VIPPSTAR. Visually Impaired children and adolescents: bridging the gap with Personalized Prevention Strategies, Tools, Approaches, and Resources - A project financed by the HORIZON-EUROPE Programme (Project n. 101156763-2)

VIPPSTAR: Personalized AI and Digital Health for Empowering Children and Adolescents with Visual Impairment

The VIPPSTAR project, launched in January 2025 and funded by the HORIZON-Europe Programme with a budget of €8.1 million over four years, is set to revolutionize care for children and adolescents with visual impairment (VI). Visual impairment affects an estimated 3.82% of young people globally, impacting their physical, cognitive, and social development. Current care models often lack the continuous, personalized support these children need. VIPPSTAR aims to bridge this gap by providing personalized prevention strategies, tools, approaches, and resources, leveraging advanced digital tools and artificial intelligence (AI) technologies, used ethically and safely.

The project is coordinated by Brescia University (Italy) for neurocognitive visual rehabilitation in infants, with technical support from the **LIGHT Center** for AI technology and the **ASST Spedali Civili** Medical centre A total of 19 partners from 11 countries contribute their expertise, including: **Katholieke Universiteit Leuven (Belgium)**, led by Prof. Els Ortibus, provides expertise in vision rehabilitation and body image development; **Erasmus MC (The Netherlands),** with Johan Pel, will study eye tracking to quantify the rehabilitation progress; **University of Tübingen (Germany)** led by Prof. Marina Pavlova, contributes knowledge on social cognition; **University of Trento (Italy)**, with Prof. Paola Venuti, studies e-learning for VI and physical activity enhancement; **Spindox Labs and ComfTech (Italy)** develop AI-powered avatar assistance and smart textile technologies, respectively led by Cristiano Carlevaro and Alessia Moltani; **University of Ioannina (Greece)**, led by Prof. Dimitris Fotiadis, develops the AI nutrition coach; **Istituto Superiore di Sanità (Italy)** and the **University of Edinburgh (Scotland)**, guided by Maria Luisa Scattoni and Prof. John Ravenscroft, respectively, will establish a cross-national surveillance network for collecting data on children and adolescents with VI across Europe. Further, **University of Limerick (Ireland),** led by Prof. Cristiano Storni, will direct the codesign of all AI tools; **Eodyne Systems** (Spain) with Santiago Brandi, will develop the telemedicine and medical device regulatory aspects; the **Republican Rehabilitation Center for Children (Moldova),** led by **Ecaterina Gincota**, will validate the digital health technologies. The sport associations **Real Eyes Sport** (Italy), led by Daniele Cassioli and **Les Glenans** (France) will test applications for physical activity, while **Views International** (Belgium) will provide dissemination to their stakeholder network.

Key features for Personalized Care will include: a **Digital Telemedicine Platform, with** personalized tools co-designed with VI youths and their families for rehabilitation and daily life support; **AI-Powered Avatar Assistant** that guides children through health routines and offers tailored advice; **Serious Games** to enhance neurocognitive vision. **Nutrition Coach:** AI-vision based food recognition and personalized dietary advice for adolescents with VI; **VIPPSTAR-NET:** a transnational surveillance network dedicated to VI in children and adolescents to enable personalized treatment and research.

By integrating AI and digital health tools into care, VIPPSTAR aims to empower children and adolescents with VI to lead fuller, healthier, and more independent lives.

Project Coordinator: Prof. Elisa Fazzi (UniBS), Technology coordinator: dr. Cesare Furlanello (LIGHT), Head of Advisory Board: Prof. Lotfi Merabet (Harvard Medical Center)

Figure: The three enhancement aspects of the VIPPSTAR framework. (top left) In early childhood, the VIPPSTAR re/habilitation based on intensive parent-based can stimulate brain plasticity to activate and enhance cerebral visual pathways; (bottom left) Childhood: a kid with VI plays the JOYVision serious game to reduce visual processing dysfunctions and improve spatial orientation and planning; (right) In adolescence, a teen with VI can use the VIPPSTAR Avatar in multiple supportive tasks, with the eventual goal of a positive body image, interest in a healthier and a more inclusive lifestyle.

PARTNERS (Principal Investigators):

Università degli Studi di Brescia (Elisa Fazzi) - Italy
Lifescience Innovation Good Healthcare Technology (Cesare Furlanello) - Italy
Azienda Socio-Sanitaria Territoriale Degli Spedali Civili (Serena Micheletti) - Italy
Katholieke Universiteit Leuven (Els Ortibus) - Belgium
Tuebingen University (Marina Pavlova) - Germany
Università degli Studi Di Trento (Paola Venuti) - Italy
Spindox Labs Srl (Cristiano Carlevaro) - Italy
Comftech Srl (Alessia Moltani) - Italy
University Of Limerick (Cristiano Storni) - Ireland
Centrul Republican De Reabilitare Pentru Copii (Ecaterina Gincota) - Moldova
The University Of Edinburgh (John Ravenscroft) - Scotland
University of Ioannina (Dimitris Fotiadis) - Greece
Istituto Superiore Di Sanita (Maria Luisa Scattoni) - Italy
Eodyne Systems Sl (Santiago Brandi) - Spain
Views International (Anca David) - Belgium
Association Les Glénans (Olivier Gutt) - France
Real Eyes Sport (Daniele Cassioli) - Italy
Erasmus MC (Johan Pel) - The Netherlands