

# VIRTUÁLNÍ REALITA V PSYCHOLOGICKÉM VÝZKUMU

JAN ONDŘEJ



# OSNOVA

## HISTORIE VIRTUÁLNÍ REALITY

## EKOLOGICKÁ & INTERNÍ VALIDITA

VÝZKUMY LÉČBY ÚZKOSTÍ  
A FÓBIÍ, ZA POMOCI VR

VÝZKUMY NA NAŠEM  
PSYCHOLOGICKÉM ÚSTAVU

PLUSY A MÍNUSY VR

# HISTORIE VIRTUÁLNÍ REALITY



# PRVNÍ PŘEDSTAVA VR

STENGLY G.  
WEINBAUM

1935

PYGMALION'S  
SPECTACLES



by Continental Publications, Inc.



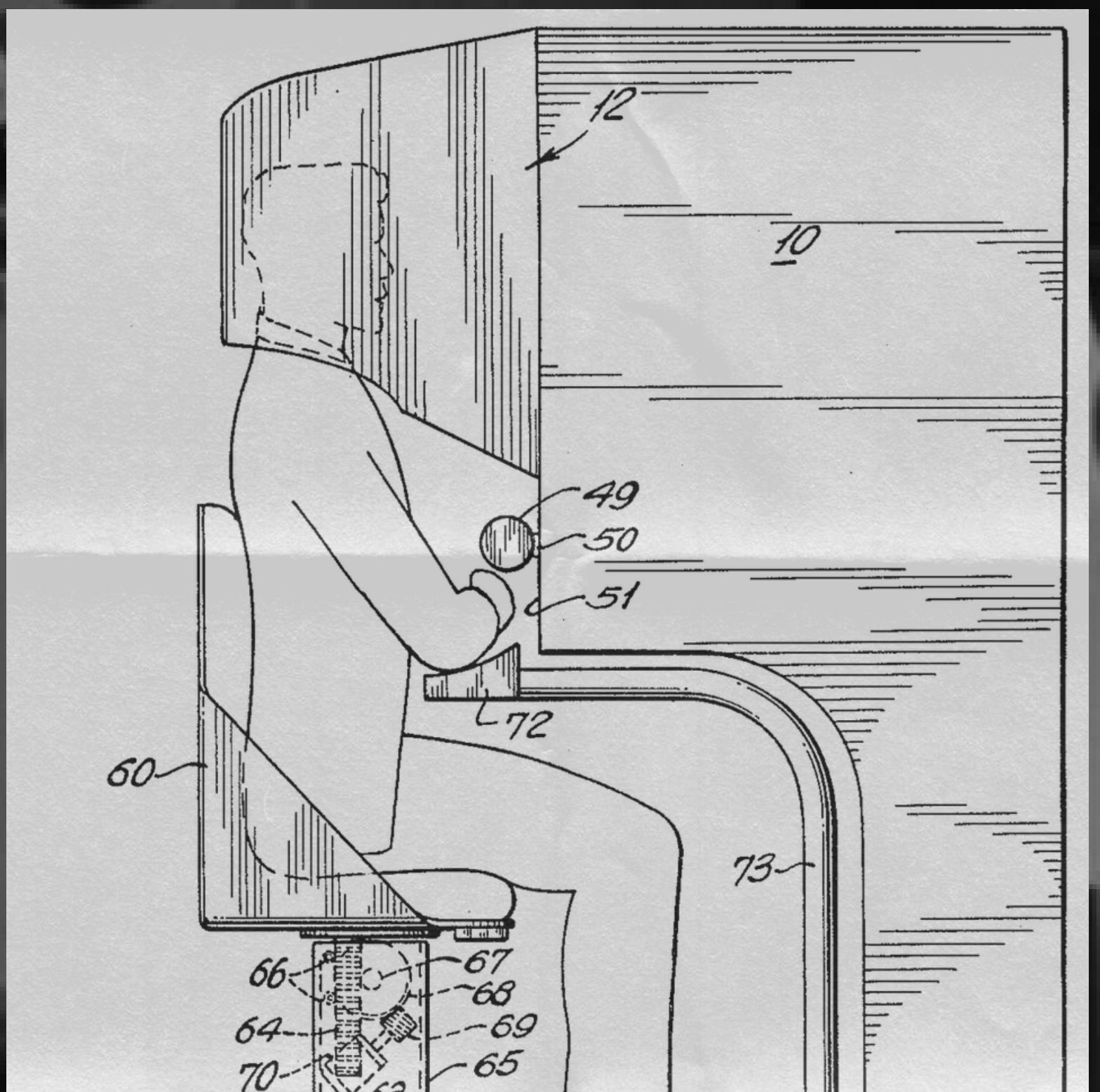
Unbelievable... still

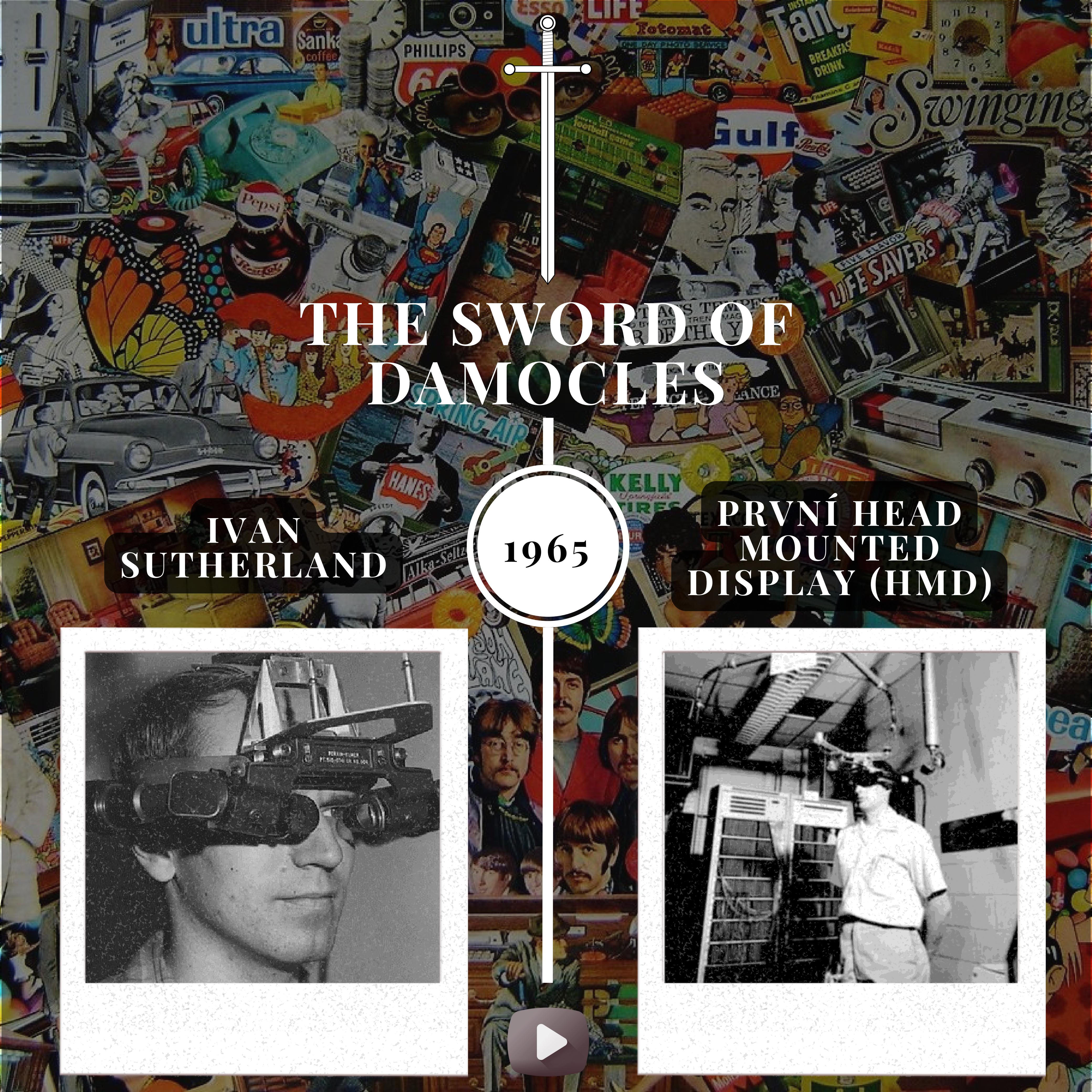
# SENSORAMA

MORTON HEILIG

1950

PŘEDCHŮDCE  
XD KIN?



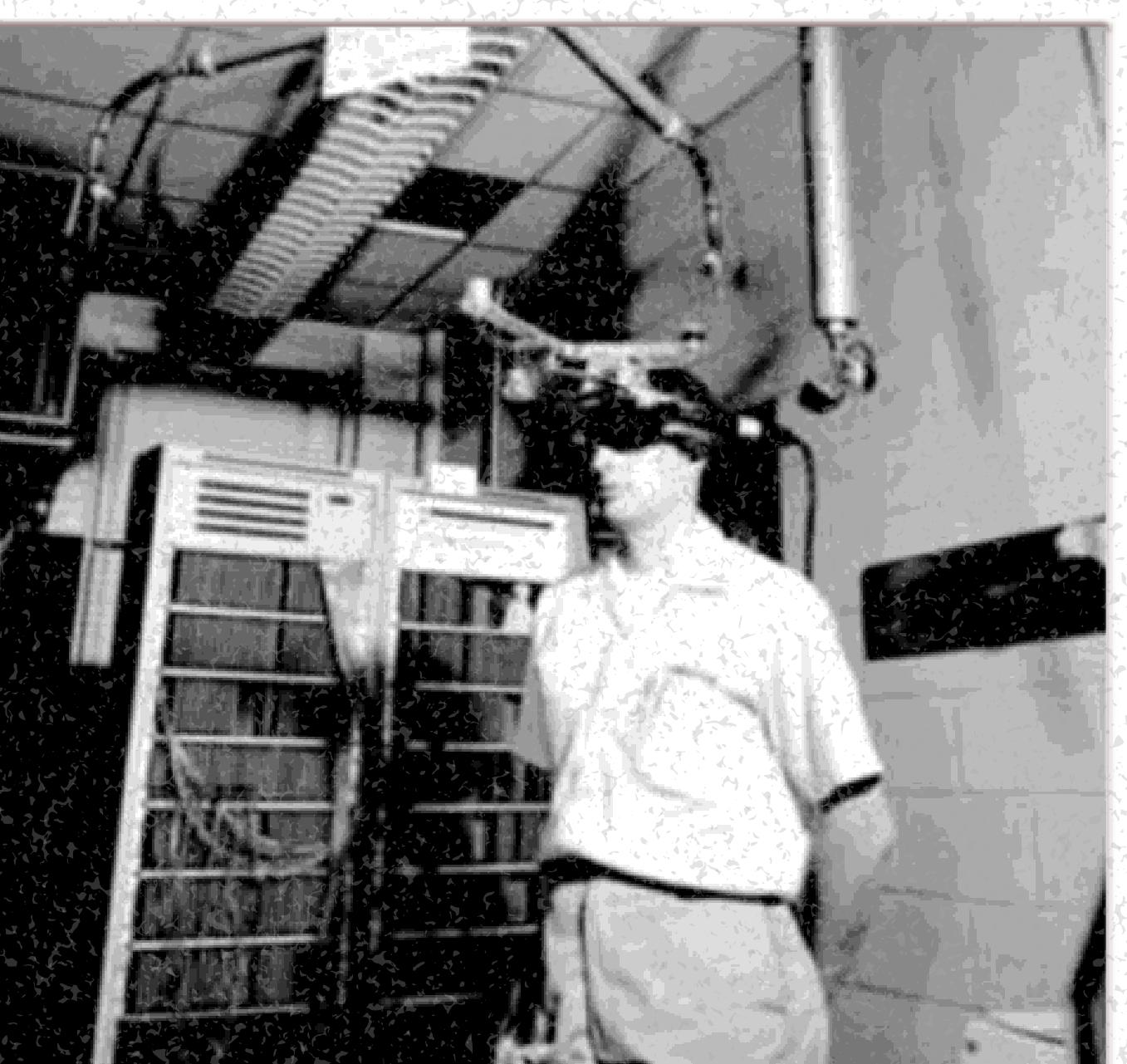
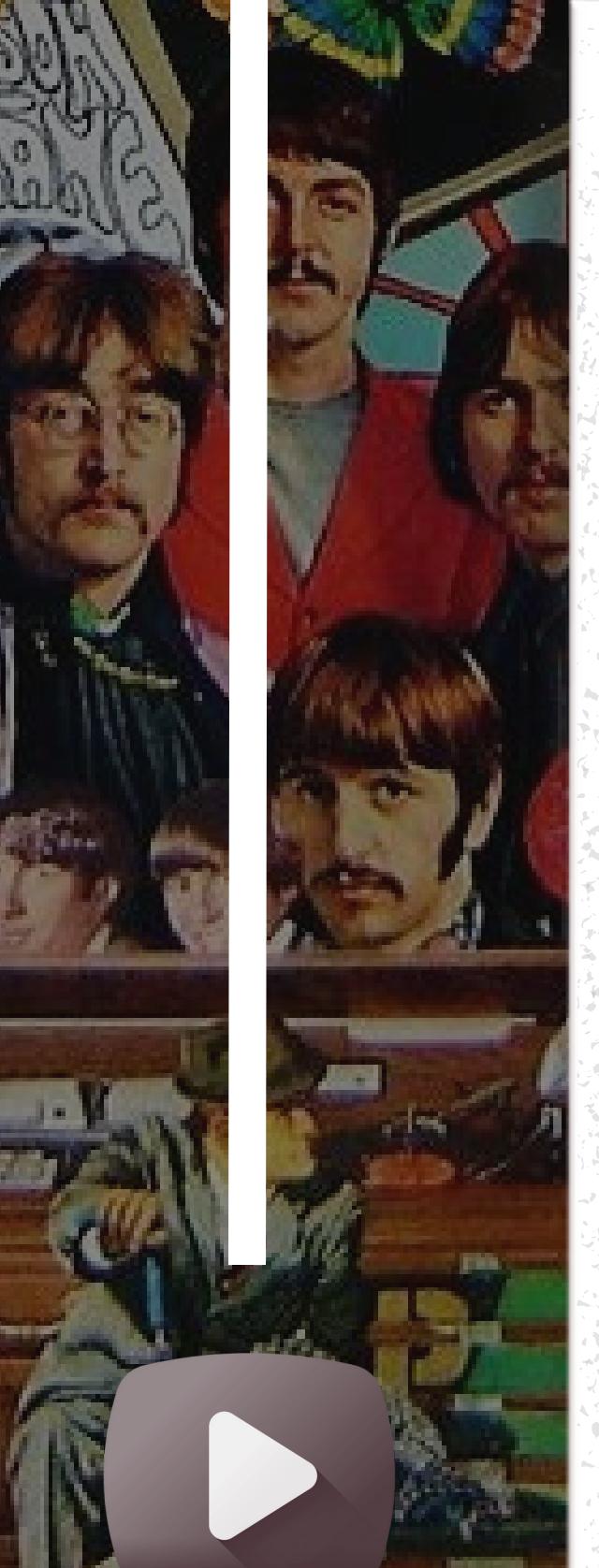


# THE SWORD OF DAMOCLES

IVAN  
SUTHERLAND

1965

PRVNÍ HEAD  
MOUNTED  
DISPLAY (HMD)

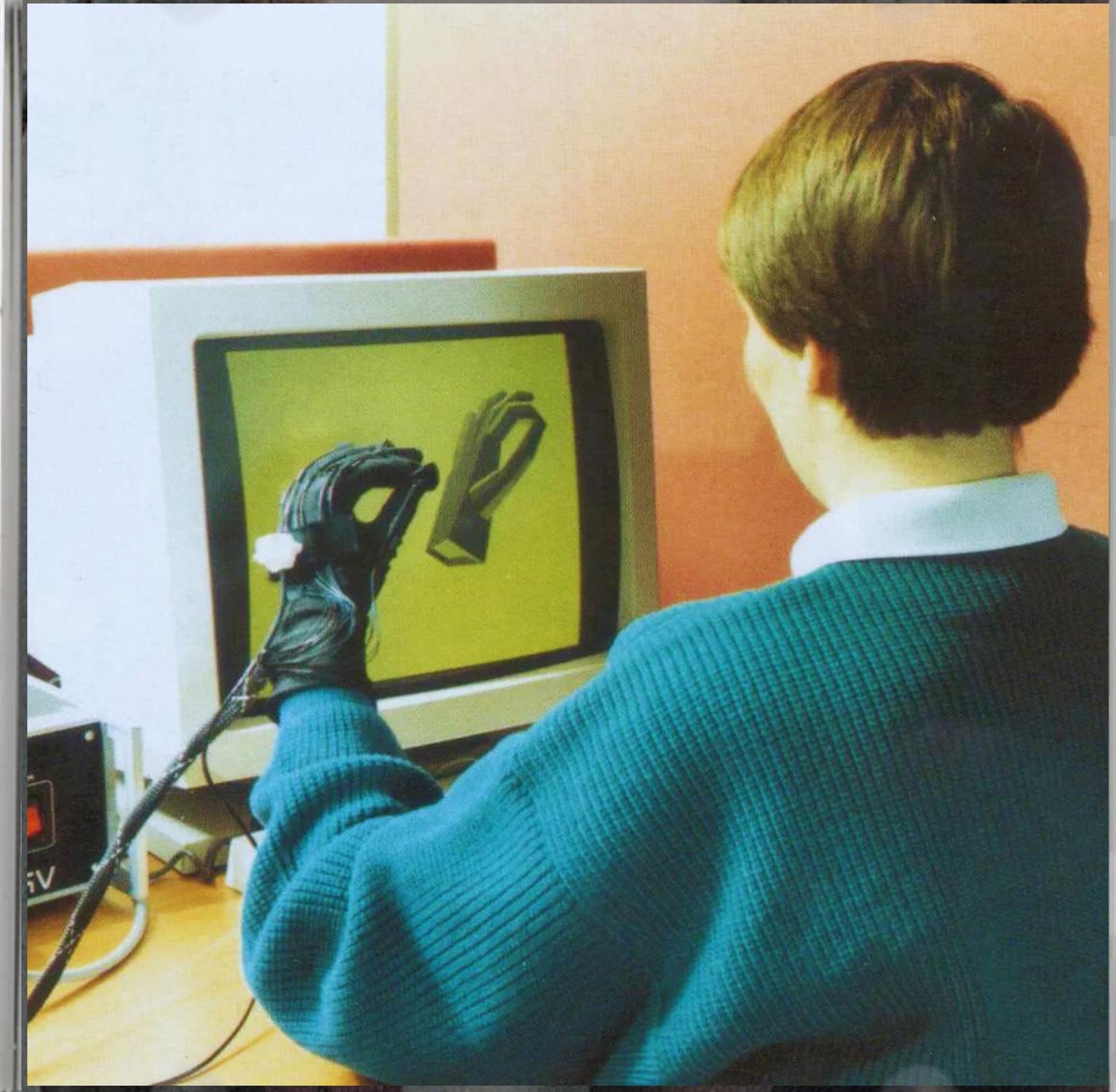
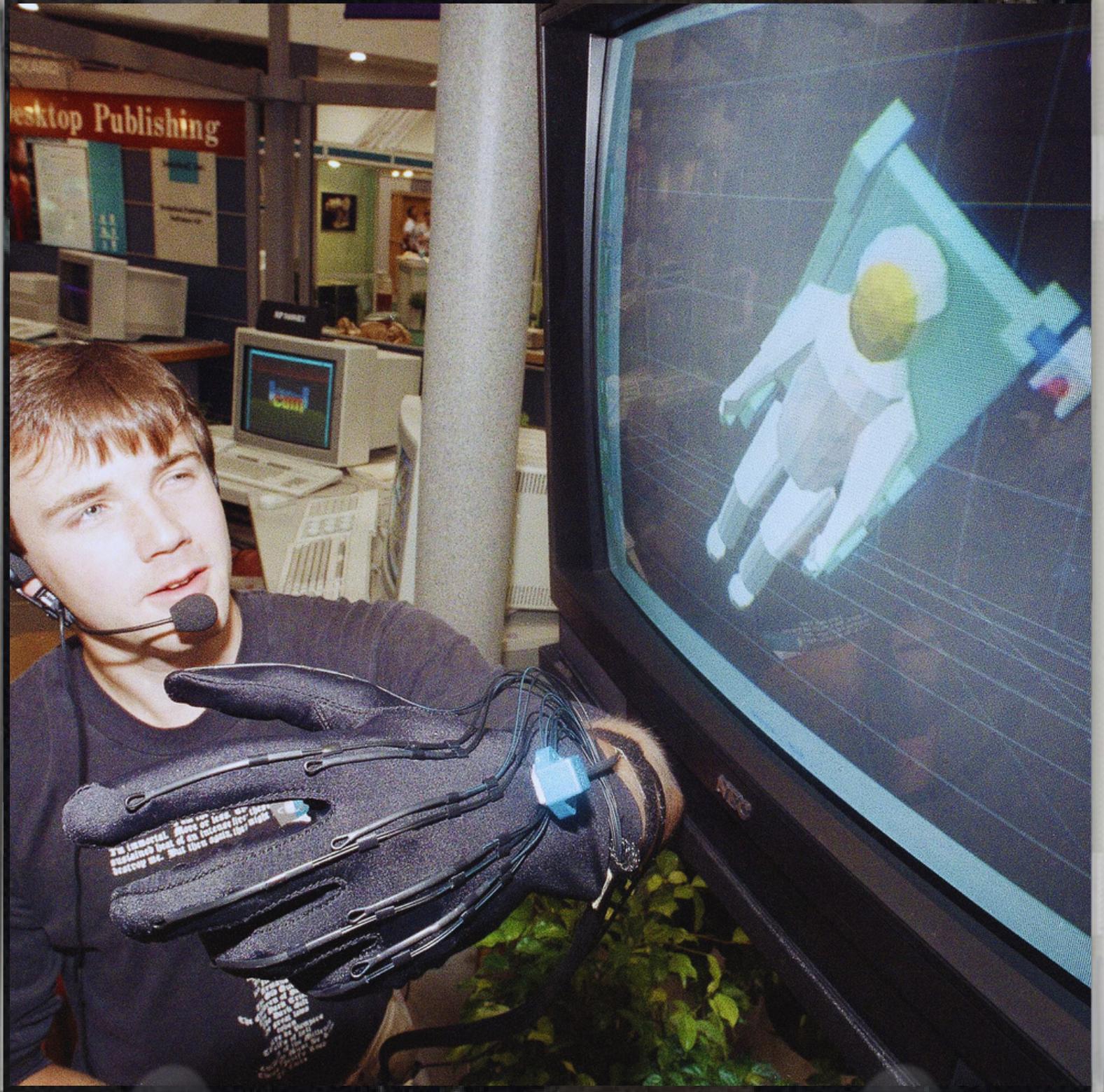


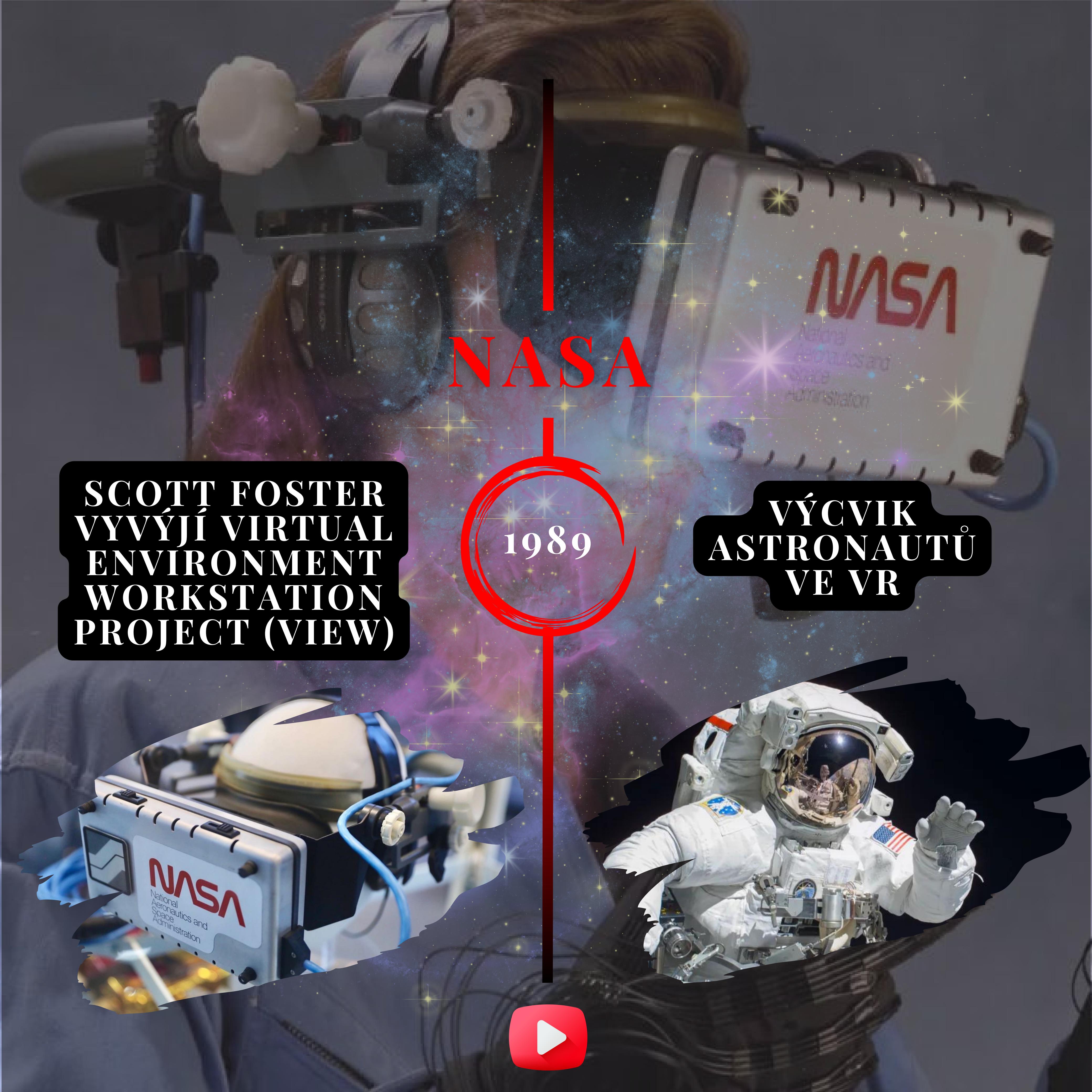
# VPL RESEARCH

JAROM LAINIER &  
VPL RESEARCH

1980

PRVNÍ KOMERČNÍ  
SPOLEČNOST  
VYVÝJEJÍCÍ VR





SCOTT FOSTER  
VYVÝJÍ VIRTUAL  
ENVIRONMENT  
WORKSTATION  
PROJECT (VIEW)

NASA

1989

VÝCVIK  
ASTRONAUTŮ  
VE VR





# ROZMACH VIRTUÁLNÍ REALTY

21.  
STOLETÍ

HTC VIVE

APPLE VISION PRO

VALVE INDEX

OCULUS

EKOLOGICKÁ VALIDITA



VNITŘNÍ VALIDITA

VYSOKÁ

EKOLOGICKÁ VALIDITA

NÍZKÁ



DESIGNY

STANDARDNÍ DESIGNY

VIRTUÁLNÍ REALITÉ

VYSOKÁ

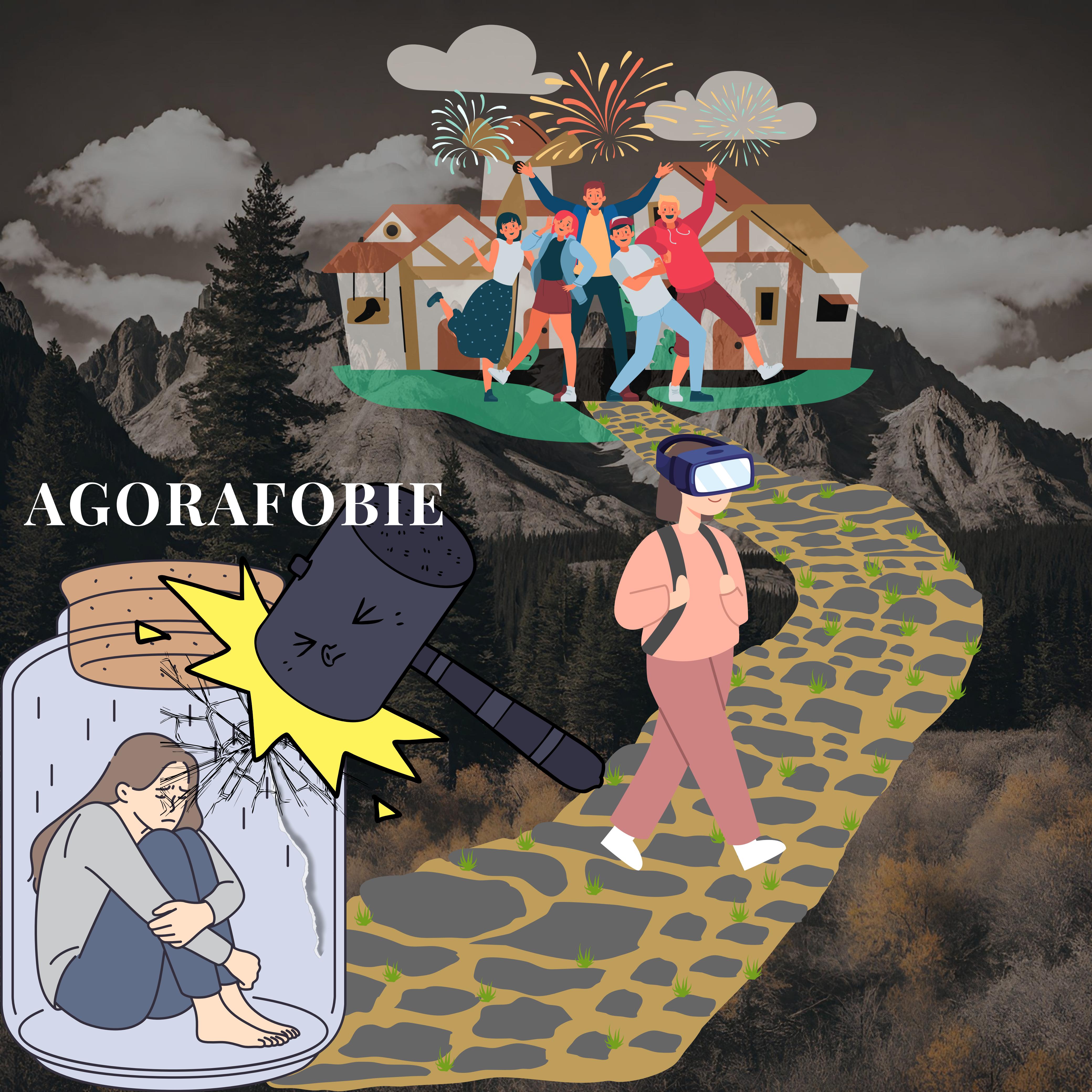


INTERNÍ VALIDITA









# AGORAFOBIE

**INCLUSION**  
18 LET  
DSM = PDA

**NÁBOR  
PARTICIPANTŮ**  
 $N = 92 \longrightarrow N = 81$

**VRET**  
 $N = 29$   
 $\downarrow$   
 $N = 19$

**WAITING  
LIST**  
 $N = 28$

**CBT**  
 $N = 24$   
 $\downarrow$   
 $N = 20$

**VRET**  
 $\downarrow$   
 $N = 33$

**CBT**  
 $\downarrow$   
 $N = 34$

**ŠEST MĚSÍCŮ  
FOLLOW-UP**  
 $N = 27$   
 $\downarrow$   
**DVANÁCT MĚSÍCŮ  
FOLLOW-UP**  
 $N = 21$

**ŠEST MĚSÍCŮ  
FOLLOW-UP**  
 $N = 30$   
 $\downarrow$   
**DVANÁCT MĚSÍCŮ  
FOLLOW-UP**  
 $N = 28$

**PO TŘECH MĚSÍČÍCH**

**VÝSLEDKY UKAZUJÍ  
NESIGNIFIKANTNÍ  
ROZDÍL MEZI  
VRET & CBT**

# ARACHNOFOBIE



# AVIOFOBIE



**INCLUSION**  
18 LET  
DSM-V = FP

**NÁBOR  
PARTICIPANTŮ**  
N = 146 ————— N = 69

**NO-FEAR +  
SELF-APPLIED**  
N = 23  
↓  
PT, N = 17

**NO-FEAR +  
THERAPIST**  
N = 23  
↓  
PT, N = 16

**WAITING  
LIST**  
N = 23

**THREE MONTHS  
FOLLOW-UP**  
↓  
N = 15

**THREE MONTHS  
FOLLOW-UP**  
↓  
N = 7

**TWELVE MONTHS  
FOLLOW-UP**  
↓  
N = 12

**TWELVE MONTHS  
FOLLOW-UP**  
↓  
N = 8

**I.**

**PSYCHOEDUKACE  
SEZNAMENÍ SE S  
INTERVENCIÍ  
INSTRUKCE JAK  
POSTUPOVAT**

**II.**

**ZMĚŘENÍ MÍRY  
ÚZKOSTI POMOCÍ  
FFQ-II**

**III.**

**VÝBĚR SCÉNY  
PODLE MÍRY  
ÚZKOSTI**

**IV.**

**VÝBĚR VLASTNÍ  
SCÉNY S  
OBTÍŽNĚJŠÍMI  
PODMÍNKAMI**

**V.**

**DOKONČENÍ  
MODULU V PRŮBĚHU  
MAXIMÁLNĚ ŠESTI  
TÝDNU**

**DVĚ INTERVENCE  
TÝDNĚ**

**ONLINE  
INTERVENCE**

**VI.**

**TŘÍ MĚSÍČNÍ  
FOLLOW-UP**

**VII.**

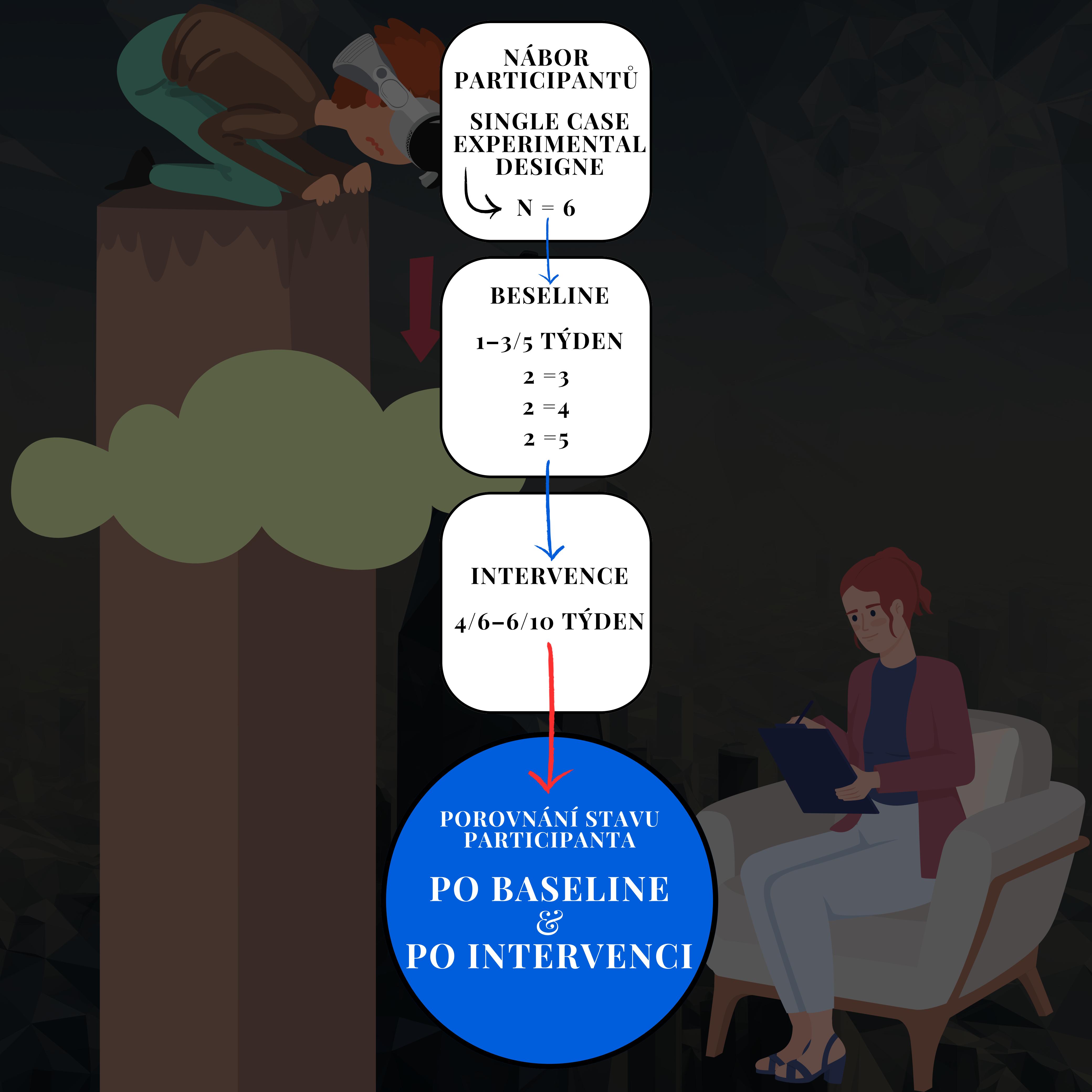
**Dvanácti  
měsíční follow-  
up**

**HOVOR  
S  
TERAPEUTEM**

**LET**

# AKROFOBIE





NÁBOR  
PARTICIPANTŮ

SINGLE CASE  
EXPERIMENTAL  
DESIGNE

→ N = 6

BASELINE

1-3/5 TÝDEN

2 = 3

2 = 4

2 = 5

INTERVENTE

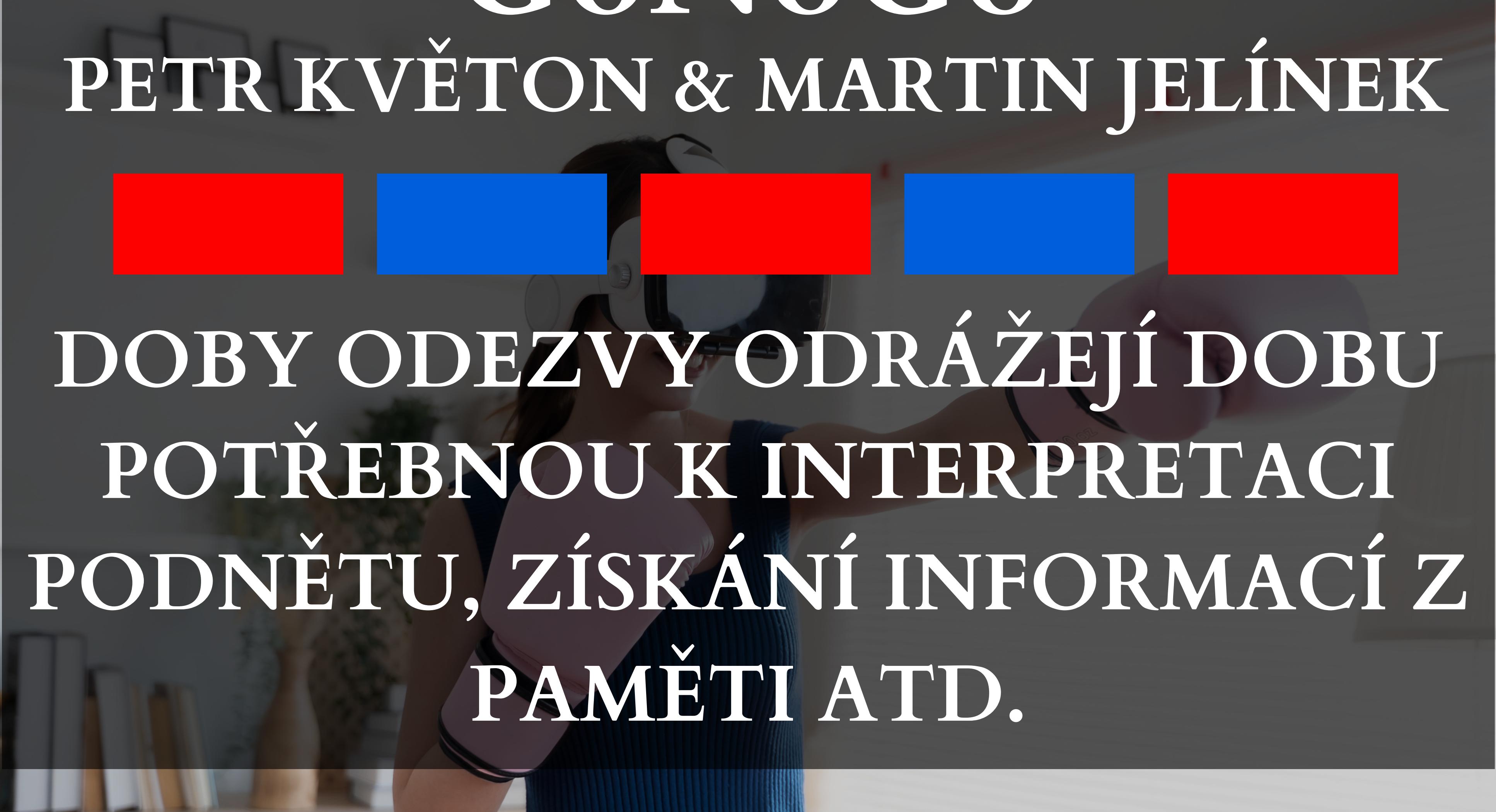
4/6-6/10 TÝDEN

POROVNÁNÍ STAVU  
PARTICIPANTA  
PO BASELINE  
&  
PO INTERVENCI



# GoNoGo

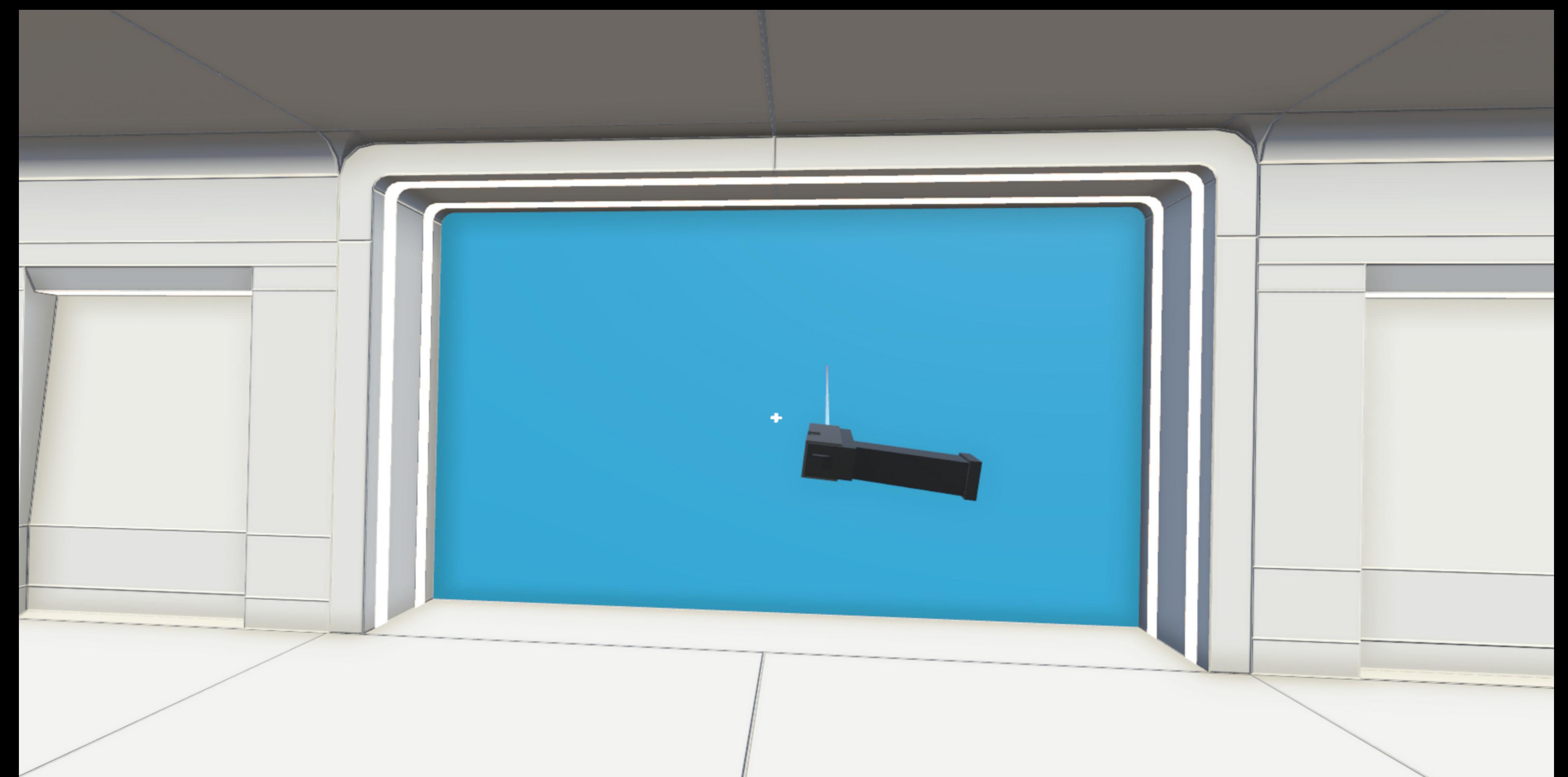
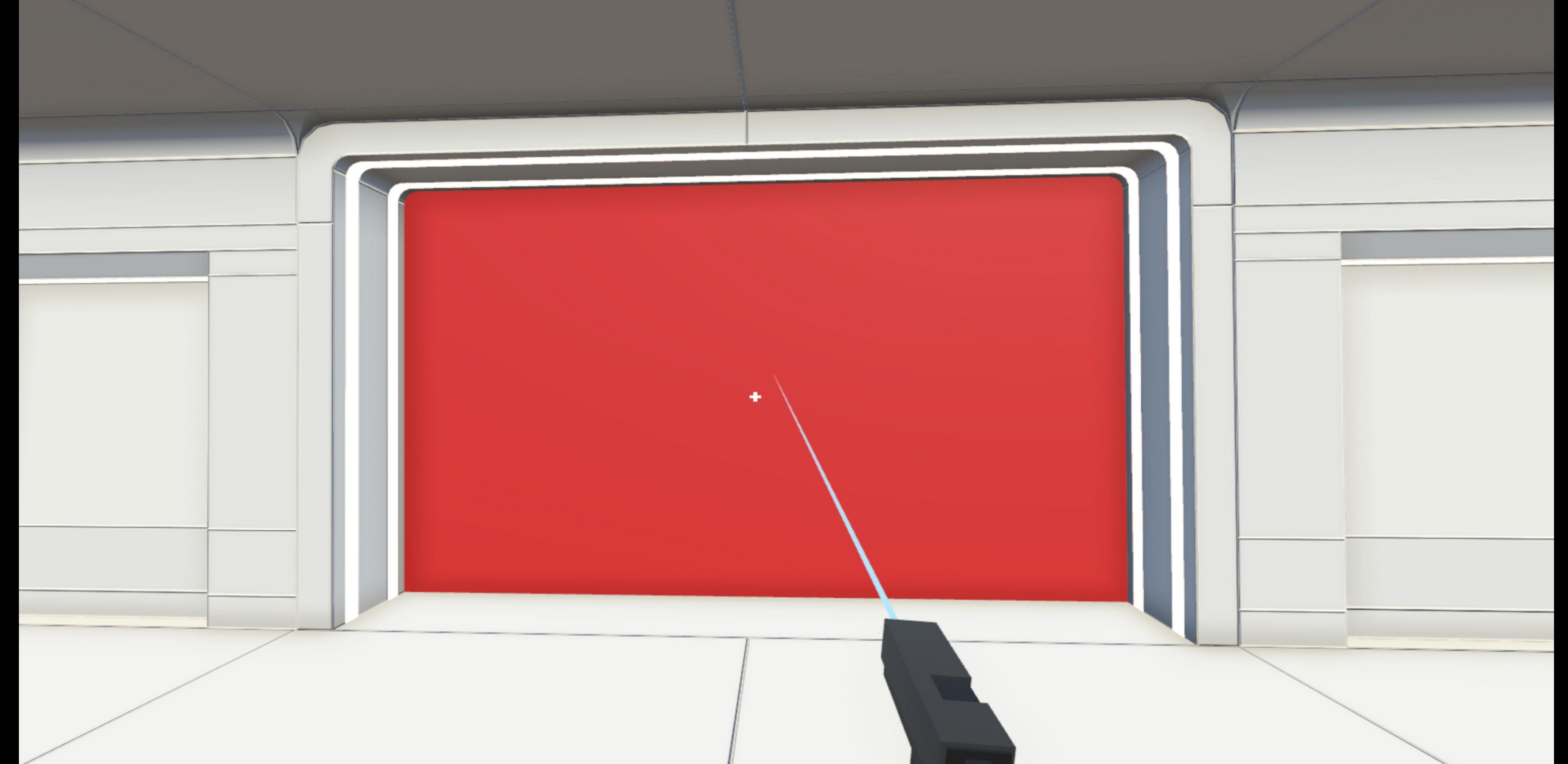
## PETR KVĚTON & MARTIN JELÍNEK

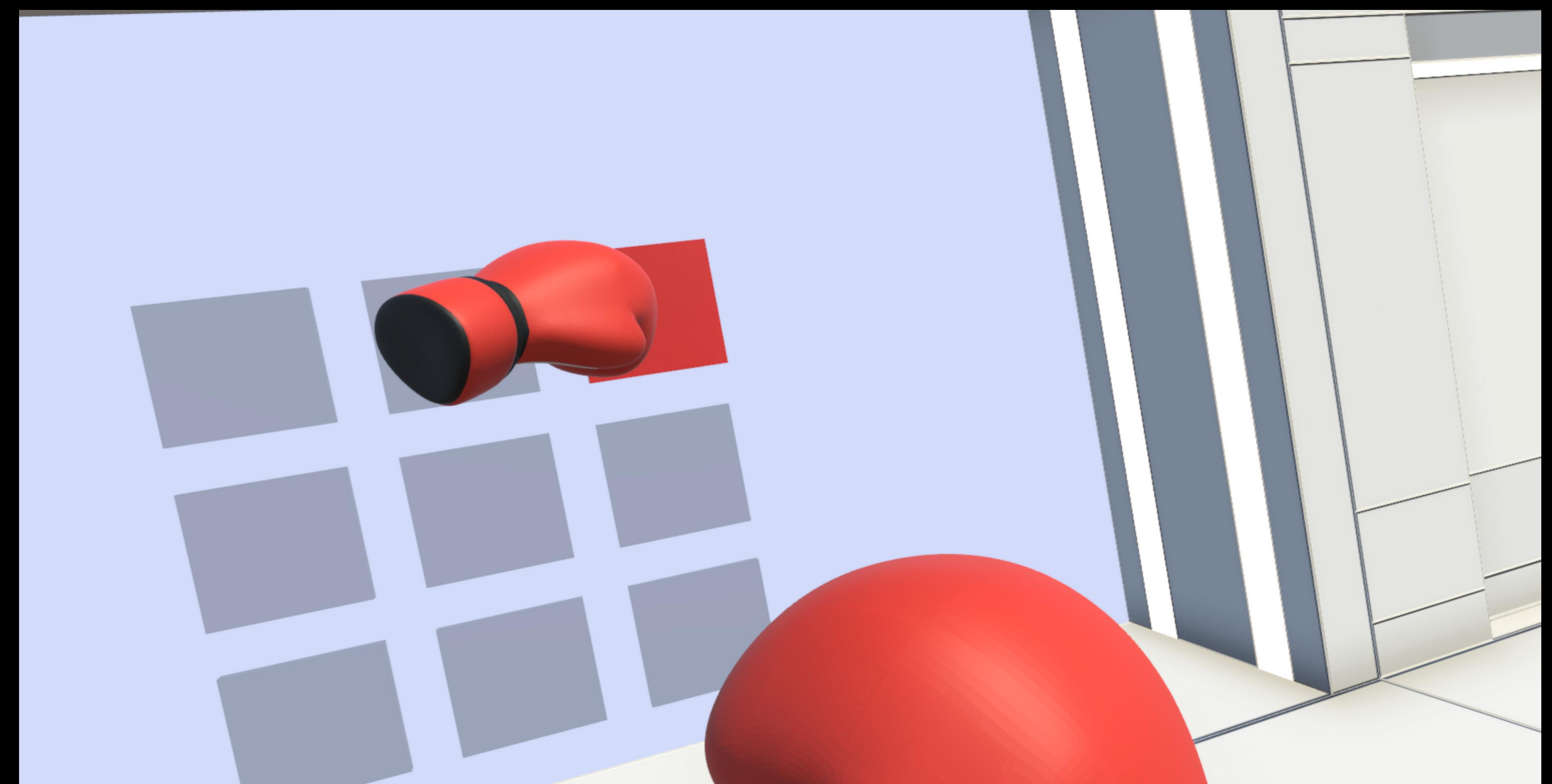
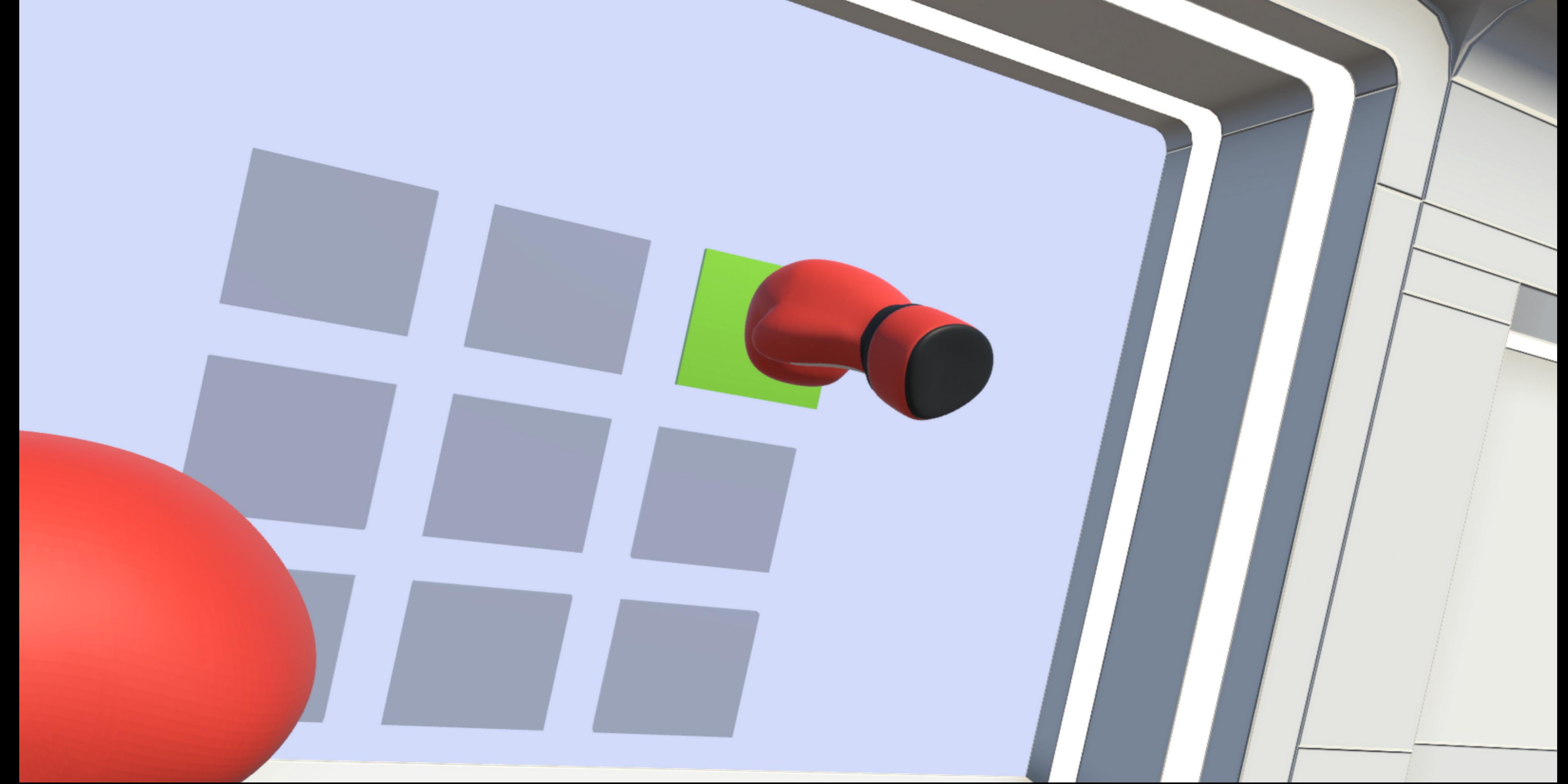


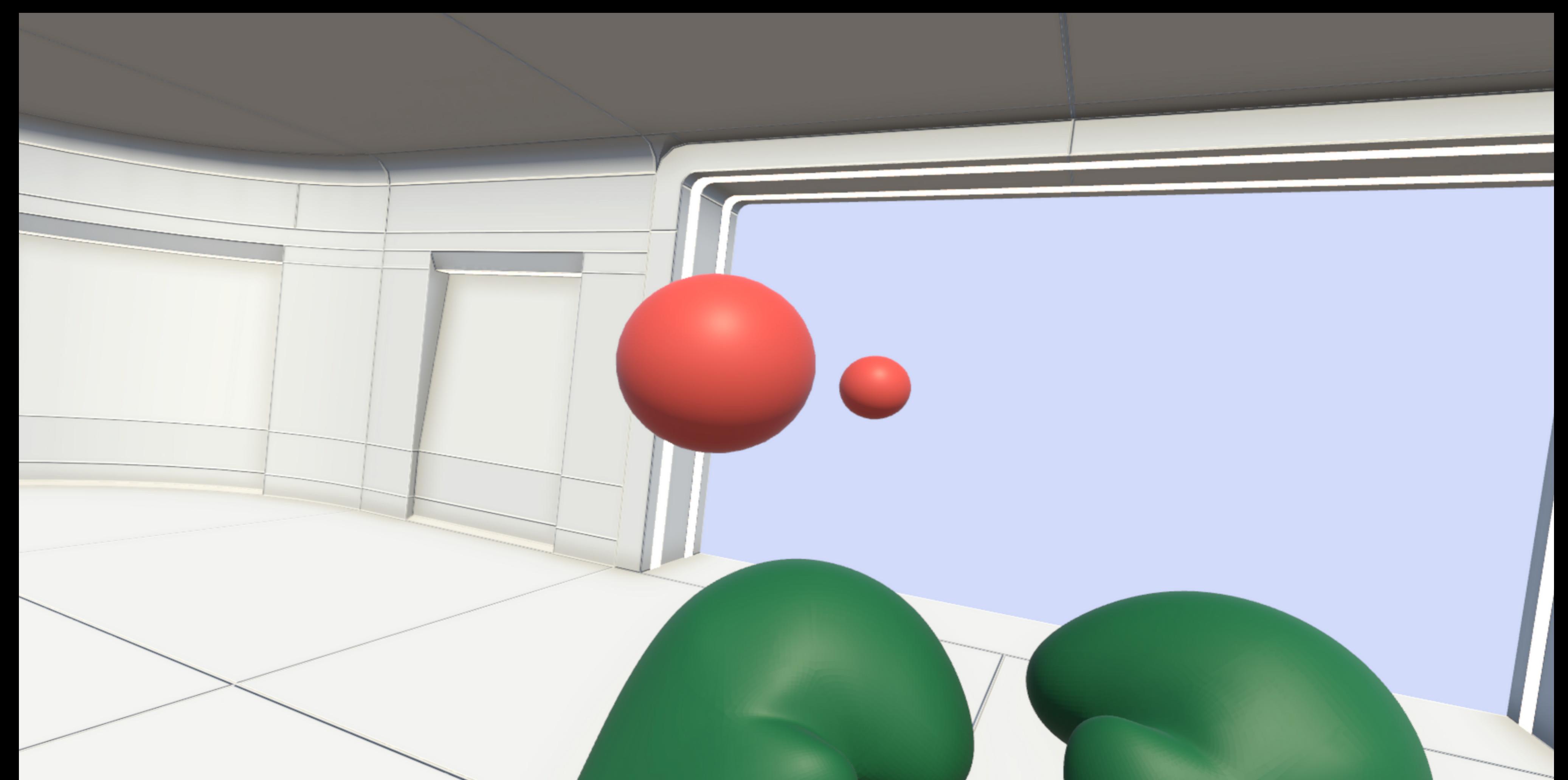
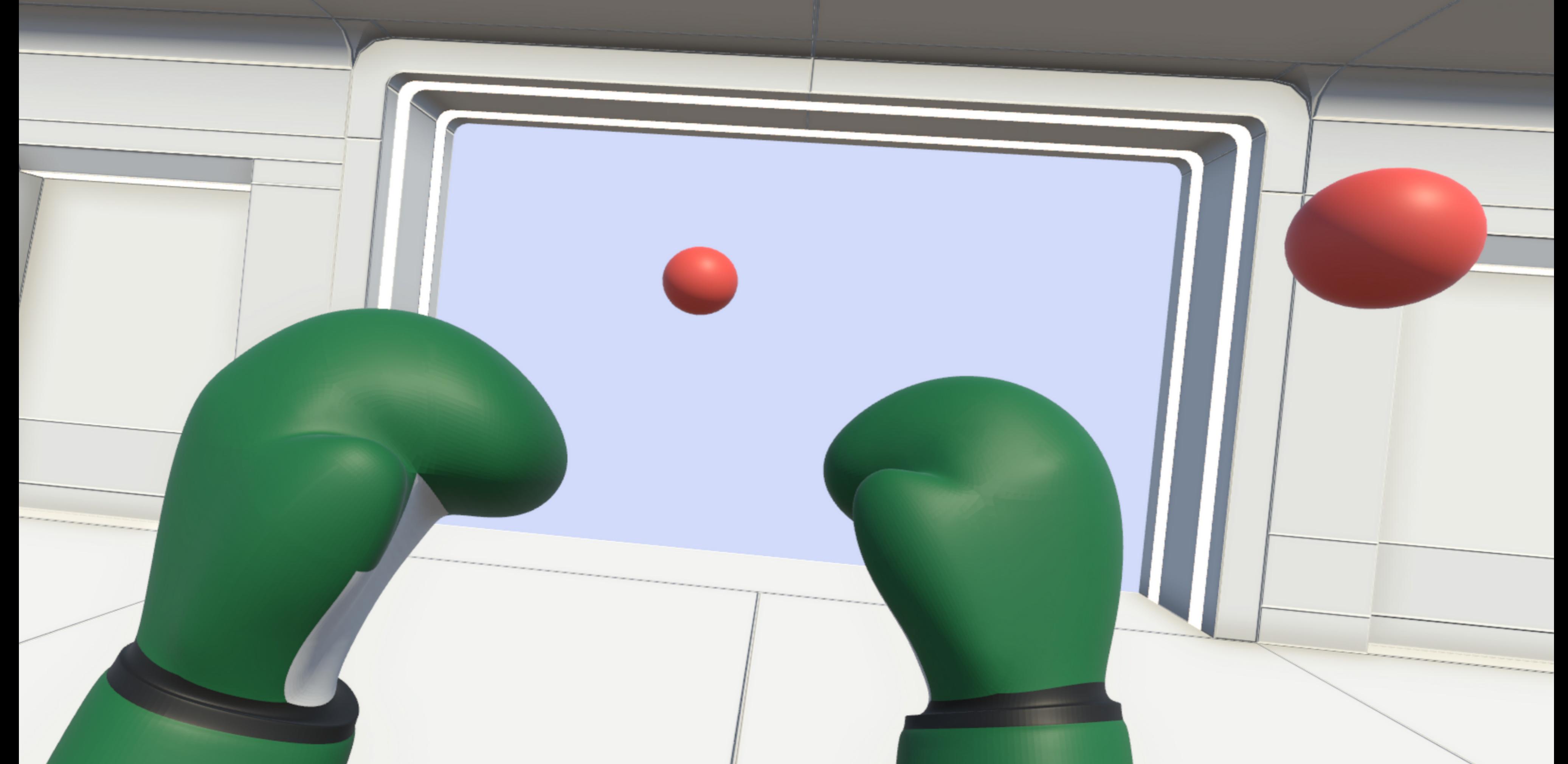
DOBY ODEZVY ODRÁŽEJÍ DOBU  
POTŘEBNOU K INTERPRETACI  
PODNETU, ZÍSKÁNÍ INFORMACÍ Z  
PAMĚTI ATD.

DOBU ODEZVY LZE TEDY  
VYUŽÍT KE ZJIŠTĚNÍ, JAK  
DLOUHO TRVAJÍ ZÁKLADNÍ  
MYŠLENKOVÉ PROCESY











# METODA LOCI

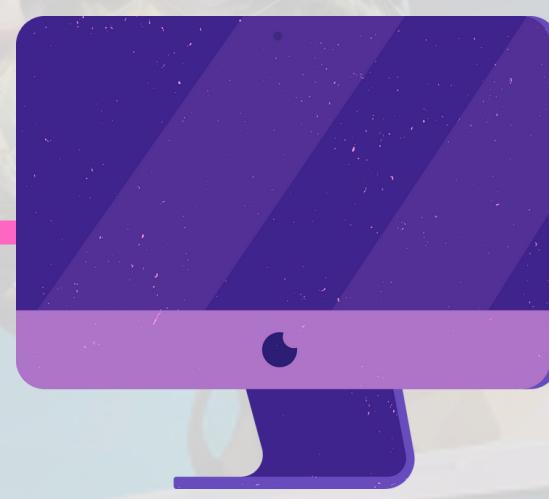
## A VYUŽÍTÍ VIRTUÁLNÍ REALTY

# PROCEDURE

I



FIGURAL  
INTELLIGENCE



METHOD OF  
LOCI MANUAL



VR  
INTRODUCTION

THE SECOND  
STEP WAS  
REPEATED  
TWICE



LOCATIONS  
RECALLING



LOCATIONS  
LEARNING

II

III



FIRST LIST  
ENCODING



SECOND LIST  
ENCODING



THIRD LIST  
ENCODING

ALL THREE LISTS OF WORDS WERE  
LEARNED IN THE SAME LOCATIONS



NEO-PI-3



VVIQ-2



VMIQ-2

IV



A person with short brown hair is wearing a white VR headset with a dark blue polygonal lens. They are wearing a black zip-up hoodie and red pants. Their right hand is raised, pointing towards a glowing blue and green geometric structure in the background. The background consists of a dark blue and black polygonal pattern, suggesting a futuristic or digital environment.

DĚKUJÍ ZA  
POZORNOST

# ZDROJE

YouTube videa přes ikonky na slidech

- Emmelkamp, P. M., & Meyerbröker, K. (2021). Virtual reality therapy in mental health. *Annual Review of Clinical Psychology*, 17, 495-519. <https://doi.org/10.1146/annurev-clinpsy-081219-115923>
- Emmelkamp, P. M., Bruynzeel, M., Drost, L., & van der Mast, C. A. G. (2001). Virtual reality treatment in acrophobia: a comparison with exposure in vivo. *CyberPsychology & Behavior*, 4(3), 335-339. <https://doi.org/10.1089/109493101300210222>
- Emmelkamp, P. M., Krijn, M., Hulbosch, A. M., De Vries, S., Schuemie, M. J., & van der Mast, C. A. (2002). Virtual reality treatment versus exposure in vivo: a comparative evaluation in acrophobia. *Behaviour Research and Therapy*, 40(5), 509-516. [https://doi.org/10.1016/S0005-7967\(01\)00023-7](https://doi.org/10.1016/S0005-7967(01)00023-7)
- Meyerbröker, K., Morina, N., & Emmelkamp, P. M. G. (2018). Enhancement of exposure therapy in participants with specific phobia: a randomized controlled trial comparing yohimbine, propranolol and placebo. *Journal of Anxiety Disorders*, 57, 48-56. <https://doi.org/10.1016/j.janxdis.2018.05.001>
- Donker T, Cornelisz I, van Klaveren C, van Straten A, Carlbring P et al. 2019. Effectiveness of self-guided app-based virtual reality cognitive behavior therapy for acrophobia: a randomized clinical trial. *JAMA Psychiatry* 76:682-90. <https://doi.org/10.1001/jamapsychiatry.2019.0219>
- Morina, N., Ijntema, H., Meyerbröker, K., & Emmelkamp, P. M. (2015). Can virtual reality exposure therapy gains be generalized to real-life? A meta-analysis of studies applying behavioral assessments. *Behaviour Research and Therapy*, 74, 18-24. <https://doi.org/10.1016/j.brat.2015.08.010>
- Wiederhold, B. K., & Wiederhold, M. D. (2003). Three-year follow-up for virtual reality exposure for fear of flying. *CyberPsychology & Behavior*, 6(4), 441-445. <https://doi.org/10.1089/109493103322278844>
- Mühlberger, A., Weik, A., Pauli, P., & Wiedemann, G. (2006). One-session virtual reality exposure treatment for fear of flying: 1-year follow-up and graduation flight accompaniment effects. *Psychotherapy Research*, 16(1), 26-40. <https://doi.org/10.1080/10503300500090944>
- Campos, D., Bretón-López, J., Botella, C., Mira, A., Castilla, D., Mor, S., ... & Quero, S. (2019). Efficacy of an internet-based exposure treatment for flying phobia (NO-FEAR Airlines) with and without therapist guidance: a randomized controlled trial. *BMC Psychiatry*, 19, 1-16. <https://doi.org/10.1186/s12888-019-2060-4>
- Botella, C., García-Palacios, A., Villa, H., Baños, R. M., Quero, S., Alcañiz, M., & Riva, G. (2007). Virtual reality exposure in the treatment of panic disorder and agoraphobia: A controlled study. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, 14(3), 164-175. <https://doi.org/10.1002/cpp.524>
- Peñate, W., Pitti, C. T., Bethencourt, J. M., de la Fuente, J., & Gracia, R. (2008). The effects of a treatment based on the use of virtual reality exposure and cognitive-behavioral therapy applied to patients with agoraphobia. *International Journal of Clinical and Health Psychology*, 8(1), 5-22. <https://www.redalyc.org/articulo.oa?id=33780101>
- Meyerbroeker, K., Morina, N., Kerkhof, G. A., & Emmelkamp, P. M. G. (2013). Virtual reality exposure therapy does not provide any additional value in agoraphobic patients: a randomized controlled trial. *Psychotherapy and Psychosomatics*, 82(3), 170-176. <https://doi.org/10.1159/000342715>
- Pelissolo, A., Zaoui, M., Aguayo, G., Yao, S. N., Roche, S., Ecochard, R., ... & Cottraux, J. (2012). Virtual reality exposure therapy versus cognitive behavior therapy for panic disorder with agoraphobia: a randomized comparison study. *J. Cyber Ther Rehabil*, 5(1), 35-43. <https://research.ou.nl/en/publications/cyberbullying-and-traditional-bullying-in-relation-with-adolescence>
- Carl, E., Stein, A. T., Levihn-Coon, A., Pogue, J. R., Rothbaum, B., Emmelkamp, P., ... & Powers, M. B. (2019). Virtual reality exposure therapy for anxiety and related disorders: A meta-analysis of randomized controlled trials. *Journal of Anxiety Disorders*, 61, 27-36. <https://doi.org/10.1016/j.janxdis.2018.08.003>
- Wechsler, T. F., Kümpers, F., & Mühlberger, A. (2019). Inferiority or even superiority of virtual reality exposure therapy in phobias?—A systematic review and quantitative meta-analysis on randomized controlled trials specifically comparing the efficacy of virtual reality exposure to gold standard in vivo exposure in agoraphobia, specific phobia, and social phobia. *Frontiers in Psychology*, 10, 445129. <https://doi.org/10.3389/fpsyg.2019.01758>
- Virtual Reality Society (2017, n. d.). History of Virtual Reality. VRS. (<https://www.vrs.org.uk/virtual-reality/history.html>)
- Barnard, D. (2023, February 20). *History of VR – Timeline of Events and Tech Development*. Virtual Speech. <https://virtualspeech.com/blog/history-of-vr>
- Minetos, J. P. (2023, June 15). *A Brief History Of VR Headsets*. LinkedIn. <https://www.linkedin.com/pulse/brief-history-vr-headsets-jp-minetos>
- Ondřej J. (2022). *Návrh teoretického modelu kognitivních mechanismů metody loci a empirický výzkum sebe-referenčního efektu jako jednoho z konstruktů ovlivňující její efektivitu* [Master's thesis, Masaryk University]. <https://is.muni.cz/th/tzitg>