

Panacea Gaming Platform

A major step for Healthcare 4.0

EXECUTIVE SUMMARY

When attempting to assist vulnerable individuals while reducing healthcare costs, interventions must be efficient, sustainable and broadly applicable. Panacea Gaming Platform's clinical gamification – including guidelines, stakeholder matchmaking and application evaluation – presents a solution.

PROJECT ORIGINS

Children with disabilities represent 13-15% of the paediatric population. For the elderly population, this figure is 40%. The incidence rate of Autism Spectrum Disorders (ASD), meanwhile, has increased by 600% in the last ten years. Gamification (the use of gaming elements in non-gaming contexts) offers a means for those affected to practice skills such as memory and social interactions. In turn, this benefits those within their circle of care, their practitioners and the developers that create such games. The resultant research, standardisation and applications can create systemic enhancements in how conditions such as dementia and autism are treated, improving quality of life and saving billions.

Although gamification has already been applied in learning contexts, current platforms are not tailored to the clinical community. The ITEA project Panacea Gaming Platform (PGP) sought to rectify this through several innovations: a gaming platform that can be licensed to software developers, a suite of health games, an evaluation, scoring and certification system (TERCA Model) with guidelines and a stakeholder matchmaking system. The games were developed by various partners, who are now working to commercialise them via the start-up Kids DigiHealth Network. To ensure that PGP remains state-of-the-art, an Advisory Board brings together medical experts from Europe, Canada and South Korea to update TERCA, support developers and vet games prior to release.



Kids DigiHealth Network aims to enhance kids digital health ecosystem

TECHNOLOGY APPLIED

TERCA lies at the heart of PGP and serves as a health gamification ecosystem, allowing developers to follow clinical guidelines that facilitate their development process. Applications can be developed around this platform or communicate with it. A commercialisation model is embedded on top of this, providing basic game assessments instantaneously via automated widgets that collect online data. Full assessment is available from Kids DigiHealth Network. The matchmaking system is accessible through the project website, acting as a search engine for ecosystem services such as quality assurance and research.

The applications are also technological innovations in their own right. Teleroo VR, for instance, uses immersive techniques (e.g. virtual reality) to train practitioners and provides an artificial intelligence framework to measure skills. Neuro-World, meanwhile, sends data to a back-end server and analyses it using machine learning algorithms, allowing therapists to track children's progress. Data is stored in a central cloud-based repository, enabling more comprehensive analysis and mining. A thorough privacy and security analysis ensures that PGP conforms to each country's standards.



MAKING THE DIFFERENCE

Healthcare 4.0 – the leveraging of digitalisation in a person-centred manner – represents the future of clinical treatment. PGP's significance lies in its clinical, personal and societal benefits: the opportunity to bring healthcare to individuals themselves, relieving the burden on hospitals and allowing those with disabilities to personalise their therapy. Additionally, PGP can be used by educators to pre-empt developmental difficulties for at-risk children (such as those in poverty). As the cost to care for individuals with autism is between USD 1.4 and 2.3 million per person, applications that offer earlier diagnosis and more effective treatment have the potential to create enormous savings.

Commercialisation has just begun and is already showing positive results. Appi@Home, an application from SME BeWell and KU Leuven, has been adopted by Belgium's National Institute for Health and Disability Insurance and deployed in 103 medical centres, resulting in 25,000 daily patients. This allowed BeWell to grow from 13 full-time employees to 34. As this field is rapidly emerging, PGP allows companies to enter into a

domain which is only set to become bigger: given that health and education are multi-trillion-dollar markets, with telehealth alone predicted to be worth USD 34 billion by 2020, ROI will be measured in billions. PGP welcomes new companies to the ecosystem, particularly big gaming partners for the development of new suites.

The revolutionary nature of this domain is underpinned by the fact that no standards exist. PGP is thus pursuing standardisation for TERCA in all countries involved, establishing best practices to ensure that the model continues to reflect developments within the field. In early 2020, a paper on TERCA will be published and a media presence has already been achieved in outlets such as Global TV and CTV News. Notably, PGP was presented by The Uncomplicated Family to 500,000 participants from 196 countries at the 2019 Special Olympics – one of only ten companies worldwide to be selected. As a result of this positive attention, follow-up projects have begun on smart textiles, smart analytics for digital therapeutics and VR therapy. This highlights the endless number of possibilities that Panacea Gaming Platform has uncovered.

MAJOR PROJECT OUTCOMES

Dissemination

- More than 5 publications: e.g. ICHI 2018, ICHI 2019, 2 Master Theses.
- More than 5 presentations at conferences/fairs: Special Olympics in Abu Dhabi, presentation to Canadian Senate & MP, Canadian Trade Mission in Republic of Korea, etc.

Exploitation (so far)

New products:

- A Suite of Gamified Applications and Health Games: Appi@Home, Conversation Builder, Dino Island, NeuroWorld PGP, Teleroo VR.
- Clinical Guidelines for Serious Games and Gamified Apps in Health: Guidelines that address understanding the needs of special populations in relation to the sample games/gamified applications.

New services:

- TERCA QA model and scoring system to evaluate the effectiveness of serious games/apps in health.
- Guidelines for Serious Games in Health.
- Business matchmaking system: to connect game developers with health institutions.

Spin-offs

- Kids DigiHealth Network: spin-off that acts as a trusted voice and uses advanced technology and state-of-the-art methodologies to provide the best and most effective tech recommendations for those with disabilities and their families.

ITEA is a transnational and industry-driven R&D&I programme in the domain of software innovation. ITEA is a EUREKA Cluster programme, enabling a global and knowledgeable community of large industry, SMEs, start-ups, academia and customer organisations, to collaborate in funded projects that turn innovative ideas into new businesses, jobs, economic growth and benefits for society.

Panacea Gaming Platform 15002

Partners

Belgium

BeWell

KU Leuven

Canada

The Uncomplicated Family

University of Victoria

QoC Health

Korea

Rhaon Entertainment

Woorisoft

Slovenia

Comland

Project start

April 2017

Project end

May 2020

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