

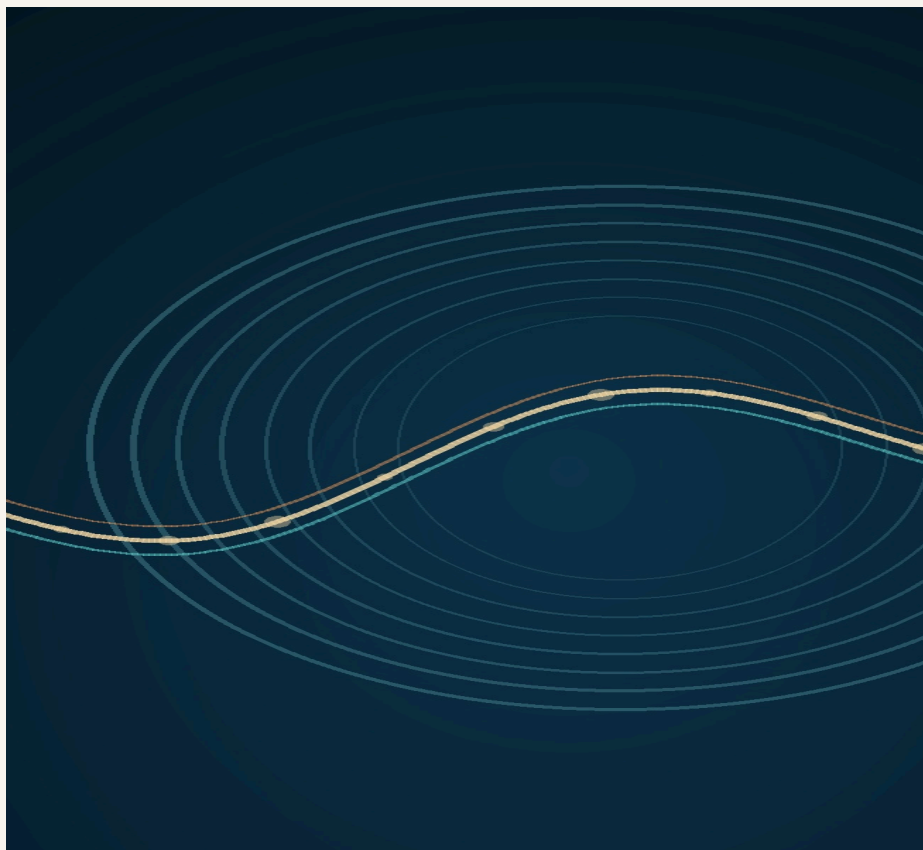
Beyond Spectacle Independence

How the premium IOL market is shifting from maximum range to better quality of vision

UPDATED SEPTEMBER 2026 / VERSION 1.1 / EVIDENCE CUTOFF: 21 SEPTEMBER 2026

THE THESIS

The next phase of premium-IOL competition is not simply about adding range. It is about reducing the optical and economic penalty required to achieve it.



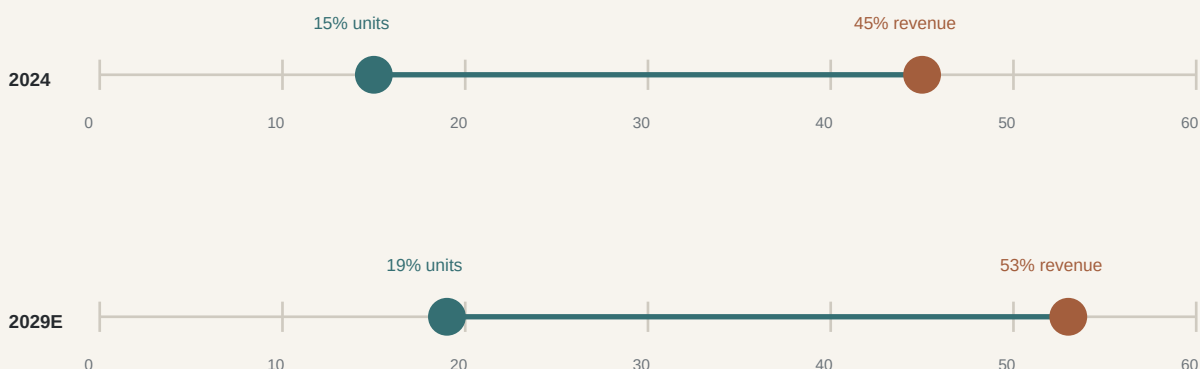
Edited by Burak Mergen, MD, FEBO, FICO

Evidence / surgeon interpretation / commercial implication

Premium IOLs remain a minority of units - but not of value

MarketScope data cited by Carl Zeiss Meditec place premium IOLs at roughly 15% of global units but 45% of global IOL revenue in 2024. The imbalance is expected to widen by 2029.

SHARE OF GLOBAL IOL MARKET



The commercial importance of premium IOLs is disproportionate to their procedural share.

COMMERCIAL IMPLICATION

Small changes in patient conversion, surgeon adoption or platform switching can matter materially to manufacturers because the category carries disproportionate economic value.

Source: MarketScope 2024 data cited by Carl Zeiss Meditec [R1].

The evidence supports a trade-off - not a category caricature

A 2023 meta-analysis of 22 studies / 2,200 eyes found better near vision and spectacle independence with trifocals, while contrast sensitivity, halos, glare and satisfaction did not differ significantly at category level. A 2024 Cochrane review judged the comparative evidence uncertain.

OUTCOME	TRIFOCAL VS EDOF	READ-THROUGH
Near vision	Favours trifocal	Full-range optics retain a clear functional advantage.
Spectacle independence	Favours trifocal	Still a central premium-IOL value proposition.
Intermediate vision	Broadly comparable	Architecture-specific differences matter more than labels.
Contrast / halos / glare	No consistent difference	Avoid 'trifocal bad / EDOF good' shorthand.
Patient satisfaction	No significant difference	Selection and expectations remain critical.

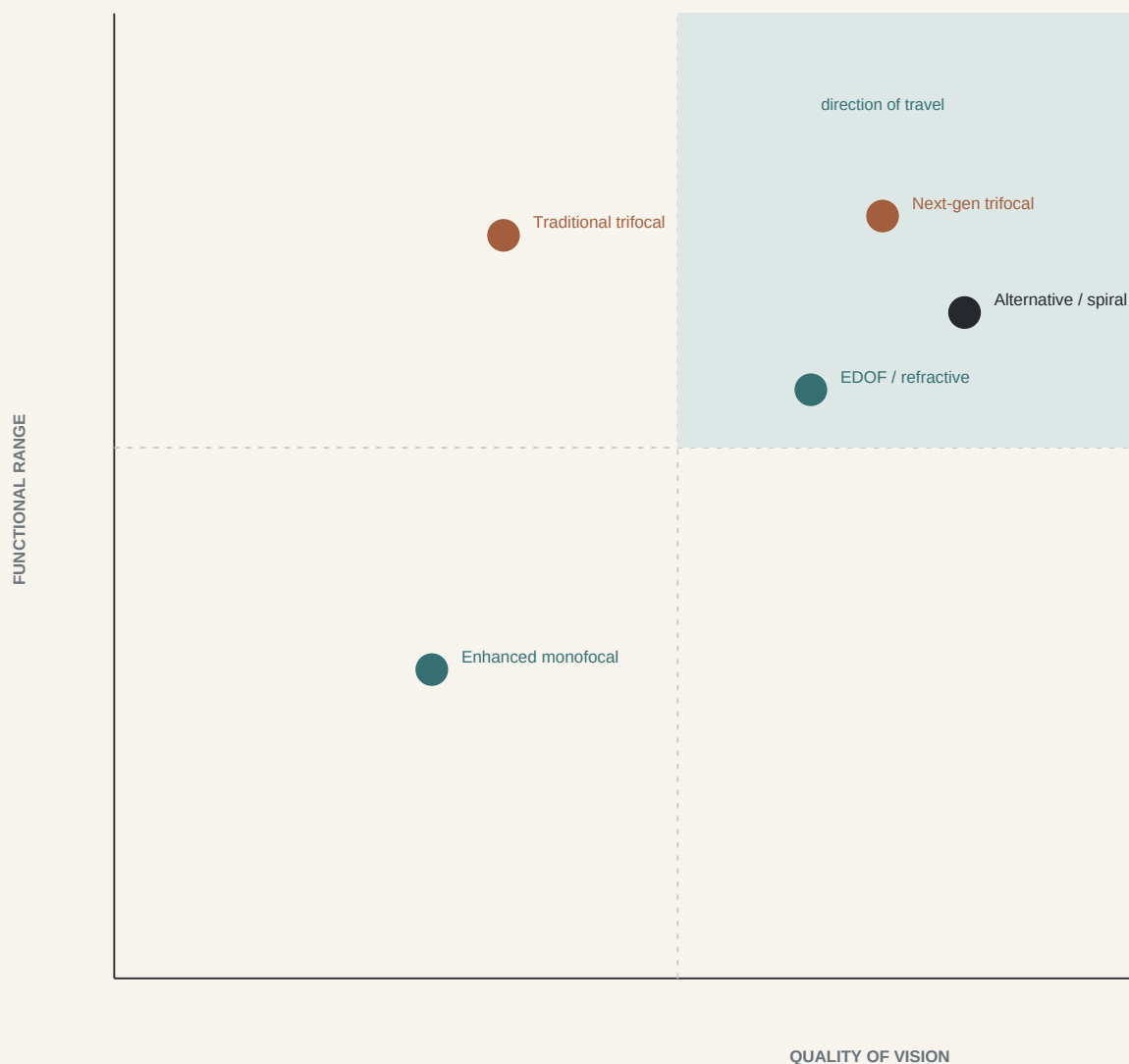
OIE VIEW

The limitation of diffractive multifocality is best framed as an optical trade-off, not as inherently poor visual performance. The competitive question is how much range can be delivered for how little penalty.

Evidence: systematic review/meta-analysis [R2]; Cochrane Review [R3].

Different architectures are converging on the same strategic destination

The map below is conceptual. It describes the direction of technology development rather than ranking individual products.



The winner may be the technology that makes the patient's choice between range and quality progressively less consequential.

The market is converging on four strategic directions

Rather than compare every lens feature, OIE tracks the direction in which each platform is trying to move the premium-IOL trade-off.

01 PRESERVE FULL RANGE

Alcon / PanOptix Pro

Next-generation trifocal design: retain spectacle independence while improving optical efficiency. [R4]

02 LOWER-DISTURBANCE RANGE

J&J / TECNIS PureSee

Refractive EDOF: extend functional range while prioritising quality-of-vision characteristics. [R5]

03 RETHINK THE OPTIC

Rayner / RayOne Galaxy

Spiral full-range architecture: challenge the traditional focal-point model. [R6]

04 REFINE MATERIAL + WORKFLOW

ZEISS / AT ELANA · BVI / FINEVISION HP

Hydrophobic full-range platforms show that material, delivery and workflow remain part of differentiation. [R7-R8]

The common destination

More useful range, less perceived penalty.

Adoption is the sum of value - minus friction

OIE's framework is deliberately simple: a platform's optical profile creates value, but commercial adoption depends on whether that value survives price, side effects and the cost of changing established behaviour.

VALUE DRIVERS

- 01

Visual range
- 02

Quality of vision
- 03

Predictability
- 04

Affordability
- 05

Manufacturer support

FRICTION

- 01

Optical side effects
- 02

Switching friction

PREMIUM-IOL ADOPTION POTENTIAL

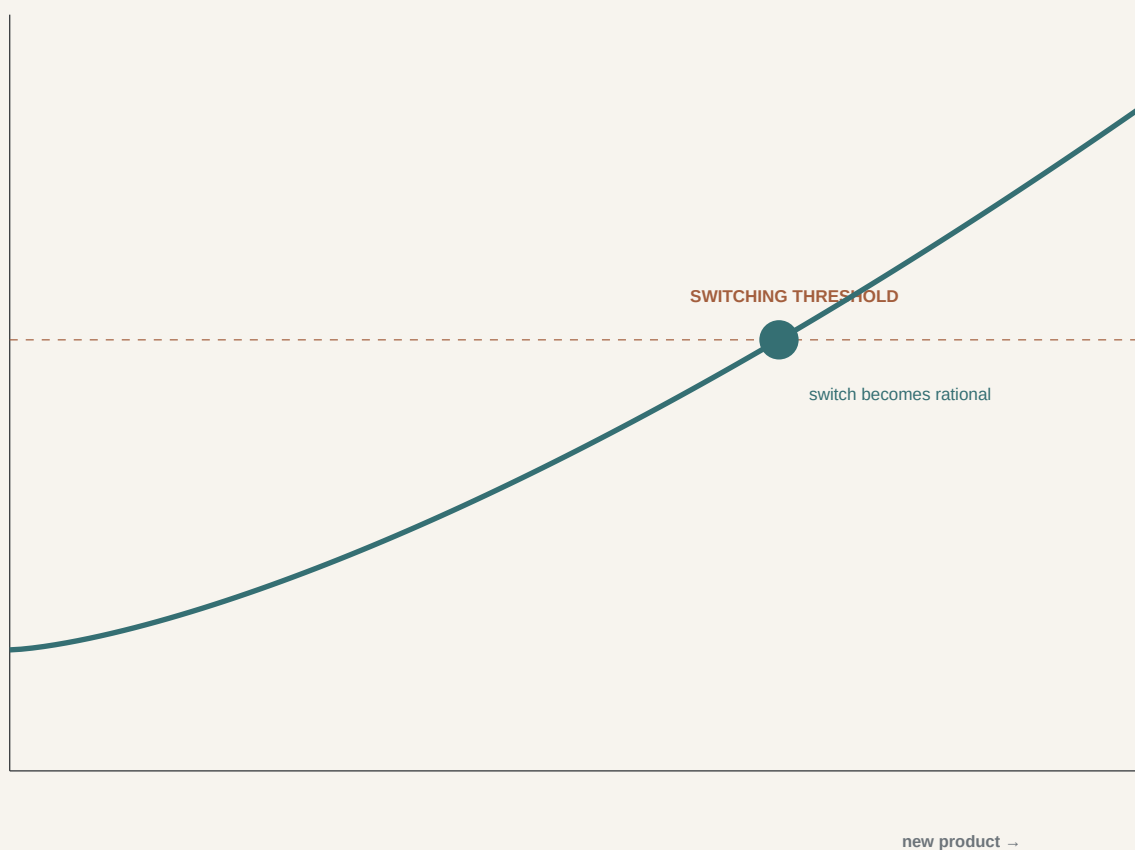
= clinical value that remains after economic and behavioural friction

OIE analytical framework - not a validated clinical score.

A marginally better lens may still be commercially irrelevant

Experienced surgeons accumulate platform-specific knowledge: refractive behaviour, patient selection, injector handling, workflow, complaint management and confidence in manufacturer response. That familiarity has value.

PERCEIVED INCREMENTAL VALUE



OIE HYPOTHESIS

As mature premium platforms converge in real-world satisfaction, switching friction and manufacturer support gain relative importance.

Price may be one of the most important unmeasured variables

German consumer guidance makes the economic distinction visible: statutory insurance covers cataract surgery with a standard lens, while multifocal options create additional patient cost. Public data do not tell us how elastic premium demand is.

WHAT WE KNOW

Standard cataract surgery is covered; premium optics can require additional patient payment. [R9]

WHAT CLINICAL EXPERIENCE SUGGESTS

In the author's German practice experience, willingness to pay appears to remain an important barrier to premium-IOL conversion.

THE UNANSWERED QUESTION

What happens to premium-IOL penetration if the patient's incremental out-of-pocket premium falls materially?

COMMERCIAL IMPLICATION

Germany may contain latent premium demand that cannot be sized from public market-share data alone. Willingness-to-pay and conversion research could become proprietary OIE intelligence.

Postoperative adjustability adds a new axis to premium-IOL competition

The Alcon-RxSight collaboration does not yet provide a new clinical outcome dataset. It does, however, signal a strategically important shift: presbyopia correction may increasingly be combined with postoperative refractive customisation.

01 OPTICAL DESIGN

Presbyopia-correcting optics define the intended range.



02 HEALING + REFRACTION

The postoperative eye reveals the residual refractive result.



03 LIGHT ADJUSTMENT

Lens power can be fine-tuned after surgery toward the patient's target.

WHY IT MATTERS FOR OIE ISSUE 01

The competitive frontier may extend beyond range versus quality to a third dimension: personalisation after implantation.

STRATEGIC / DEVELOPMENT SIGNAL. The planned adjustable PCIOL is not an established commercial platform or evidence of clinical superiority. [R10]

Five signals worth watching through 2030

01 **Trifocal technology persists**

Innovation targets the range-quality penalty rather than abandoning full-range optics.

02 **Functional range becomes a spectrum**

Clareon TruPlus: an enhanced-monofocal market signal. Manufacturer bench evidence; no independent clinical superiority established. [R11]

03 **Continuous vision outranks labels**

Defocus behaviour and patient experience matter more than category terminology.

04 **Non-optical differentiation gains weight**

Workflow, support, price and ecosystem integration increasingly influence loyalty.

05 **Accommodation: early, increasingly credible**

Lumina shows dynamic refractive responses in selected cases. Early clinical evidence, not an established replacement. [R12; limits p12]

The category debate is likely to become less binary as technologies converge on the same patient objective.

Evidence first. Interpretation second.

OIE separates peer-reviewed/public evidence, manufacturer-reported data and experienced-surgeon interpretation. Strategic collaborations are treated as market signals, not as proof of clinical superiority.

SELECTED SOURCES

- R1** MarketScope 2024 data cited by Carl Zeiss Meditec, Investor Presentation, May 2026.
- R2** 2023 systematic review/meta-analysis: EDOF versus trifocal, 22 studies / 2,200 eyes.
- R3** 2024 Cochrane Review: trifocal versus EDOF after cataract extraction.
- R4** Alcon professional information: Clareon PanOptix Pro.
- R5** Johnson & Johnson: TECNIS PureSee clinical data, ASCRS 2026.
- R6** Rayner: RayOne Galaxy Hydrophobic launch, ESCRS 2026.
- R7** ZEISS AT ELANA 841P product information.
- R8** BVI FINEVISION HP product information.
- R9** Verbraucherzentrale Germany: cataract surgery cost transparency.
- R10** Alcon + RxSight: collaboration to develop adjustable presbyopia-correcting IOLs, July 2026.

Additional sources, evidence boundaries and publication disclosures: [p12](#).

ABOUT THE EDITOR

Burak Mergen, MD, FEBO, FICO is an ophthalmic surgeon practicing in Germany with a clinical focus on cataract and refractive surgery. His background combines high-volume surgical practice with academic research and European ophthalmology experience.

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Emerging frontiers. Clear limits.

Version 1.1 · Updated 21 September 2026 · Evidence cutoff: 21 September 2026
12 retained sources · 12 pages

Newly appraised context supports the original thesis. These sources predate the previous cutoff; they are not new post-cutoff clinical results.

R11 MANUFACTURER / BENCH / DATA ON FILE

Alcon. Alcon Launches Clareon TruPlus, Enhanced Design Monofocal and Toric IOLs, at ASCRS 2026. 6 April 2026.

Official manufacturer source

OIE interpretation: enhanced monofocals fill the space between monofocal and EDOF. Proprietary bench reports were not independently appraised; no clinical superiority is inferred.

R12 EARLY CLINICAL / PEER-REVIEWED / FULL TEXT

Eppig T, et al. Objective assessment of accommodation with an accommodative intraocular lens: Development of methodology and case report. Z Med Phys. 2026;36(2):179–188.

doi: [10.1016/j.zemedi.2026.03.005](https://doi.org/10.1016/j.zemedi.2026.03.005)

Selected cases; measurement-method limitations. Authors disclose manufacturer employment, board/equity and patent interests. This is not independent comparative validation.

ACCOMMODATION / WHAT STILL NEEDS TESTING

Objective amplitude and reproducibility; durability and long-term stability; surgical complexity; scalability and commercial availability; comparative clinical outcomes. Early signals do not establish a replacement for current premium IOLs.

CONFLICT OF INTEREST

The author declares no conflicts of interest relevant to this publication.

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Update sources accessed 21 September 2026. R1–R10 retained.