



HAL
open science

Consumer virtual reality: from entertainment to motion analytics

Olivier Nocent

► **To cite this version:**

Olivier Nocent. Consumer virtual reality: from entertainment to motion analytics. 27th Annual Congress of the European College of Sport Science, Aug 2022, Sevilla, Spain. hal-04418012

HAL Id: hal-04418012

<https://hal.univ-reims.fr/hal-04418012>

Submitted on 25 Jan 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

Consumer virtual reality: from entertainment to motion analytics

Olivier Nocent (olivier.nocent@univ-reims.fr)
 Université de Reims Champagne Ardenne, France

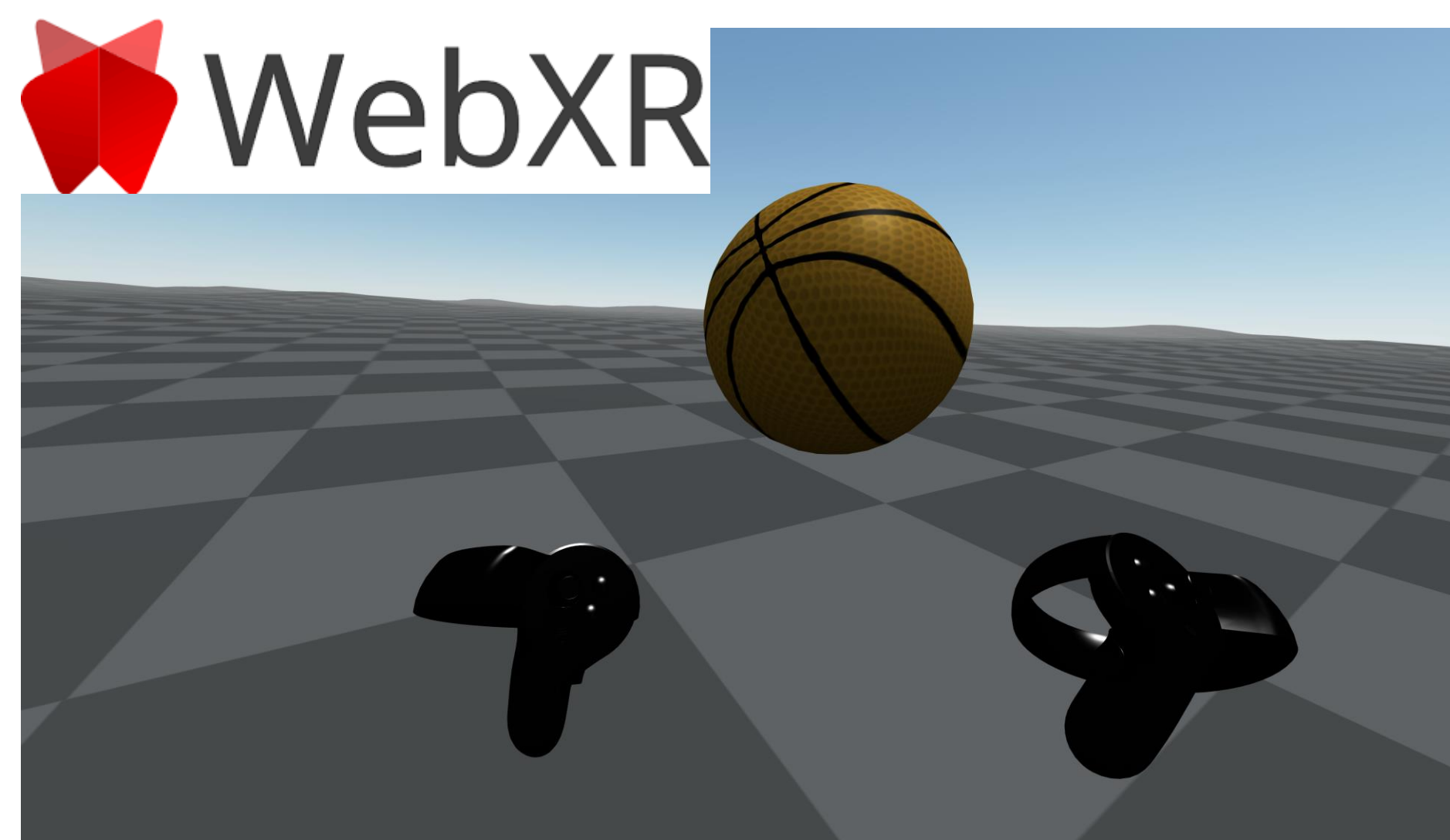


The facts:

- VR technology **more affordable** with the rise of the metaverse
- **Rich kinematic data** provided by VR headset IMU and 6-axis controllers at 60 Hz
- Segmented ecosystem with **non compatible VR apps** between different devices

1

Immersive experience running in a web browser (device agnostic paradigm)

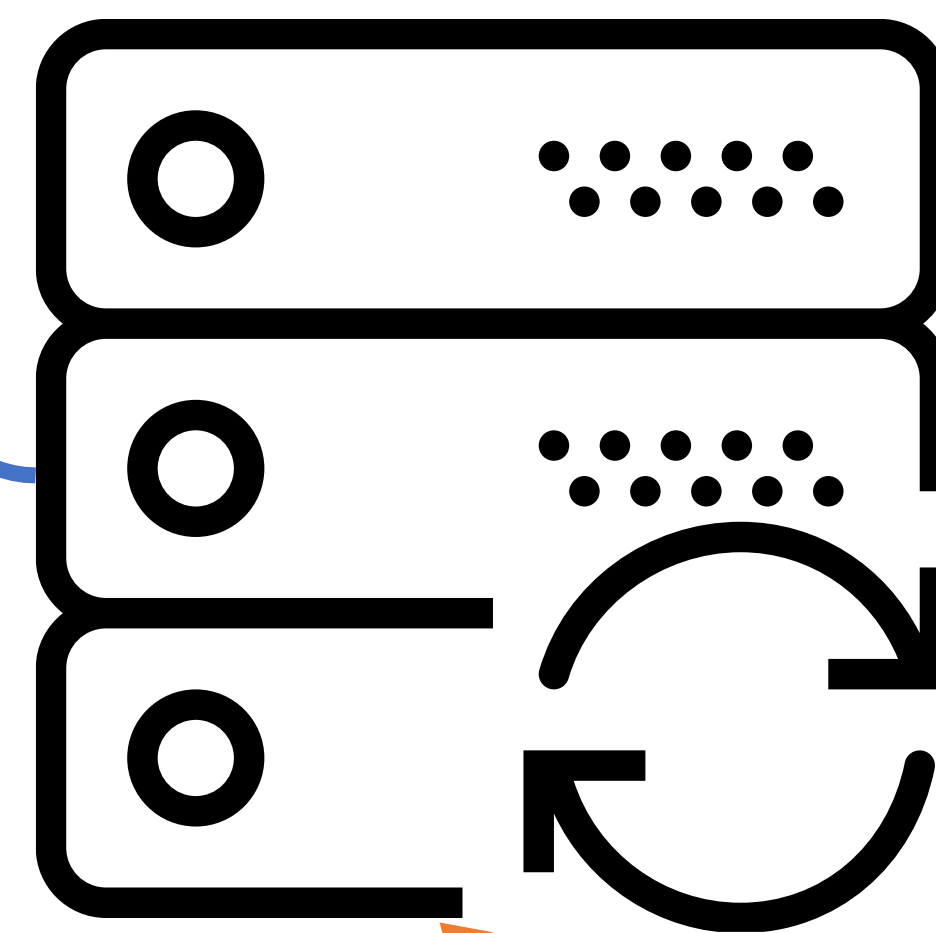


Our Solution:

A World Wide Web based software architecture enabling:

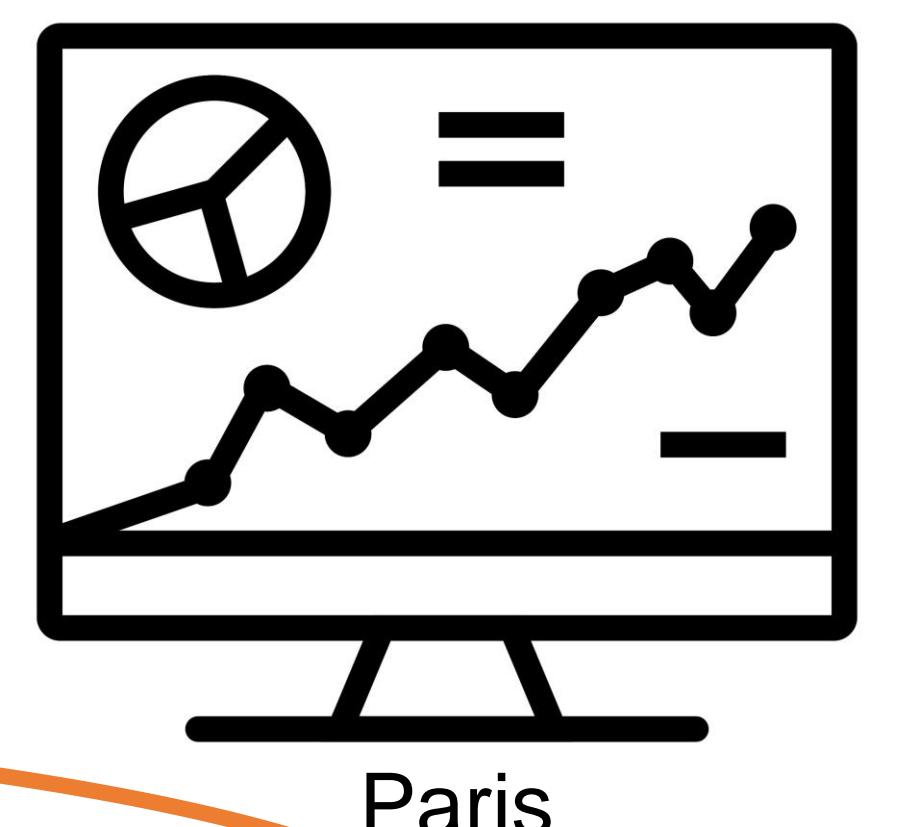
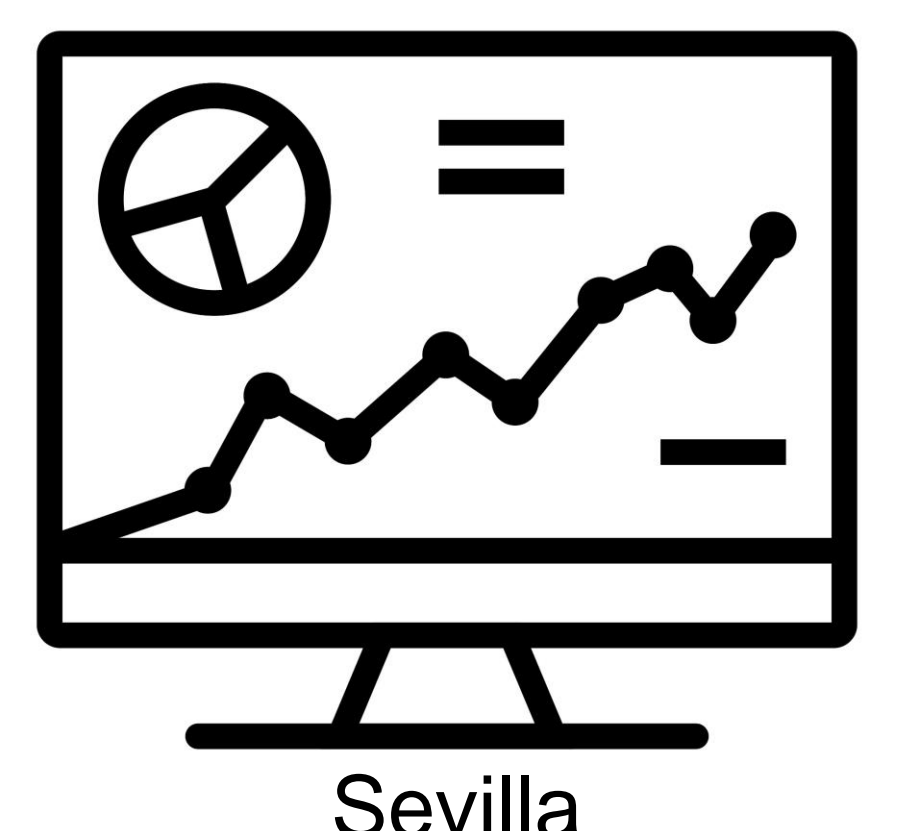
1. Immersive experiences in **all** VR headsets
2. **Remote** monitoring
3. **Realtime** motion analytics
4. **Bidirectional** communication

Web server



2

Multiple monitoring instances



W3C WebSockets for realtime bidirectional communication (60 Hz)

4

Bidirectional interaction

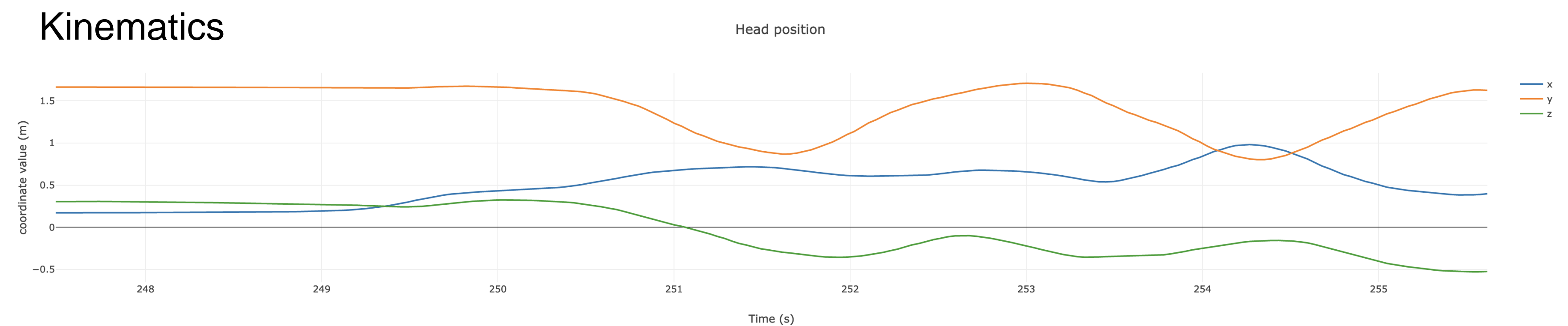
allows the monitoring interface to change the parameters of the VR app:

- Lighting conditions
- Difficulty of the motor task
- Sound volume
- ...

3

Realtime motion analytics

Kinematics



Reaction time

