

XPANCEO Storytelling

XPANCEO is a deep tech company that launches the first smart contact lenses with AR vision and health monitoring features. The company is based in Dubai and is formed by an experienced team of executive leaders and over 40 scientists and engineers from leading universities, research institutions, and other deep tech companies. Its mission is to develop the next generation of computing via an invisible and weightless smart contact lens that enables humans to replace all possible gadgets and use all the usual software and apps in a single interface.

Unlike other deep tech and healthcare companies that abandoned smart contact lens projects, **XPANCEO** has developed new components that allow the creation of the first smart contacts made from materials and electronics as thin as an atom. **Since 2021, XPANCEO** has developed and rigorously tested three distinct prototypes in their laboratory, enabling **night vision and zoom capabilities, real-time health monitoring, and the ability to view video and graphic content in AR**. These new, all-in-one contacts will boast all these features while replacing bulky AR/VR glasses.

XPANCEO combines over **20+ potentially patented technologies** in advanced optic and photonics, novel material, AI, and neural interfacing, which enable the company to create ultra-compact and highly efficient optoelectronic devices in smart contact lenses, paving the way for a gradual transition from traditional silicon technologies to the "**graphene valley**" future. Graphene, a material that played a crucial role in groundbreaking experiments leading to the 2010 Nobel Prize in Physics, holds particular significance for the company. This is because the components of classical optoelectronic materials are too bulky for practical use, highlighting the importance of graphene in achieving the desired advancements.

The company was co-founded by Valentyn S. Volkov, a Ukrainian scientist with an **h-Index of 38** and **over 8000** citations in leading international publications, and Roman Axelrod, an experienced entrepreneur who supervised three successful exits. 50 percent of **XPANCEO's** scientific team holds a PhD degree. Furthermore, **XPANCEO** has established scientific collaboration with distinguished scientists from renowned universities across the globe, such as the Donostia International Physics Center (Spain), Chalmers University of Technology (Sweden), National University of Singapore (Singapore), University of Oviedo (Spain), University of Manchester (UK), Aix-Marseille University (France), and the University of Zaragoza.

The use of classical optoelectronic materials and technologies has proven insufficient to realize this project, as the resulting components are too bulky to be effectively integrated into a practical and user-friendly contact lens. The high refractive indices, coupled with the giant anisotropy of the materials used in waveguide-based devices, are key factors that enable a more efficient light bending and guiding process than modern optical devices. To overcome these challenges, Xpanceo opted for a groundbreaking approach by incorporating 2D materials instead of the mentioned technologies, paving the way for a more streamlined and advanced smart contact lens design. This opens up possibilities for the realization of ultra-compact optical elements. One more technology used by **XPANCEO** is its flexible and transparent electronics, based on highly **conductive quasi-2D metallic films** with thicknesses of only a few nanometers. To engage with these technologies, scientists are employing AI. It can predict the properties of new materials and devise methods for creating custom materials. Additionally, AI assists scientists in understanding which materials to combine to achieve new material properties. Scientists are integrating neural interfacing units into the lens. Neural Interfacing gives the user full control over the applications without the need for awkward eye movements, blinks, or extra controllers.

At this stage, XPANCEO has meticulously created three independent prototypes to integrate them to produce the **Perfect Smart Contact Lens**. This innovative lens is poised to unlock extraordinary human abilities. The first is the **Supervision Smart Contact Lens**, which grants users superpowers such as visual enhancement, color correction, night vision, and zoom. The second intermediate product is a **Sensory Smart Contact Lens**, equipped with a range of built-in sensors that seamlessly measure critical health indicators such as IOP, glucose levels, cortisol, and more. This cutting-edge device offers real-time and comprehensive recommendations, including insights like, "**You shouldn't have another cup of coffee; your blood pressure is high**," making health monitoring as convenient as ever. The applications of the lens extend to both medical settings and private use, making it a life-changing solution for individuals dealing with conditions like diabetes, stress, and dry eye syndrome. **The Holographic Smart Contact Lens** provides an infinite XR experience and allows the wearer to interact with content like video, social media, gaming, and more. Combined in the **Perfect Smart Contact Lens**, these innovations seamlessly merge all existing gadgets into one invisible, weightless contact lens, which feels as natural to the wearer as their own vision. Operated effortlessly through voice, gaze, gestures, and mind, it redefines human-technology interactions and reinvents how we experience the real and digital worlds.

XPANCEO recently secured a **\$40 million** seed round from a single investor, **Opportunity Venture (Asia)**. XPANCEO was recognized as one of the **top five** optic laboratories in the world by international consulting firm BCG and has practical experience in **developing and studying unique materials, like graphene and other 2D materials**. This paves the path for the development of next-generation, ultra-compact optoelectronic devices.

XPANCEO in numbers

- Established in 2021
- Raised \$40 million in a seed round led by Singapore-based Opportunity Ventures
- Cutting-edge team with 40 scientists, engineers, and business operations experts
- 50% of researchers hold PhDs
- Considered one of the Top 5 optics laboratories in the world (by BCG) and Top 10 Research Institutions by UAE Nature Index
- 20+ potentially patentable technologies