A Multi-Pillar Framework to Address Childhood Obesity by Building on an EU Biobank, Micro-Moments and Mobile Recommendation Systems

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BIO-STREAMS

BIO-STREAMS: Addressing Childhood Obesity in the EU

BIO-STREAMS

„Building a brighter, healthier future for the next generation of Europeans"

A 4-year Horizon Europe Research & Innovation Action **(2023-2027)** addressing the alarming health challenge affecting nearly **1 in 3** children in the EU (29% of boys and 27% of girls).

EU Childhood/Adolescence Virtual Obesity Biobank
First EU-wide data sharing center standardizing collection and expanding data networks across countries for children experiencing obesity

BIO-STREAMS Digital Platform
Integrated solution offering personalized risk assessments, prevention programs, *Serious Games* and the *ActiveHealth* App to support healthy behaviors

EU Community Network
Evidence-based knowledge communication, weight-neutral approaches, and community engagement campaigns for healthier environments

Project's Scale
- 30 partners from 15 EU countries
- 7 hospitals in 6 EU countries
- 5 school sites in 5 EU countries
- Advanced machine learning for personalized support

Knowledge Chain Model
- EU-wide biobank with data from diverse populations
- Balance of health, technical, and socioeconomic domains
- Family-centered approach considering micro-moments
- Community network bridging research and implementation

BIO-STREAMS: Use Cases

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„**Approaching childhood obesity through personalized clinical recommendations and community-based family interventions to empower healthier lifestyle choices "**

Personalized recommendation system for obesity prevention **Clinical Setting**

empower children & parents towards informed decisions;

identify biological pathways conferring efficacy of preventive behavior;

identify factors differentiating among metabolically healthy, metabolically unhealthy;

identify cases at risk for metabolic disfunction

1050 children and adolescents involved in prospective 6M intervention

Living Lab 1

Community-based family-intervention for obesity prevention **School Setting**

empower citizens to prevent obesity via informed lifestyle choices;

promote healthy diets & physical activity, increasing self-efficacy;

increase trust in knowledge-based recommendations from health authorities;

motivate citizens to provide their health data to the Bio-Streams Biobank.

2000 students (aged 9-14) and parents in prospective 1Y intervention

Living Lab 2

BIO-STREAMS: Human-Centric Approach

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Creating an inclusive, evidence-based digital environment by including relevant end users in early stages of conceptualization, design and development to address childhood and adolescent obesity across Europe

Elicitation Framework

- User research (identify actors exploiting, BIO-STREAMS experts)
- Actor mapping (understand stakeholders and relationships)
- Create personas (describe actors, and define relevant questions)
- Validate personas (assess how well they align with real world, external experts)

Elicit Requirements

- Initial set of requirements (BIO-STREAMS experts)
- Initial set of KPIs (BIO-STREAMS experts)
- Real-world requirements and stories (surveys delphi studies, workshops, and semi-structured direct dialogue)
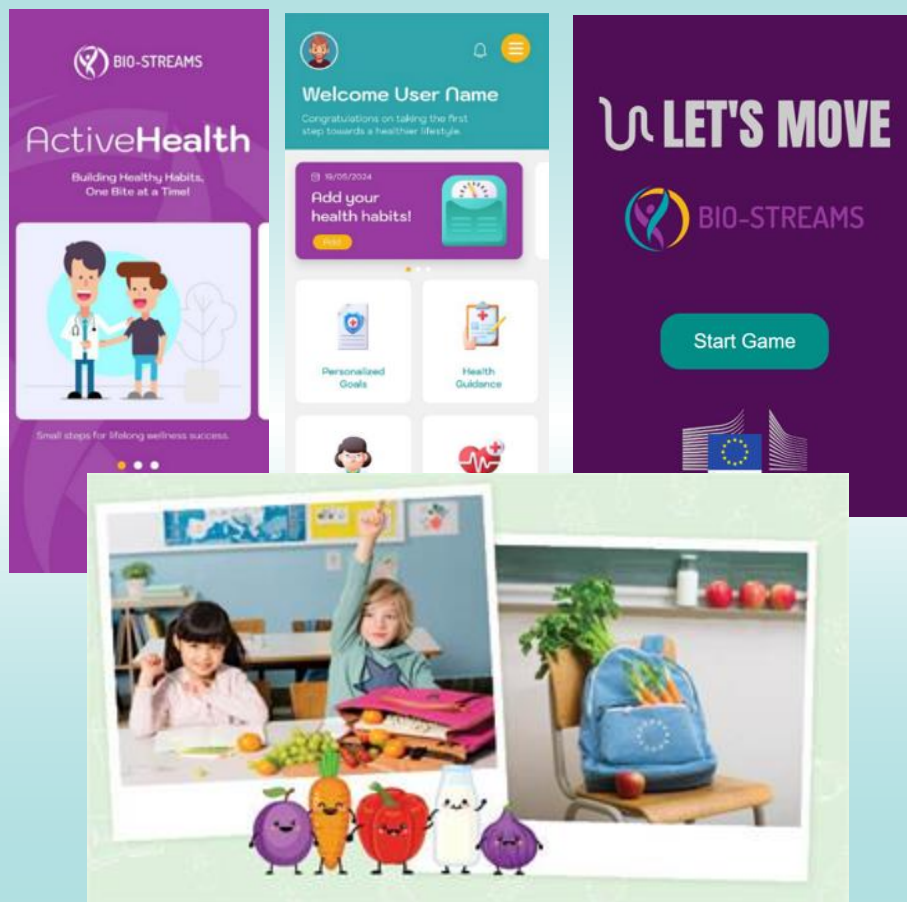- Contextual interviews

Ecosystem for Co-creation

- Mockups and unmoderated usability tests, evaluating and adjusting the storyline
- Patient and public involvement in study design
- Experiment with solutions and provide feedback

BIO-STREAMS: Understanding children's values

BIO-STREAMS

By centering around children's voices, BIO-STREAMS aims to demonstrate how healthcare can responsibly harness AI and digital interventions to address childhood obesity and other public health challenges