**Augmented Reality Pool Training Aid: Start-Up Scoping Report**

***Executive Summary***

The following report outlines the start-up opportunity for a new training tool for cue sports, such as pool and snooker. Utilising Mixed Reality (MR) technologies, we aim to produce and provide a new system for wearable Head Mounted Display (HMD), such as the Microsoft HoloLens, to help novice and amateur players improve their game skills. This system could be bought, licenced / rented, or experienced at a physical location similar to a Virtual Reality (VR) arcade. Aside from the benefits to cue sports players, there is a large number of casual players and VR enthusiasts who would be interested in such as system due to the use of a new emerging technology.  
For this system, a bespoke software solution needs developing, as well as marketing, licencing and possible store setup expertise and management. We aim to secure a capital investment which will allow us to grow our team to handle marketing and in store business running, as well as developing, maintaining, and improving the software application itself. A partnership with a HMD manufacturer would also be beneficial to reduce the cost and overhead of the physical hardware needed.

***Evaluation of Potential Opportunity***

Although having a low entry curve to the sport, with many people playing casually in a pub or dedicated pool hall, cue sports can be one of the most challenging and time-consuming sports to improve upon and succeed at. Training often requires countless hours of individual work in order to improve and be semi-successful in potting the ball you aimed at. However, there are many other aspects to the game as well such as applying spin to the cue ball, having the cue ball end up in a good position for your next shot, being able to think two or more shots ahead, building high scoring breaks, or snookering (see Appendix B) your opponent just to name a few2. These skills also require a huge time commitment to improve upon, and this is before playing any games against people which is vital for skill development3.

The system will benefit the most will be new or moderately skilled players, as helps most with aiming cue ball and potting object ball. Also good for causal players as adds another level of interest and excitement onto the game, with novelty of the technology and immersion of interactive graphics.

Snooker is as popular as ever, with over 17.1 million UK viewers of the 2020 world championship final (up from 11.8 million in 2019)1. Pool is a hugely popular social and recreational pastime amongst all ages. Great time to act. Success of VR arcades due to low accessibility in the home because of price.

***Value Proposition***

EXPLAINING HOW IDEA ADDRESSES THE PROBLEM OR OPPORTUNIY TO CREATE VALUE FOR THE AUDIENCE

* WHAT IS YOUR IDEA AND WHAT DOES IT ACHIEVE
* HOW DOES IT DO THIS
* WHY IS THIS VALUABLE AND FOR WHO
* HOW IS IT BETTER THAN ALTERNATIVE SOLUTIONS

***Impact***

EXPLAIN PLANNED NEXT STEPS FOR REALISING THIS OPPORTUNITY

* WHAT ARE NECESSARY STEPS THAT YOU NEED TO TAKE TO REALISE THE IDEAS? MAY INVOLVE :
  + SPECIFYING RESEARCH THAT WILL BE CARRIED OUT
  + TESTING AND PROTOTYPING OF PRODUCTS OR INITIATIVES
  + SOURCING ADDITIONAL INVESTMENT AND SUPPORT
  + ON-BOARDING NEW PARTNERS OR COLLABORATORS
  + DISSEMINATION, NETWORKING, PROMOTION, PROFILE BUILDING
  + OVERCOMING LEGAL OR REGULATORY HURDLES, AND SO ON
* WHAT MEASURABLE IMPACTS ARE BEING TARGETED AND BY WHEN

***Appendix A***

Below is the survey sent out to members of the University of Bristol Pool and Snooker Club i.e., people with interested in cue sports with varying experience levels.

All responses were kept anonymous, and no identifiable or sensitive information was collected.

Question 1: How many years have you played a cue sport (i.e. pool, snooker, billiards) consistently?

* I have never played
* 0-1 years
* 1-2 years
* 2-3 years
* 3-4 years
* 4-5 years
* 5+ years

Question 2: What would you say is your greatest strength from the list below?

* Hitting the targeted ball
* Potting the targeted ball
* Positioning the cue ball optimally for the next shot
* Break building
* Safety shots
* Complex / Spin shots

Question 3: What would you say do you need to improve on the most from the list below?

* Hitting the targeted ball
* Potting the targeted ball
* Positioning the cue ball optimally for the next shot
* Break building
* Safety shots
* Complex / Spin shots

Question 4: Do you perform training drills either alone or with others?

* Yes
* No

Question 5: If you answered ‘YES’ to question 4, what technique do you focus on the most when training? Please select all that apply

* Hitting the targeted ball
* Potting the targeted ball
* Positioning the cue ball optimally for the next shot
* Break building
* Safety shots
* Complex / Spin shots

Question 6: Would you like the idea of using a head mounted display in order to provide feedback and guidance on your shots whilst you play?

* Yes
* No
* Maybe

Question 7: What features would you find useful for such a device to have?

Question 8: Would you ever pay for pool or snooker training?

* I have in the past
* Yes
* No
* Maybe

Question 9: How much would you consider paying for training? (Per session)

* £0
* £0-£10
* £10-£20
* £20-£30
* £30-£40
* £40-£50
* £50+

Question 10: Would you ever go to a Virtual Reality arcade or Virtual Reality experience?

* Yes
* No
* I have in the past

Question 11: How much would you think (per hour) a Virtual Reality arcade or Virtual Reality experience would cost?

* £10-£20
* £20-£30
* £30-£40
* £40-£50
* £50+

***Appendix B***

Below are some useful explanations of specific terminologies.

* **Snookering**
  + Forcing the cue ball into a position such that the opposing player cannot hit a valid object ball directly – meaning they must first hit a cushion before a valid object ball to avoid a foul.

# Bibliography

1 - Anon., 2020. *WST.tv.* [Online]   
Available at: https://wst.tv/world-snooker-championship-pockets-record-viewing-figures/#:~:text=The%20World%20Championship%20achieved%20strong,reporting%20on%20Radio%205%20Live.  
[Accessed 3 March 2021].

2 - Griffiths, T., n.d. *Terry Griffiths Snooker.* [Online]   
Available at: https://www.terrygriffithssnooker.com/snooker-tips/practice-and-preparation/  
[Accessed 3 March 2021].

3 - Wilson, K., 2014. *Pro Snooker Blog.* [Online]   
Available at: https://www.prosnookerblog.com/2014/02/11/snooker-tips-from-kyren-wilson/  
[Accessed 3 March 2021].