



UAE
Centre for the
Fourth Industrial
Revolution

Glucose
5.6
mmol/L



6h 12h 24h

In range 92%

High 6%

Low 2%

4IR Technologies:

**AI, Advanced materials,
IoT**

Emirate:

Dubai

Maturity:



Proof of Concept

Type:

Private

HEALTHCARE

069

Smart Contact Lenses

ACTORS

XPANCEO

SNAPSHOT

XPANCEO is developing an ultra-thin smart contact lens that compresses AI, nanophotonics, biosensing, and extended reality into a single device worn directly on the eye. Based in Dubai, the company raised USD 250 million in a Series A round in July 2025 at a USD 1.35 billion valuation,¹ the largest Series A ever raised in the UAE and the largest globally in AR/VR and wearables.² At GITEX Global 2025, XPANCEO presented six working prototypes spanning glucose sensing, intraocular pressure monitoring, AR vision, night vision, colour correction, and holographic display.³

WHY IT MATTERS

Smart contact lenses push health monitoring beyond phones, watches, and external wearables into a device that sits directly on the eye. The eye provides continuous access to physiological signals that conventional consumer devices cannot reliably capture: tear fluid contains biomarkers correlated with blood glucose, lactate, cortisol, hormones, and even cancer indicators,⁴ while intraocular pressure is the only modifiable risk factor for glaucoma, a condition affecting over 70 million people worldwide and the leading cause of irreversible blindness.⁵

Current intraocular pressure (IOP) measurement relies on episodic readings in a physician's office, typically only a few times per year, missing the nocturnal pressure peaks and daily fluctuations now recognised as critical to disease progression.⁶ If clinically validated, a smart lens capable of continuous IOP or glucose monitoring would shift diagnosis from episodic clinic visits to always-on physiological tracking in a device the patient already knows how to wear. That compression of AI, biosensing, microelectronics, and wireless power into a near-invisible form factor is what makes this a frontier 4IR case rather than an incremental improvement in wearable technology.

HOW THE TECHNOLOGY WORKS

XPANCEO's prototypes combine optical, electronic, and biosensing components inside contact lens formats. The health readings prototype integrates a miniature sensor designed to detect glucose in tear fluid and transmit readings wirelessly to a smartphone, using electrochemical technology similar to compact glucometers.⁷ The IOP lens embeds an optical pattern that reacts to intraocular pressure changes without blocking vision. Users scan the pattern through an AI-powered app trained on more than 10,000 IOP measurements to estimate eye pressure,⁸ with a reported 50% improvement in measurement effectiveness over existing non-invasive methods.⁹

Other prototypes explore AR microdisplays consuming as little as 1 to 3 microwatts (100 to 300 times less than conventional AR glasses), wireless power transfer with twice the range of previous industry solutions, night vision through nanoparticle-enhanced lenses, colour correction for colour blindness, and holographic display.^{10,11} Together, the prototypes indicate XPANCEO's intended pathway: first validating individual sensing, display, power, and data-transfer functions, then integrating them into a single clinically safe smart lens, with an integrated prototype target of 2027.

USD
250M
RAISED

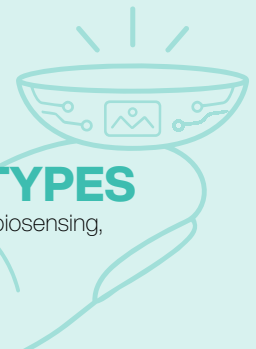
in the largest Series A
round ever in the UAE

USD
1.35B
VALUATION

following the raise

15
PROTOTYPES

produced across biosensing,
AR and display



IMPACT AND RESULTS

The company has raised USD 290 million in total funding (USD 40 million seed, USD 250 million Series A), produced 15 working prototypes across biosensing, AR, power, and display systems, and expanded its Dubai R&D laboratory with a dedicated biosensing facility opened during GITEX 2025.^{12,13}

XPANCEO is ranked the number one corporate research institution in Western Asia and one of the top three research institutions in the UAE by the Nature Index,¹⁴ with 110 scientific publications.¹⁵ For Dubai, XPANCEO positions the city not only as a market for imported medtech but as a base for frontier R&D at the intersection of AI, nanotechnology, biosensing, and human-computer interaction. The Series A was among the top three hardware funding rounds in history globally.¹⁶



WHAT'S NEXT

The next milestone is integration. XPANCEO must move from individual working prototypes toward a single smart lens that combines sensing, display, power, wireless data transfer, and user-facing functionality in a safe and comfortable form. The company has indicated its Series A funding will support product development, team expansion, and its path to market, with an integrated prototype target of 2027.

For healthcare, the decisive steps will be calibration, safety testing, clinical validation, and regulatory approval. If smart lenses can reliably monitor eye pressure or tear-fluid biomarkers in a clinically validated format, they could create a new class of continuous health interfaces. The 15 working prototypes, supported by XPANCEO's R&D capabilities, funding and publication record, demonstrate that the programme has moved beyond the conceptual stage and established a strong foundation for progression towards a regulated medical device.

"In just 24 months, we've developed 15 working prototypes, each unlocking a new layer of possibility. Our vision remains the same: to merge all your devices into a single, invisible interface," said Roman Axelrod, Founder and Managing Partner of XPANCEO.¹⁷

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