Topic idea submitted to IHI - Reference Number: TI_001292

☒ **in your personal capacity?**
☐ **on behalf of an organisation?**

1 Title of your idea

Please provide a short title that accurately reflects the objective(s) of your idea:
A Digital Immune System

2 Scope

Explain the specific challenges/problems to be addressed by your idea and how these affect relevant stakeholders, taking into account what is already known and/or available in the field:
Scope
Today's youth are spending an excessive amount of time on private screens—up to 6 hours daily, totaling approximately 3 months per year or 20 years across a lifetime. This overexposure is not simply a time management issue; it represents a major public health concern with serious physical, mental, and social implications.

Key Challenges:

Mental Health Crisis: Excessive screen time is strongly correlated with increased levels of anxiety, depression, emotional instability, and poor self-worth. These conditions often lead to long-term emotional immaturity and difficulty in managing real-world stressors.

Sleep Disruption: Overexposure to screens—especially before bedtime—has been proven to interfere with natural sleep patterns, leading to chronic sleep deprivation, which impairs cognitive function and emotional regulation.

Physical Inactivity: Screen-heavy lifestyles result in sedentary behaviors, increasing the risk of non-communicable diseases such as obesity, cardiovascular conditions, and metabolic disorders.

Lack of Preventative Tools: Current digital well-being solutions are limited to screen timers or app blockers, which are often easily bypassed or ignored. There is no comprehensive, user-centered solution on the market that effectively reduces screen addiction or promotes healthier digital habits in youth.

Stakeholder Impact:

Youth: Experience declining mental and physical health, reduced social skills, and long-term developmental consequences.

Parents and Educators: Struggle to manage and guide healthy screen behaviors, often without adequate support or tools.

Healthcare Providers: Face increased pressure from the rising incidence of mental health conditions and lifestyle-related diseases.

Society at Large: Bears the cost of reduced productivity, increased healthcare expenditures, and a generation at risk of disengagement and underdevelopment.

Relevant IHI Specific Objectives (SO):

SO1: Contribute towards a better understanding of the determinants of health and priority disease areas

SO2: Integrate fragmented health research and innovation efforts... for improved prediction, prevention, interception, diagnosis, treatment and management of diseases

SO3: Demonstrate the feasibility of people-centred, integrated health care solutions

SO4: Exploit the full potential of digitalisation and data exchange in health care

Please indicate which IHI specific objective(s) (SO), as described in the IHI Strategic Research and Innovation Agenda (SRIA), your idea addresses:

["SO1: contribute towards a better understanding of the determinants of health and priority disease areas"
"SO2: integrate fragmented health research and innovation efforts bringing together health industry sectors and other stakeholders, focusing on unmet public health needs, to enable the development of tools, data, platforms, technologies and processes for improved prediction, prevention, interception, diagnosis, treat- ment and management of diseases, meeting the needs of end-users "
"SO3: demonstrate the feasibility of people-centered, integrate health care solutions"
"SO4: exploit the full potential of digitalisation and date exchange in heath care"]

Please select the keywords that are most relevant to your idea:

["Non-communicable diseases"
"Mental health"
"Paediatric"
"Prediction"
"Prevention"
"Treatment"
"Disease management"
"Digital health"
"Health technology"]

In alignment with the IHI specific objective(s) selected above, specify the objectives of your idea:

The goal is to develop an interdisciplinary, scalable digital intervention that fosters healthier digital behaviors among children aged 7-10. By combining behavioral science, emotional learning, AI, and gamification, the intervention seeks to reduce screen addiction, improve emotional regulation, and increase physical activity. The aim is to co-create a solution with children, caregivers, researchers, and digital developers that is proactive, preventative, and grounded in evidence. The project will establish protocols for a "Digital Immune System" that can self-regulate and support children's well-being, both at home and in school.

3 Expected impacts to be achieved by your idea

Briefly describe the expected impacts to be achieved by your idea, ensuring that they contribute to IHI general and relevant specific objectives, as described in the IHI SRIA:

__Impacts__ are wider long-term effects on society (including the environment), the economy and science, enabled by the outcomes of R&I investments. Impacts generally occur sometime after the end of the project, e.g. successful implementation of digital solutions supporting people-centred care.

__IHI general objectives:__ 1. contribute towards the creation of an EU-wide health research and innovation ecosystem that facilitates translation of scientific knowledge into innovations, notably by launching at least 30 large-scale, cross-sectoral projects, focussing on health innovations; 2. foster the development of safe, effective, people-centred and cost-effective innovations that respond to strategic unmet public health needs, by exhibiting, in at least 5 examples, the feasibility of integrating health care products or services, with demonstrated suitability for uptake by health care systems. The related projects should address the prevention, diagnosis, treatment and/or management of diseases affecting the EU population, including contribution to 'Europe's Beating Cancer Plan'; 3. drive cross-sectoral health innovation for a globally competitive European health industry and contribute to reaching the objectives of the new Industrial Strategy for Europe and the Pharmaceutical Strategy for Europe.

Strengthen Europe's leadership in child digital health innovation

Contribute to an EU-wide approach to preventative pediatric health

Generate actionable insights and validated methods for addressing digital overuse in children

Demonstrate the scalability of behavior-change technologies across EU countries

Enable better resource use in healthcare systems through early prevention of mental and physical health decline

4 Why should your idea become an IHI call topic?

Explain why collaboration through a cross-sectoral and multidisciplinary public private partnership is needed in particular:

Why does it require collaboration among several industry sectors (*e.g.* pharma, vaccines, biotech, medical devices, in vitro diagnostics, radiotherapy, medical imaging health ICT)?

Why does it require collaboration between private (industry) and public partners (*e.g.* academia, healthcare practitioners, patients, regulators)?

Solving screen overuse in children demands cross-sectoral collaboration: behavioral scientists, pediatric health experts, educators, digital technologists, and health ICT providers must unite. No single sector holds all the answers. Public-private collaboration enables co-development of ethical, scalable, and child-centered interventions. The IHI platform is uniquely positioned to align research with innovation and ensure safety, accessibility, and efficacy through stakeholder engagement. Emmo—the proposed system's AI-based emotional companion—symbolizes this synthesis.

Why is the contribution of industry needed to achieve the expected impacts?

__Contribution of industry__: Large companies that are members of the IHI industry partners (i.e. COCIR, EFPIA, EuropaBio, MedTech Europe, Vaccines Europe) contribute to the programme, primarily through 'in-kind' contributions (e.g. their researchers' time, laboratories, data, compounds). At least 45% of each project's total costs have to be in-kind contribution.

The success of this initiative depends on cutting-edge digital capabilities and real-world deployment capacity provided by industry partners, especially in health tech, gamification, wearables, and AI. Industrial input is essential for robust prototyping, validation in diverse user environments, and long-term sustainability. In-kind contributions, such as technical infrastructure, engineering teams, and data pipelines, will be critical to develop a solution that can scale across Europe and beyond. Industry also brings experience with user engagement, co-design, and compliance with data and safety standards.