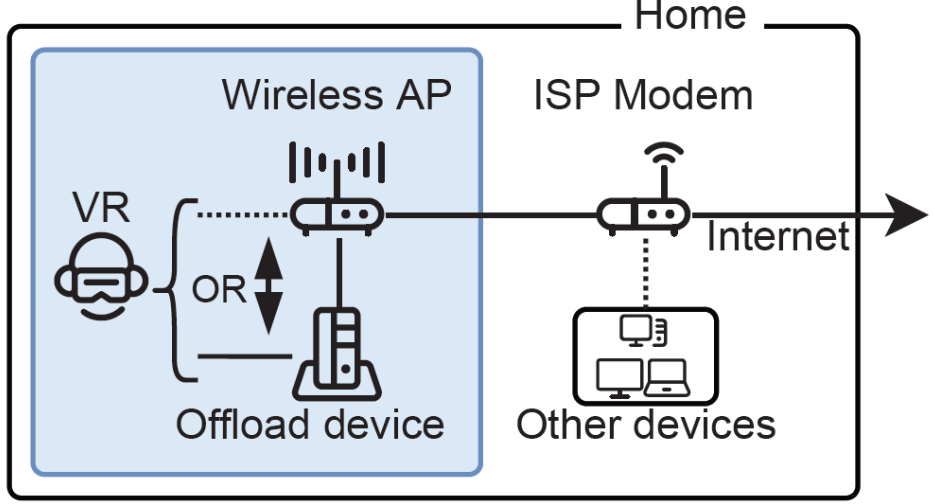

a novel
SNOW CRASH
NEAL STEPHENSON


NATIONAL
GEOGRAPHIC
EXPLORE VR

How to Deploy Metaverse Infrastructure?

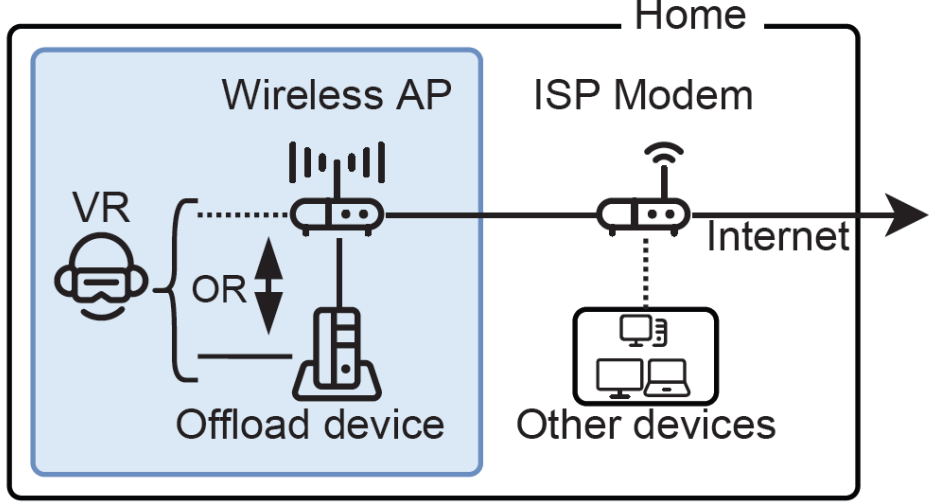


Experiment Setup

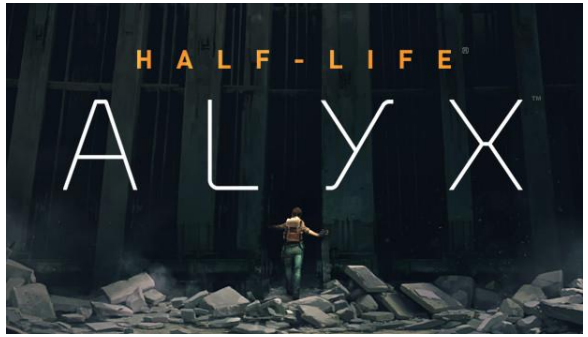


#1 Local

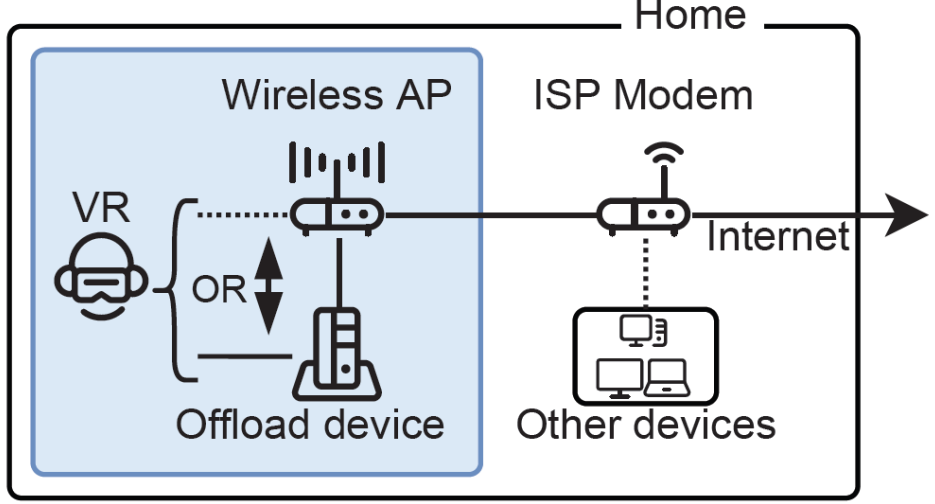
Experiment Setup



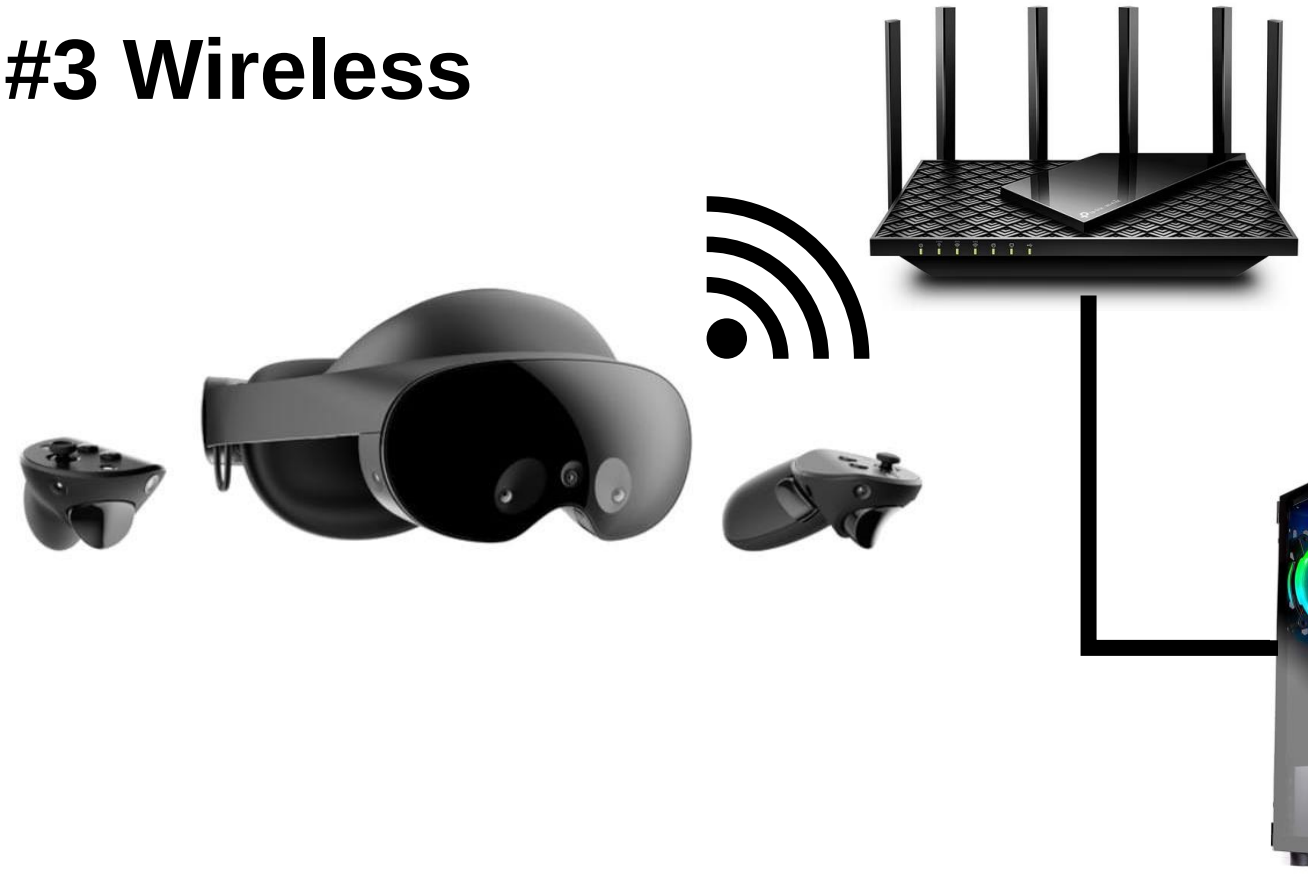
#2 Wired



Experiment Setup



#3 Wireless



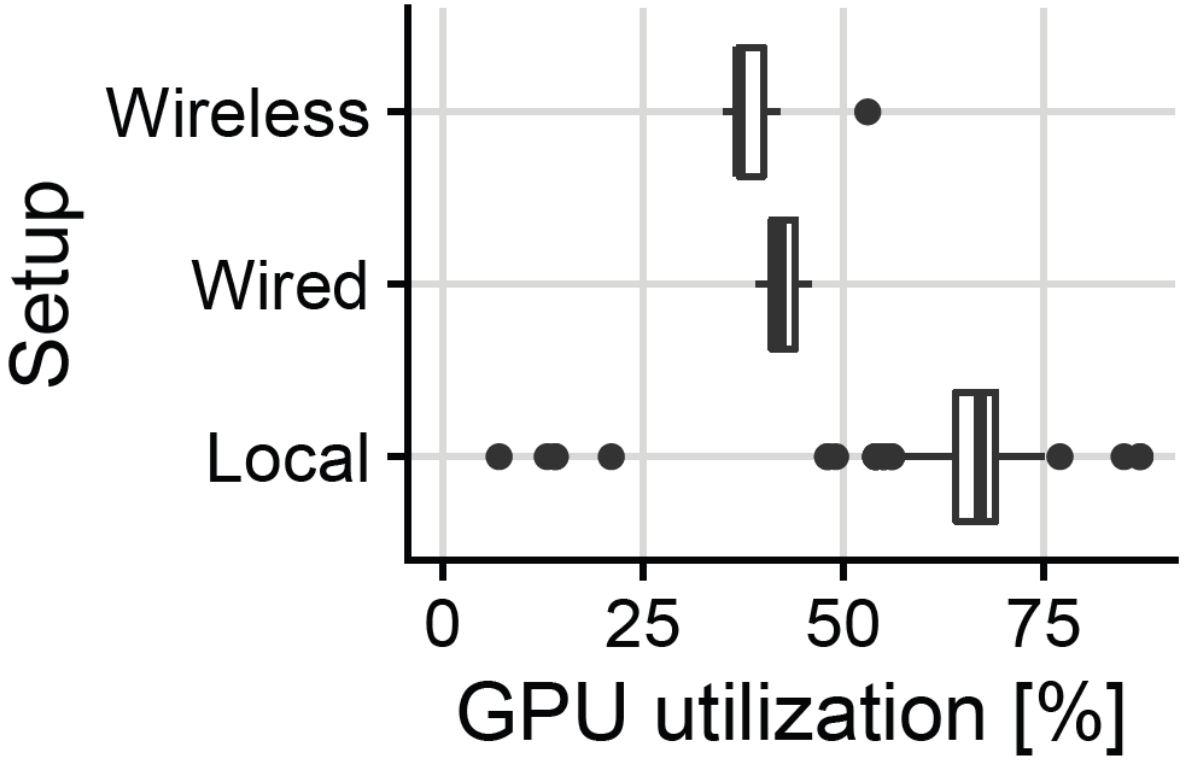
Experiment Design Goals

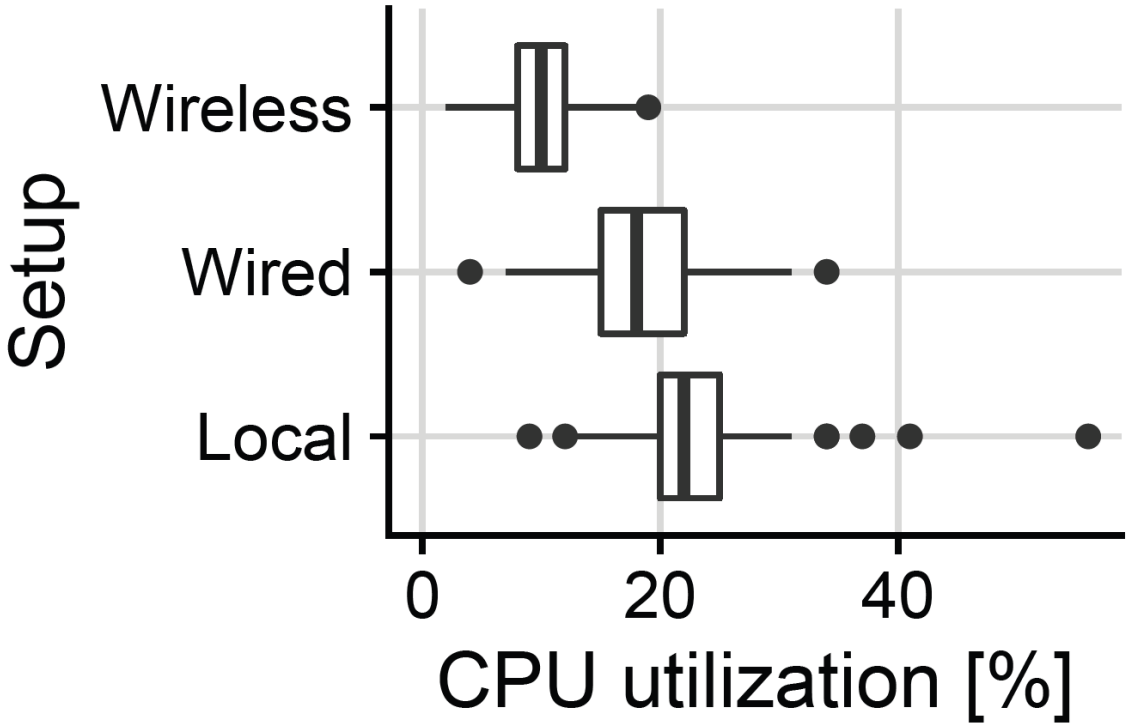
Q1 What is the **performance and resource usage** of VR applications on **state-of-the-art VR hardware**?

Q2 What are the **advantages and disadvantages of VR workload offloading** compared to native processing on VR headsets?

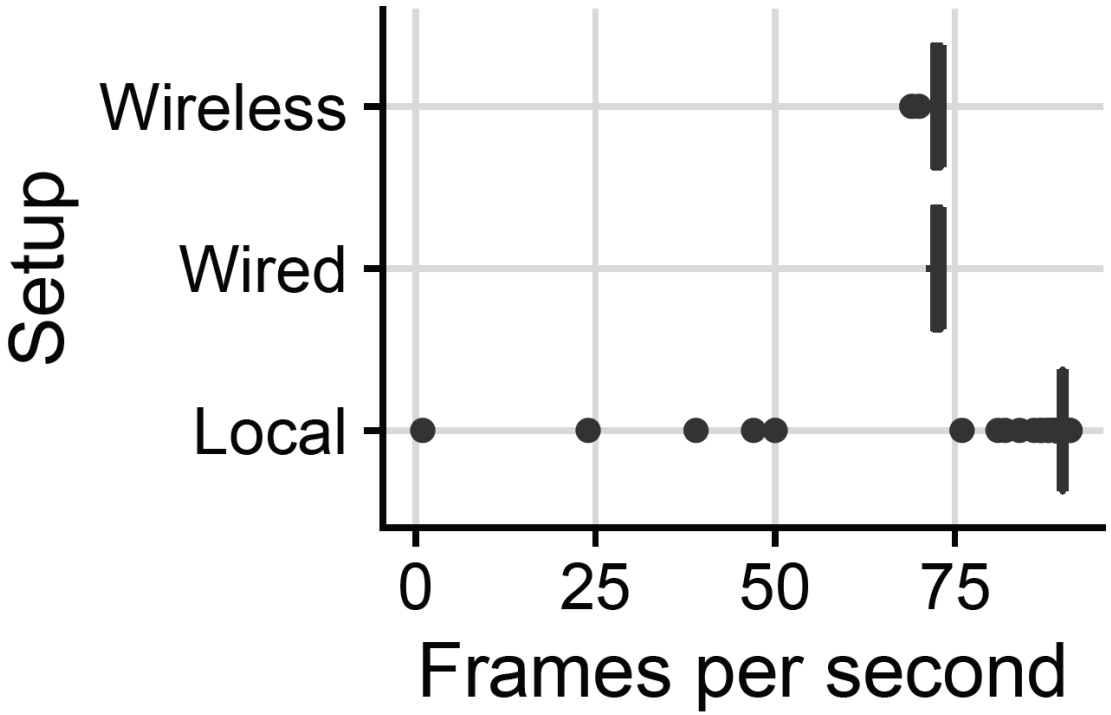
Q3 What are the **network requirements** to enable wireless compute offloading for VR?

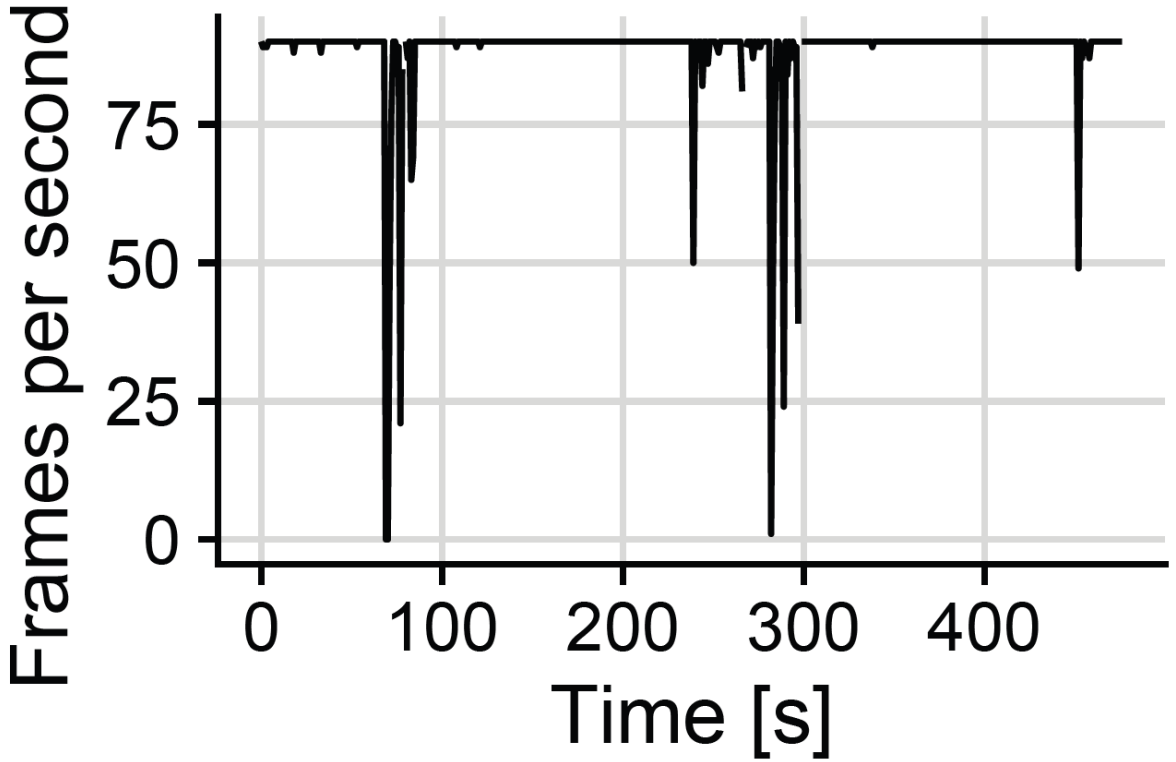
Resource Usage for All Tested Setups





Good Performance for All Tested Setups





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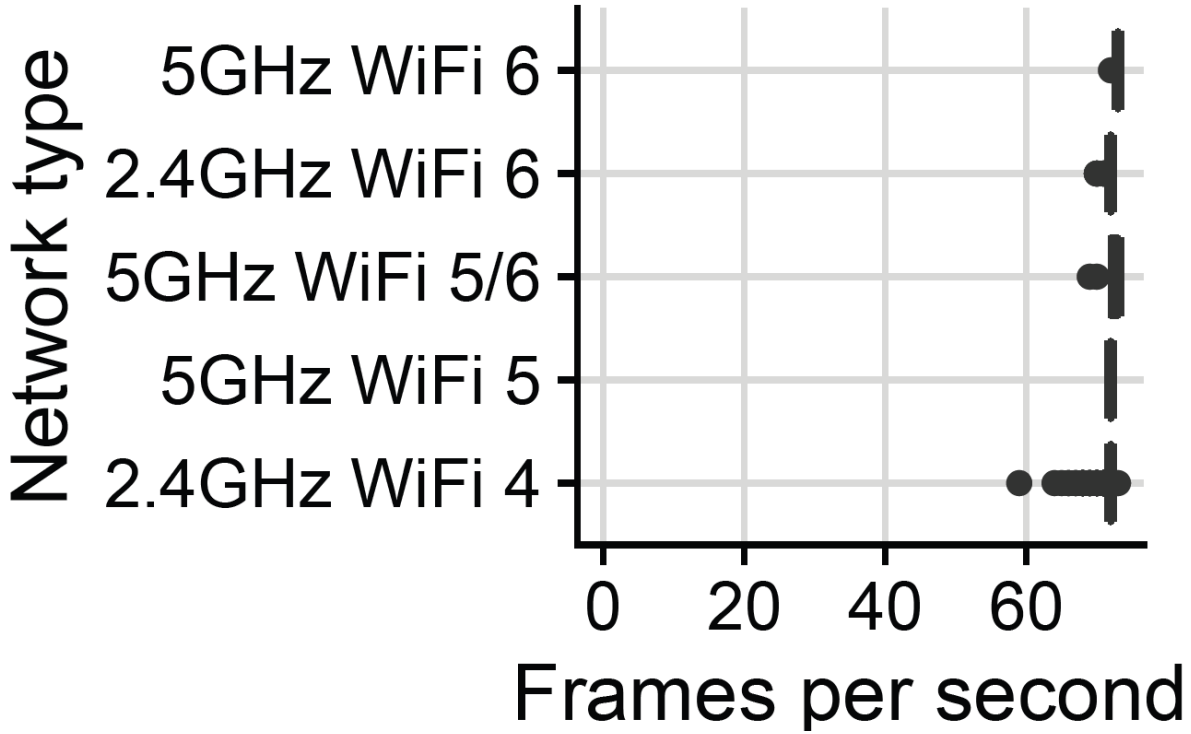
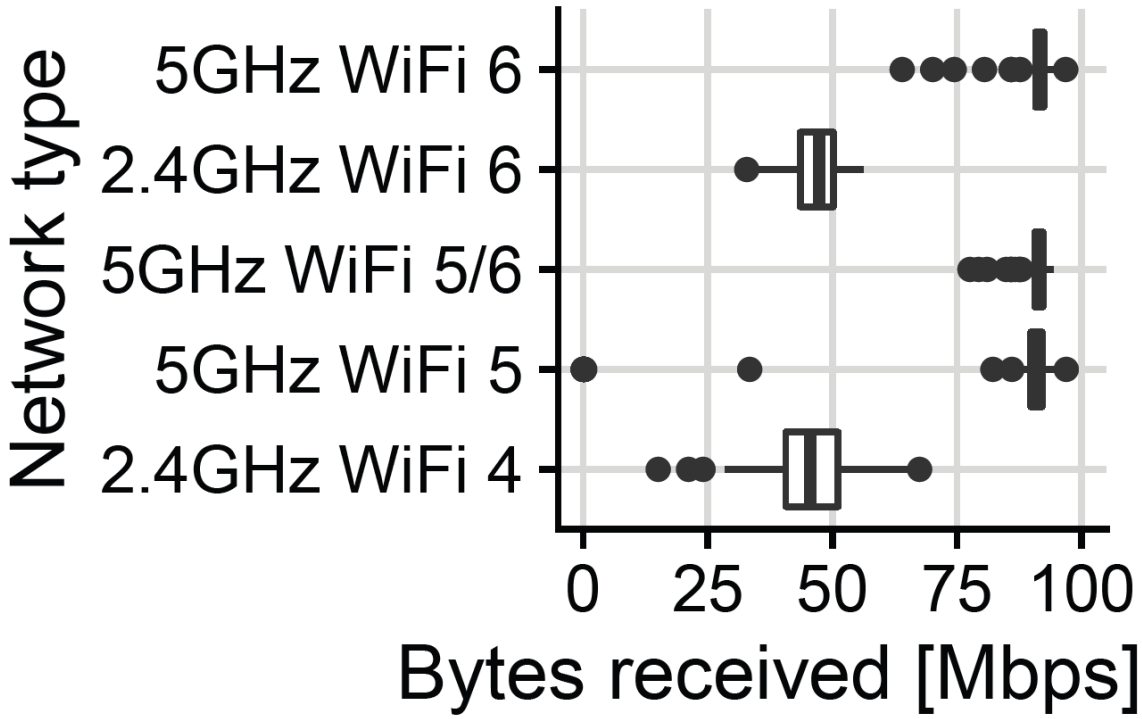
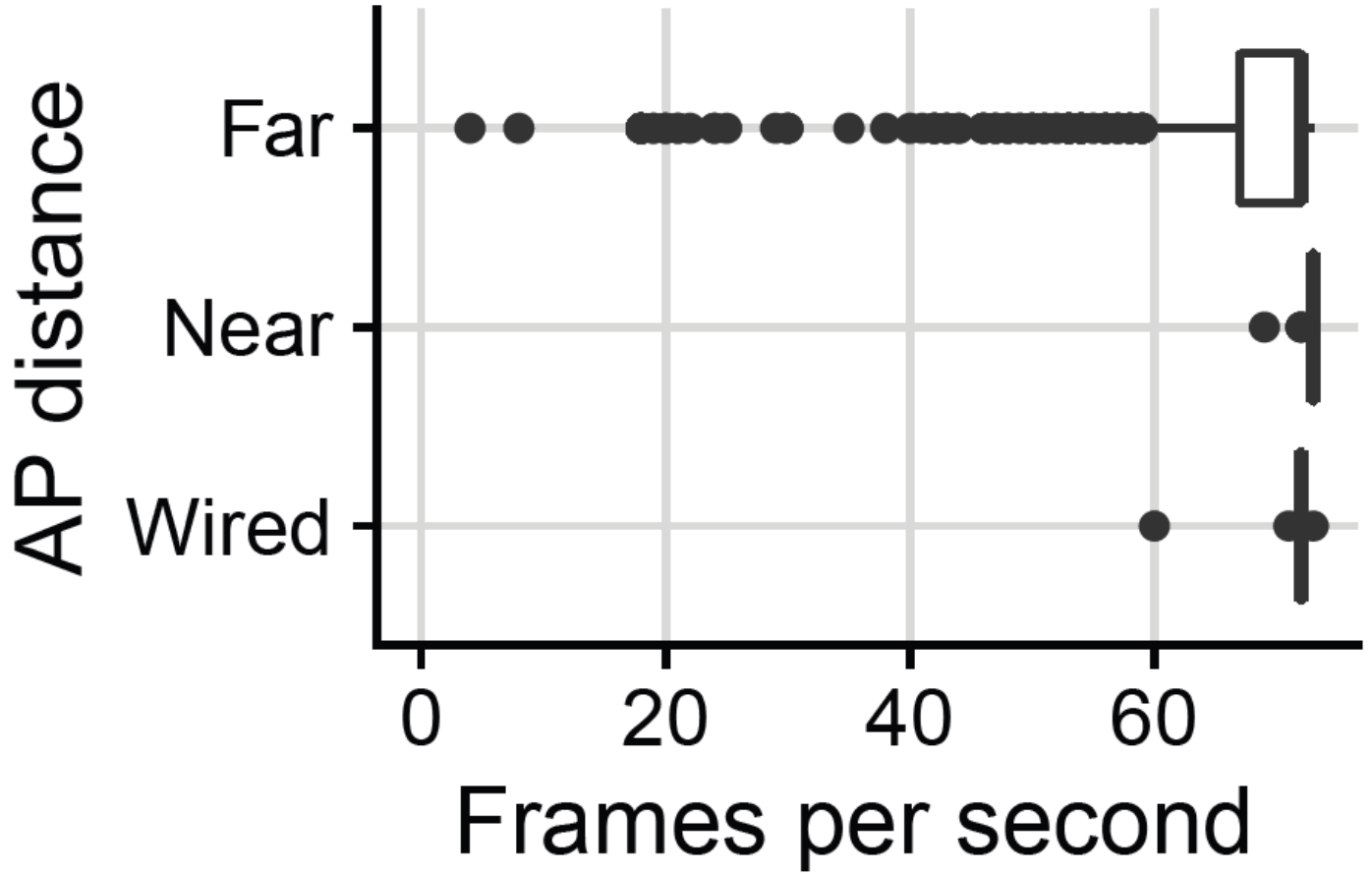
Older WiFi Types Support VR Streaming





Performance Deteriorates Quickly When WiFi Signals Are Obstructed



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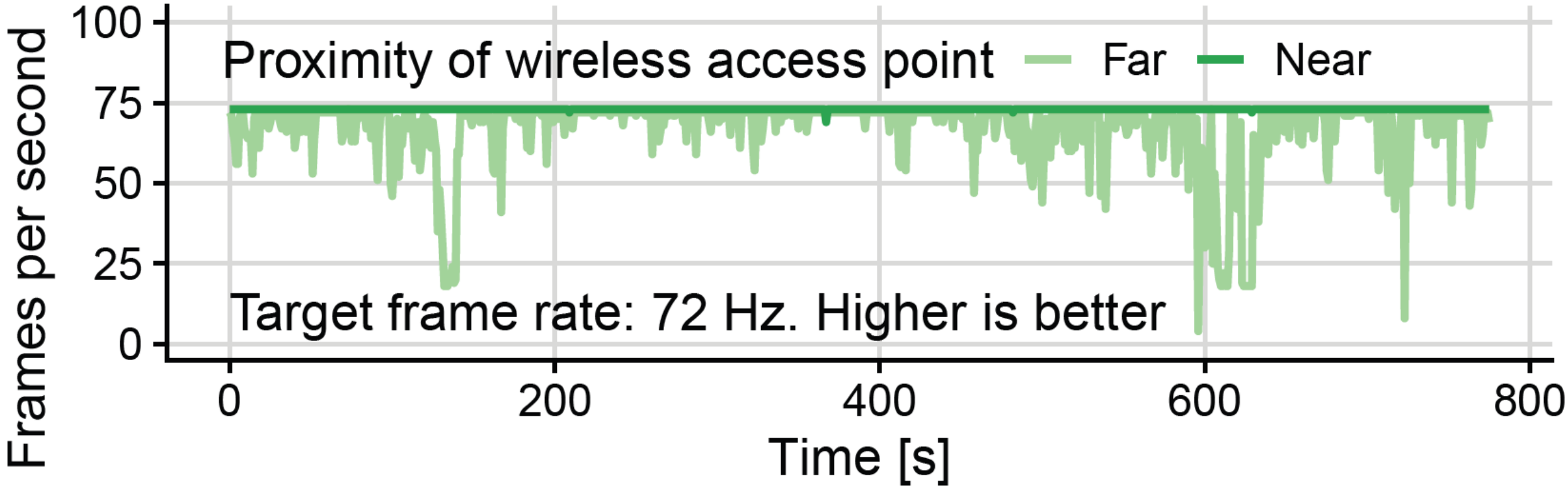

Take-Home Message

1. Metaverse is an emerging ecosystem with **promising applications**
   (games, digital twins, tourism, shopping, …)
2. We have insufficient knowledge about **design trade-offs and system behavior** in the metaverse ecosystem
3. Current state-of-the art metaverse systems show **surprising behavior**