



**GAMES FOR HEALTH EUROPE
2025**



**DATA-DRIVEN SYSTEM
FOR AUTISTIC TEENS
USING MIXED REALITY
GAMES**

GAMES FOR HEALTH EUROPE
Eindhoven April 1st, 2025
A-L HÉRITIER, DIVERSSITY SA

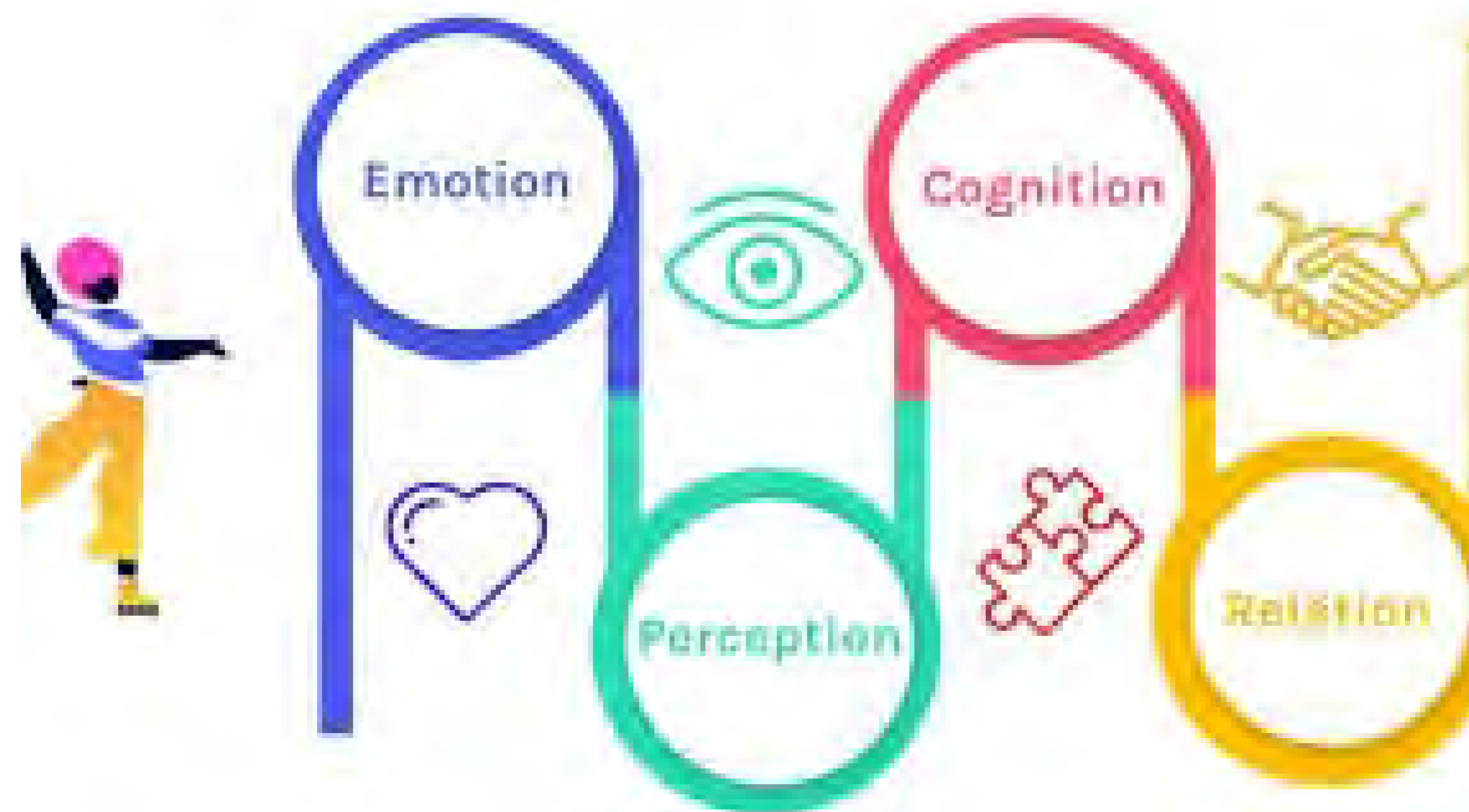
Holistic approach of Game & Autism

“GAME AS A WHOLE FEEDS THE MIND JUST AS FOOD FEEDS THE BODY.”

Voyage en psychomotricité. Itineraire d'une therapeute, A. Dupuis-de-Charrière, 2024

“FAR MORE THAN JUST A GAME WITH RULES, IT IS MOST OFTEN A PLAY, OFFERING PLENTY OF POSSIBILITIES”

Winnicott, 1975b.



What is Autism?

AUTISM SPECTRUM DISORDER (ASD) IS A COMPLEX NEURODEVELOPMENTAL DIFFERENCE we cannot change.

It can impair several core areas of development and functioning:

- Social communication skills & interactions
- Motor skills & coordination
- Cognitive & adaptive skills
- Sensory processing
- Emotion regulation



EVERY ASD IS UNIQUE AND REQUIRES INDIVIDUAL SUPPORT.

ASD may have strong strengths in certain areas that can be leveraged in **EDUCATIONAL AND THERAPEUTIC SETTINGS** to support their development.

A personalized approach to therapy and interventions targeting specific skill areas is crucial **TO IMPROVE THE QUALITY OF LIFE OF THOSE WITH ASD.**

Major Challenges in Autism

AUTISM IS A SPECTRUM OF SYMPTOMS strongly influenced by other pathologies *like ADHD, Anxiety, Depression, Dys, etc.* that can be identified and monitored.
NO CLEAR METRICS TO ASSESS GRADIENT & ADAPTED TREATMENT.

**NO
OBJECTIVE DATA ON ASD + 12Y. ASD**

**NO
DATA-DRIVEN SYSTEM TO SUPPORT
DECISION**

NO EASY WAY TO DOCUMENT HOW AN ASD INDIVIDUAL INTERACTS WITH THE WORLD.

**NO
TOOL TO UNDERSTAND INTERACTIONS**

According to WHO* ASD is one of the most prevalent Neurodevelopmental Disorder
Over 70 million of ASD teenagers WW by 2029!

CURRENT SYSTEM CAN'T SUPPORT PERSONALIZED SUPPORTING TOOL.

It is a main concern for parents.

ASD TEENAGERS FACES SOCIAL ISOLATION, EDUCATION & WORK EXCLUSION, MENTAL HEALTH ISSUES.

* [HTTPS://WWW.WHO.INT/NEWS-ROOM/FACTSHEETS/DETAIL/AUTISM-SPECTRUM-](https://www.who.int/news-room/factsheets/detail/autism-spectrum-disorders)

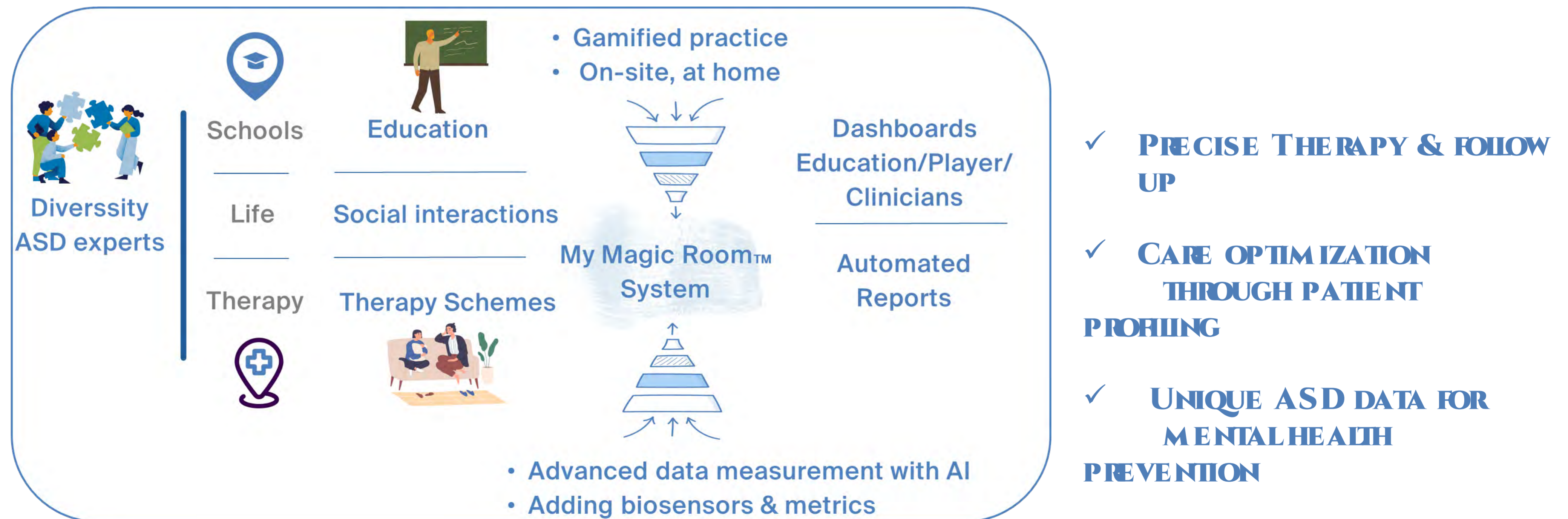
[DISORDERS](https://www.who.int/news-room/factsheets/detail/autism-spectrum-disorders)



No data, no health

UNLOCKING PRECISE THERAPY STARTS WITH REAL-LIFE DATA CAPTURE: MY MAGIC ROOM™ SYSTEM

WE DEVELOPED A MULTIDISCIPLINARY CARE APPROACH AND ICT INNOVATION TO
CREATE A
GAME-CENTRIC DATA-DRIVEN SYSTEM FOR PERSONALISED ASD



Pioneering data-driven system for ASD care

We opt for **MIXED-REALITY** for our games: a cutting-edge technology that **MAKES THE CARE FEELS PERSONAL.**

Game practice *in-situ* & at home so to capture the maximum of data.

MIXED REALITY GAMES & TECHNOLOGY



- Haptic scenarios for sensory and emotion regulation
- Room scale mixed-reality movement exercises
- Data-driven insights to ensure continuous progress monitoring
- Contextual, visual and spatial audio

BIO SIGNALS INTEGRATION



- Integration of adds-on for ML training
- Continuous eye-tracking. Innovation in spatial computing
- EEG, ECG, EMG

MULTI-ACCESS PLATFORM



- Multi-skills metrics
- Advanced data measurement system
- Differentiated dashboards

Innovation project supported by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency





Schweizerische Eidgenossenschaft
Confédération suisse
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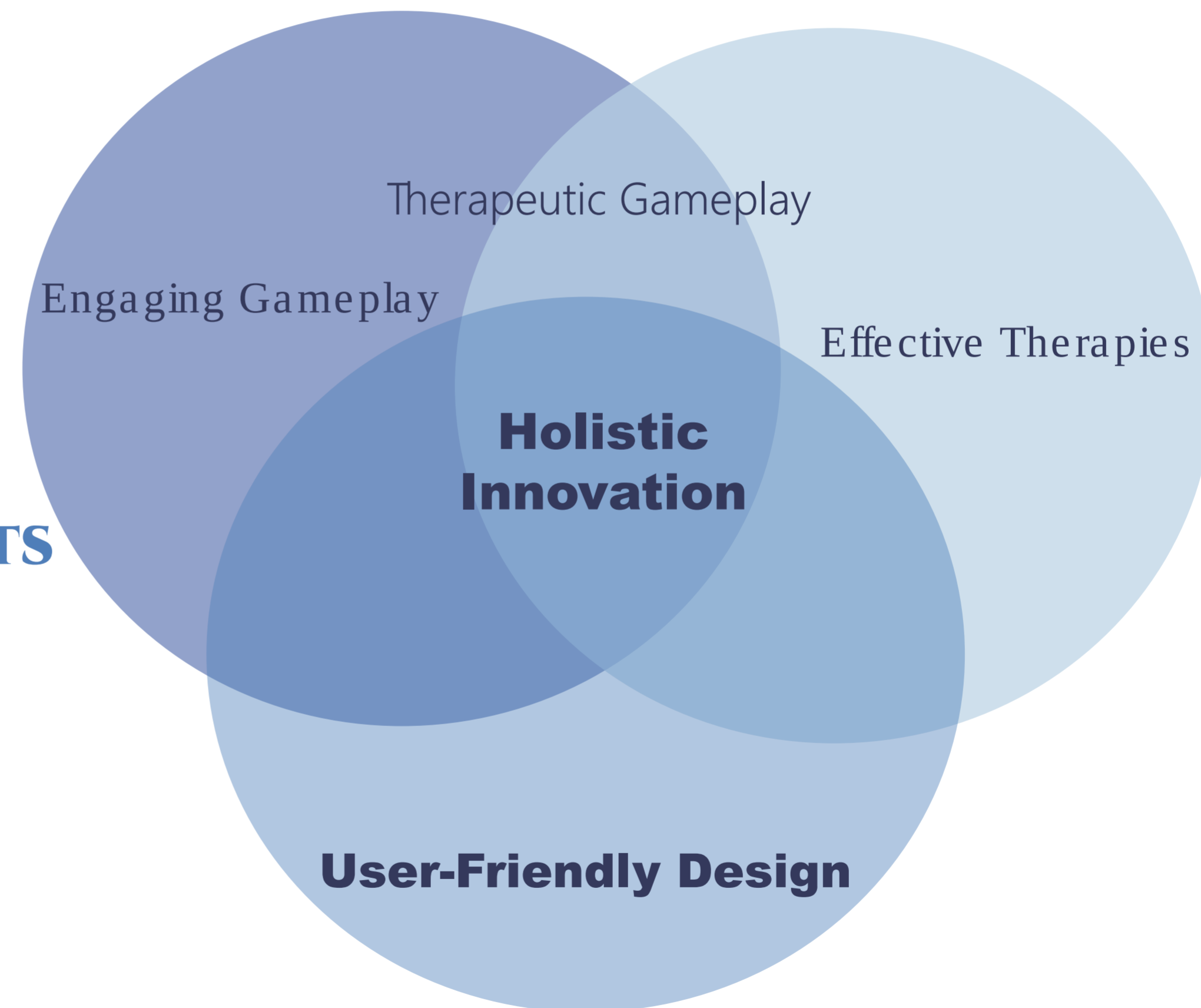
Swiss Confederation

Innosuisse – Swiss Innovation Agency

ASD IS A COMPLEX PATHOLOGY WHICH NEEDS A HOLISTIC APPROACH FOR DATA-DRIVEN SYSTEM. EMPOWERING ASD TEENAGERS THROUGH A MULTISENSORIAL, ENGAGING AND FUN GAMING EXPERIENCE.
Personalisable practice.

TARGETING ASD EXPERTS & NON-EXPERTS

- ✓ CARE CENTERS
- ✓ PSYCHIATRISTS
- ✓ PSYCHOLOGISTS/PSYCHOTHERAPISTS
- ✓ PSYCHOMOTOR THERAPISTS

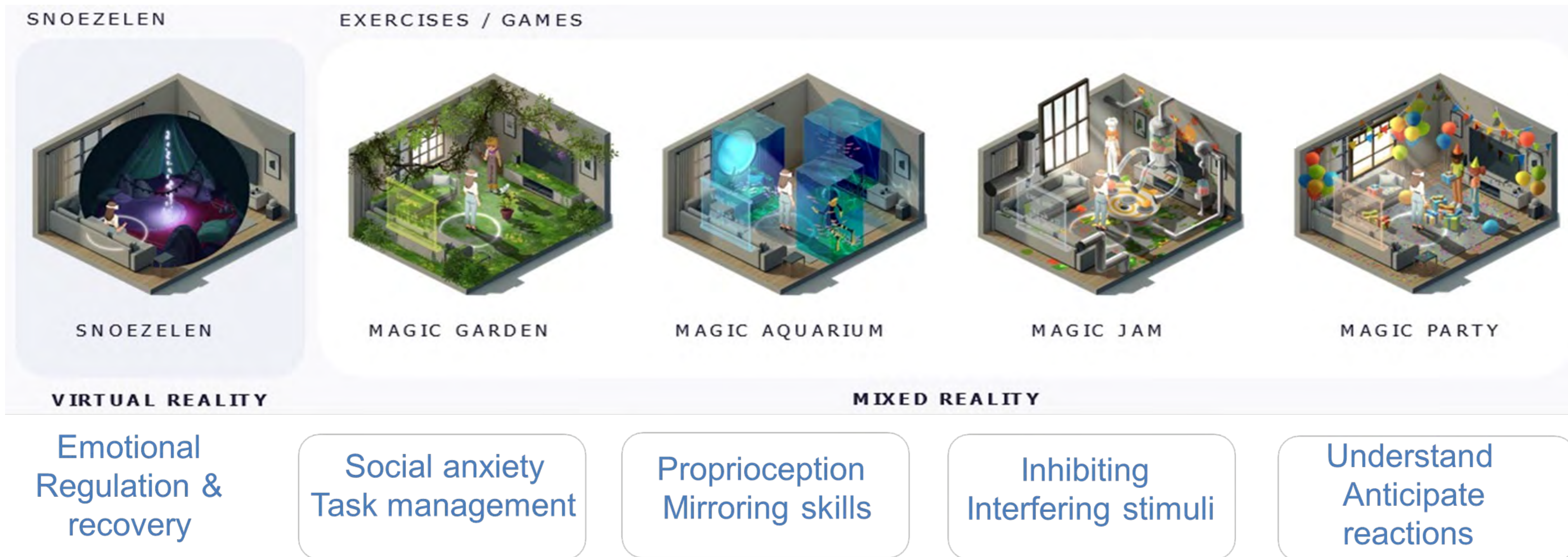


A Game in Mixed-Reality (MR)

MY MAGIC ROOM™

Tracking movement & capturing interactions with virtual objects & avatars provide data to understand how an ASD teenagers interact in «real-life» situation.

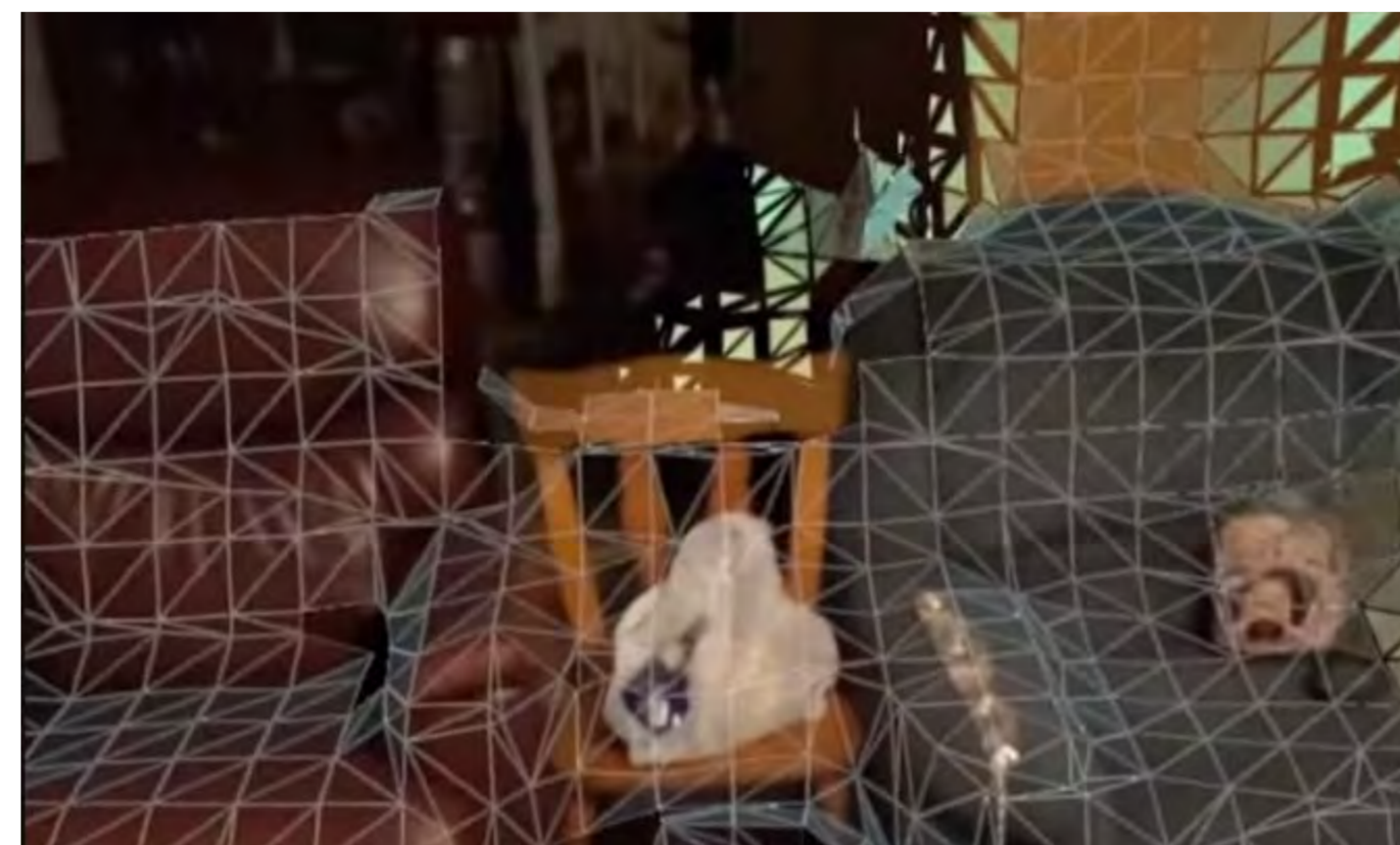
Winner of the





REPEATABILITY

Each time the gameplay will be **SLIGHTLY DIFFERENT** in terms of the placement of items and layout



PROCEDURAL

ARCHITECTURE

Virtual objects will spawn according to the layout of the room mesh. Even if we are in "full VR," the layout of the room will be visible helping reinforce the "safe" and "predictability" of the contexts.



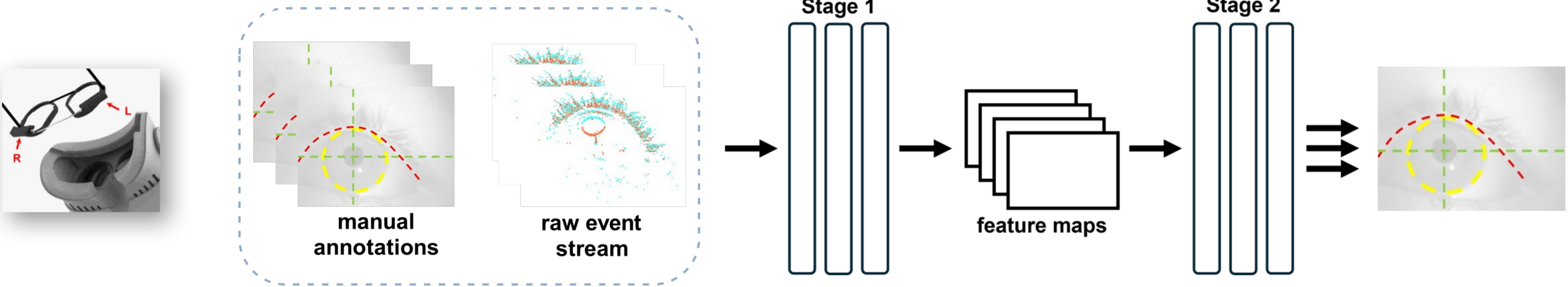
ADAPTIVE DESIGN & SCALABILITY

Small gameplay area → small world
Larger gameplay area → larger world

Adds-on to capture & measure physiological data

REVEAL IN™

MR-based eye tracking analysis system to capture and measure micro-expressions.



Research-based innovation in spatial computing.

EEG, EMG, EKG*

Real-time recording, monitoring.
Measurement concentration/relaxation stress levels
Further correlation with AI for ASD patient profiling

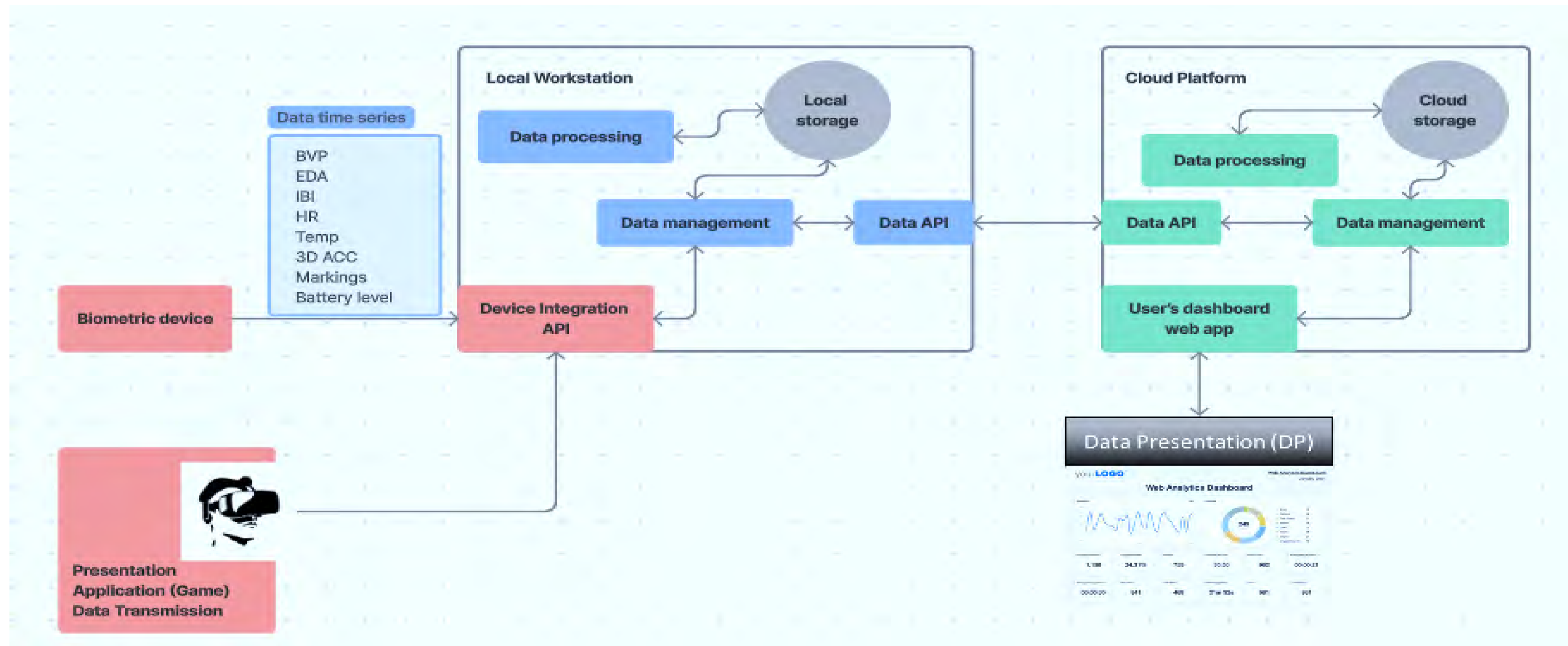


* Innosuisse Project with Clerverpoint, Poland

Data architecture interface

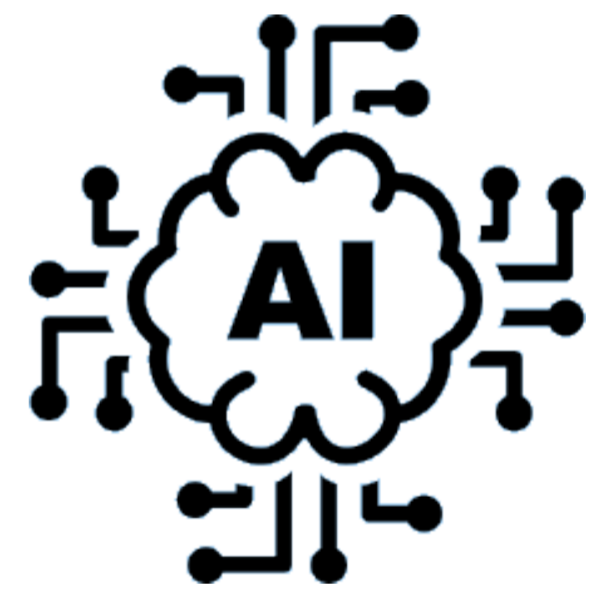
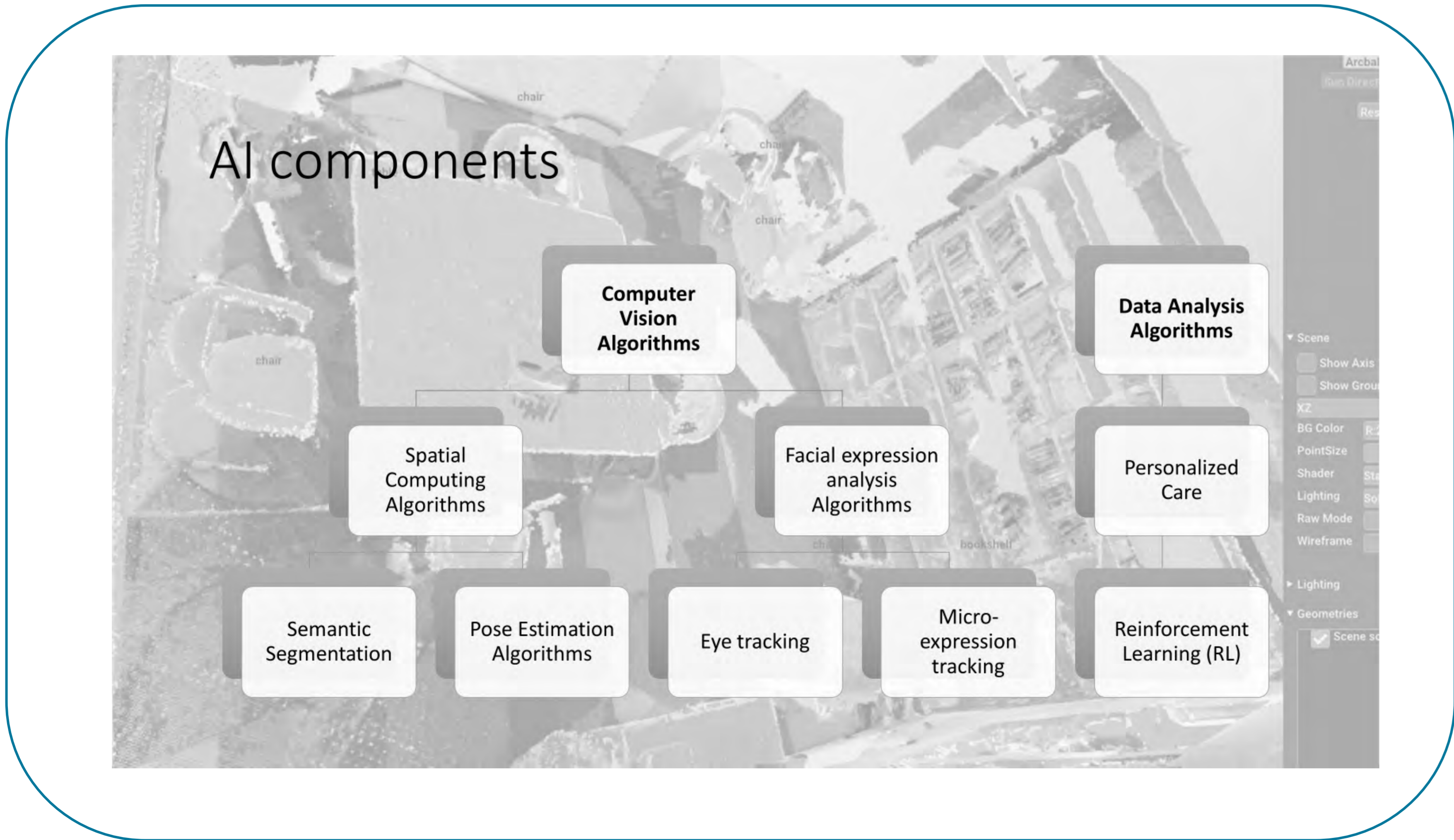
Multisource data collection & analysis. Different time series collection.

LOCAL DATASET.



Data treatment with AI Engine

To further detect ASD biomarkers for precise patient profiling.



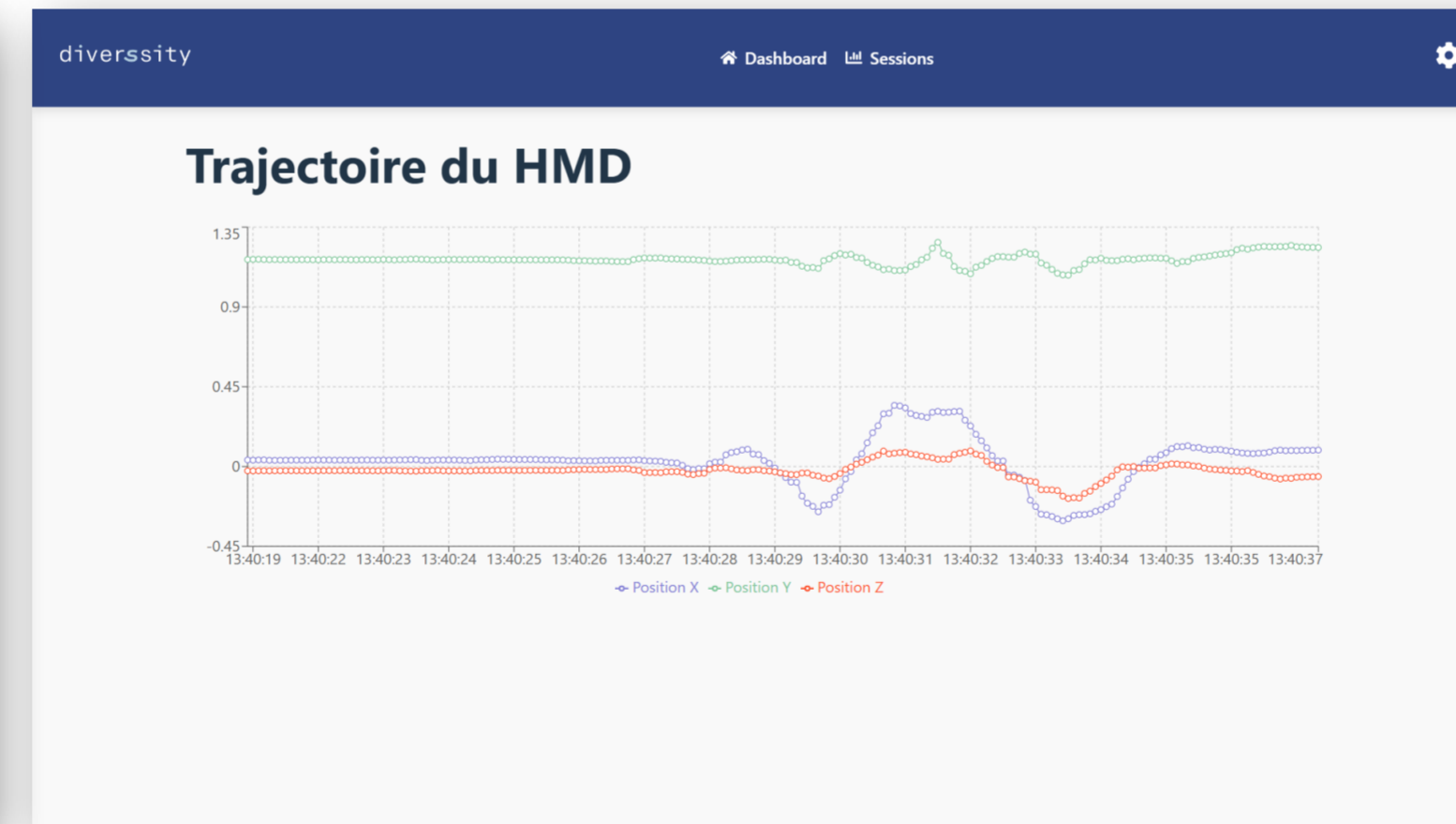
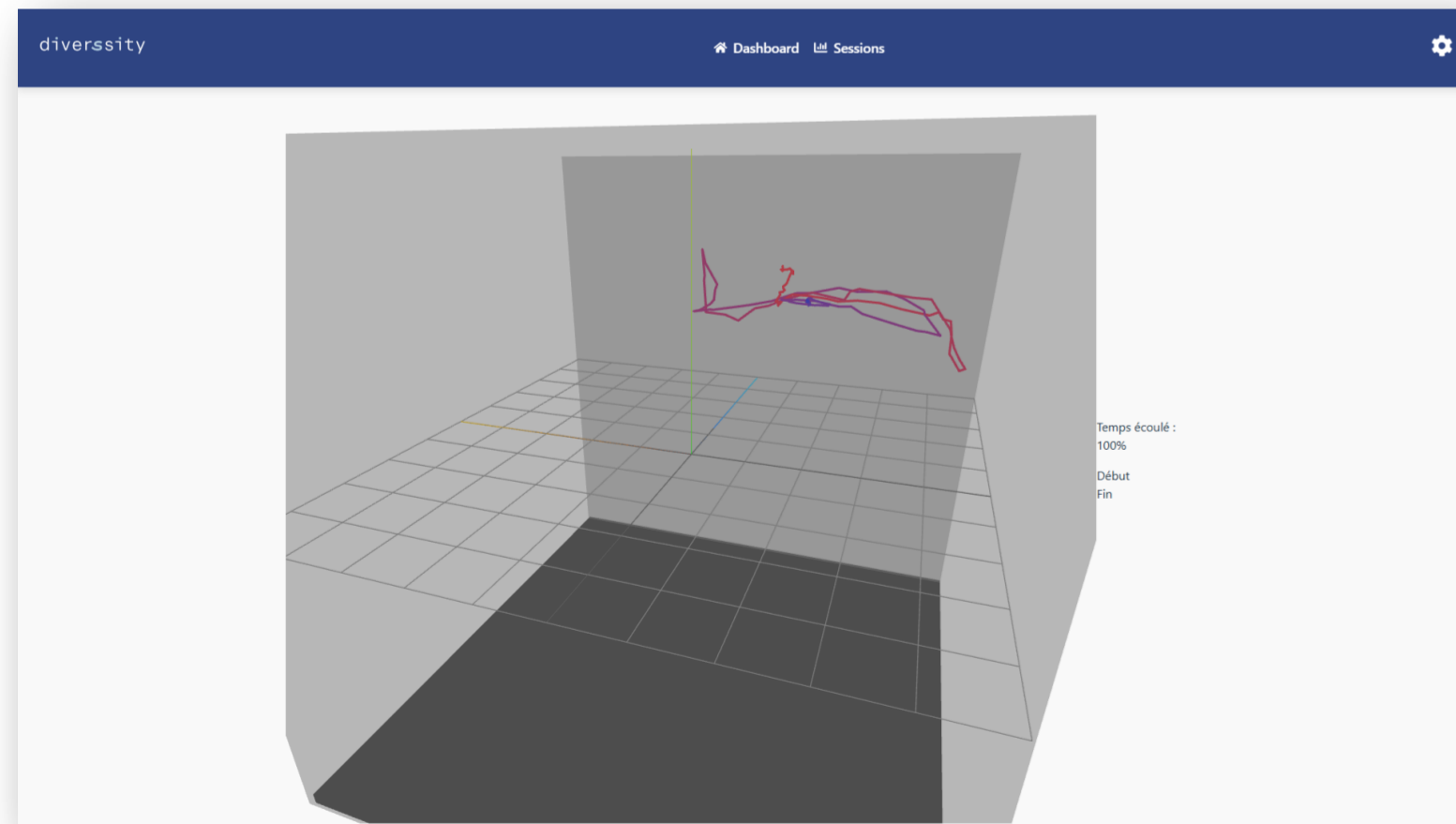
Snapchat of first dashboards - *in preparation*



Sessions des patients

Choisissez une date : mars 2025

Nom de la session	Date et Heure	Patient
session_13165929500	20/03/2025 13:16:59	Alice Dupont
session_1222	05/03/2025 12:22:55	Alice Dupont
session_1217	05/03/2025 12:17:35	Alice Dupont
session_1047	04/03/2025 10:47:37	Marc Lemoine
session_1028	04/03/2025 10:28:20	Alice Dupont
session_1019	04/03/2025 10:19:06	Emma Fontaine
session_1340	27/02/2025 13:40:37	Emma Fontaine
session_1748	26/02/2025 17:48:59	Emma Fontaine
session_1731	26/02/2025 17:31:14	Marc Lemoine
session_1725	26/02/2025 17:25:05	Alice Dupont
session_1724	26/02/2025 17:24:18	Julien Morel
session_1623	26/02/2025 16:23:37	Julien Morel
session_1412	26/02/2025 14:12:00	Marc Lemoine
session_1117	26/02/2025 11:17:01	Marc Lemoine
session_1114	26/02/2025 11:14:19	Alice Dupont
session_1549	25/02/2025 15:49:41	Sophie Bernard



Integrative ASD teens' care : Fitting clinicians & ASD needs

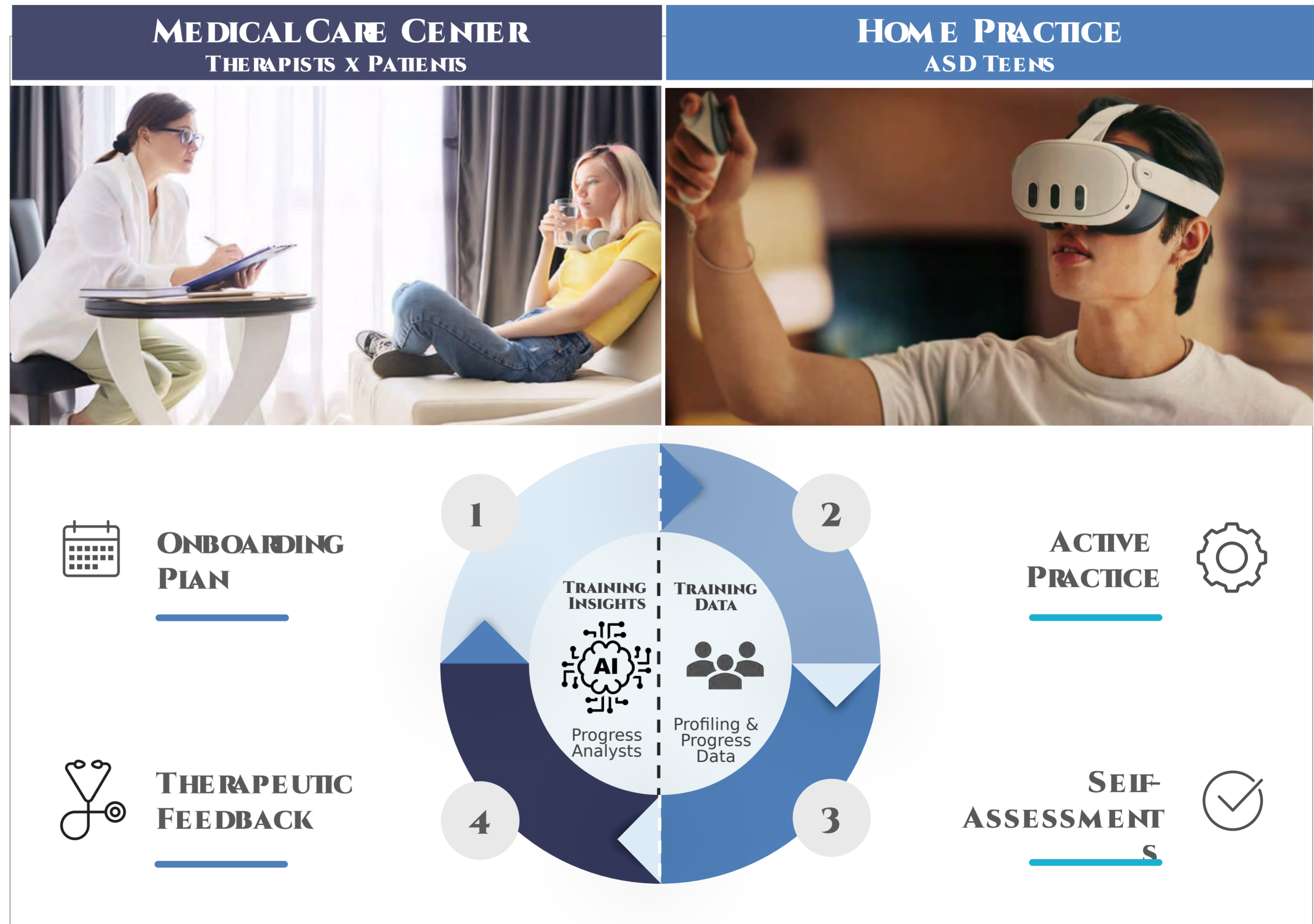
Proposing a *continuum of care* with **data-driven system** software in therapy.

To drive the shift *from Digital Healthcare to Precision Therapy.*



Main Lasting **IMPACTS:**

- ✓ Clinicians & Teens Empowerment
- ✓ Therapy Enhancement
- ✓ Adaptive Technology





University of Applied Sciences

Academic Partner



Multidisciplinary Clinique

Partner in Neurodevelopmental Disorder Art & Medical Therapy



Medical Consultation

Partner in Neurodevelopmental Disorders Support for Children & Families



Association for ASD Individuals

ASD-Specific Support Partner



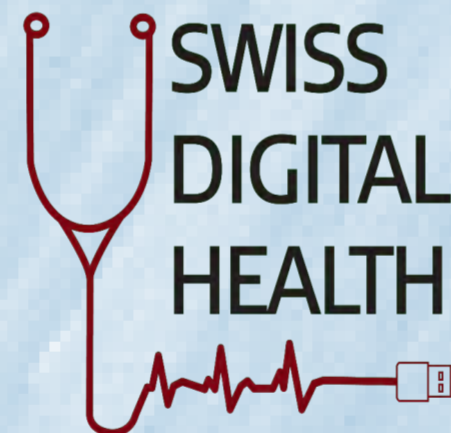
Swiss XR Facilitation & Promotion

Immersive Tech Industry Advisor



Foundation to support Wallis innovation

Incubator & Startup Support



Healthcare Innovation Platform

Cross-disciplinary Network Partner



XR Professionals' Cluster

European Dissemination Partner



Patent & Trademark Attorneys

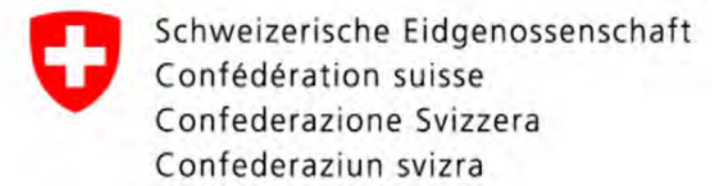
IP Advisory & Patenting



Autism Association

Trade association Romandie

Innosuisse - Swiss Innovation Agency



Research-based Innovation

Federal Innovation Partner



Regulatory compliance

Advisory & Medical device



Communication Agency & Media Design

Branding & Website



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Anne-Laure Héritier
al.heritier@diverssity.io
+41 79 561 49 70
www.diverssity.io