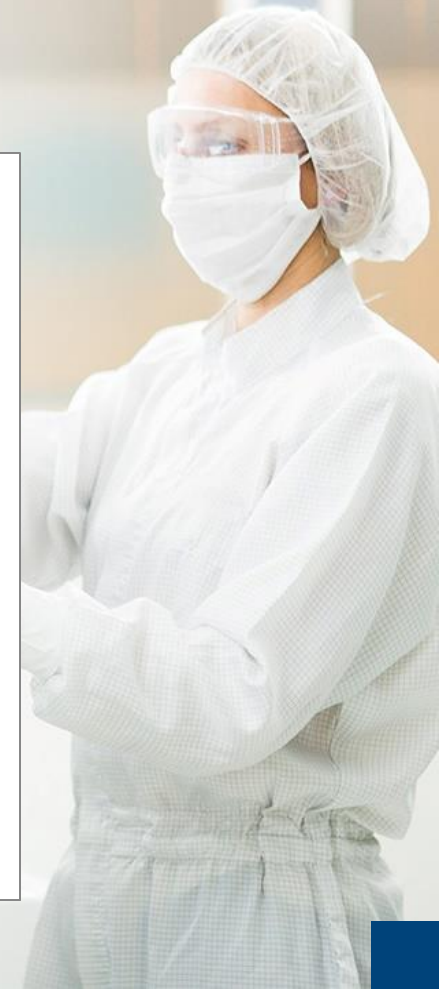
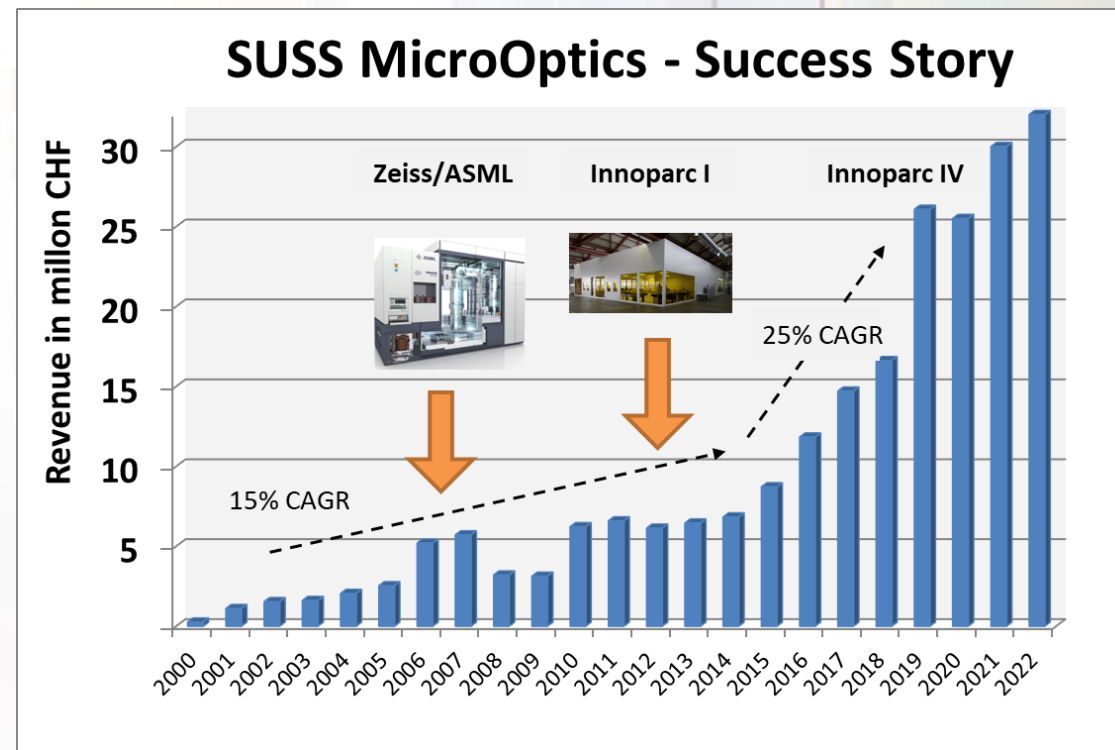


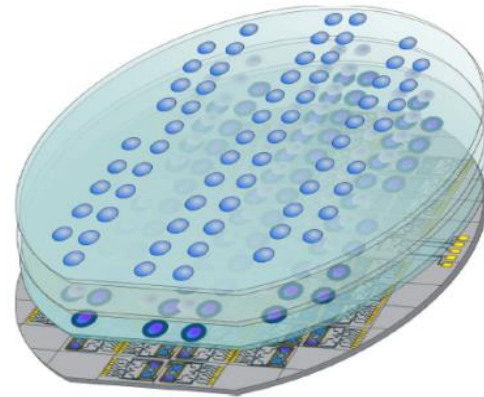
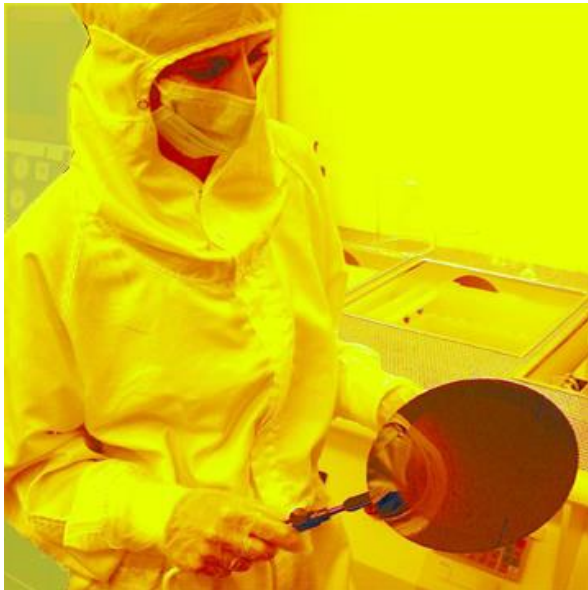
MICRO-OPTICS & EPIC SUCCESS STORIES

Dr. Reinhard Voelkel
CEO SUSS MicroOptics SA
Switzerland



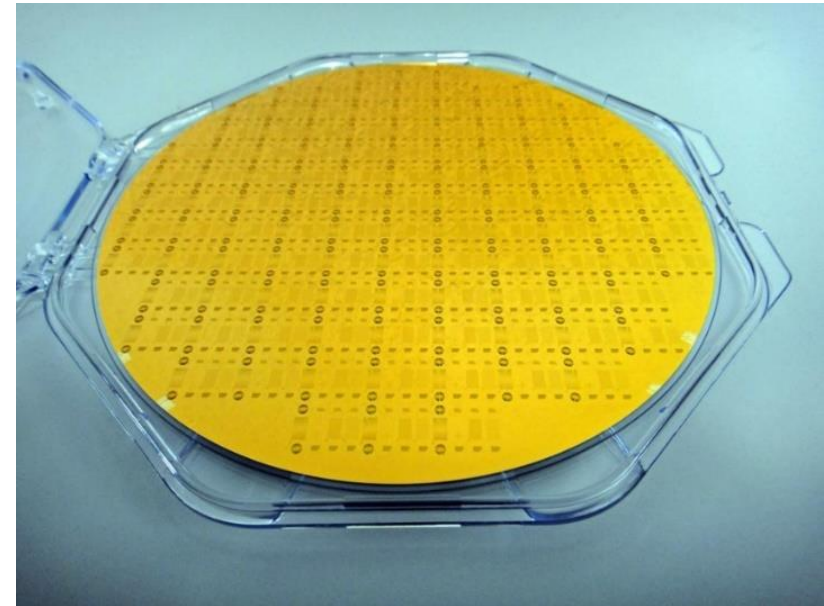
PLANAR MICRO-OPTICS ON WAFER-LEVEL

- + Ideas and micro-structuring technology developed in Semiconductor industry enable Micro-Optics manufacturing.
- + Wafer-Level Micro-Optics!



Wafer-Level Packaging

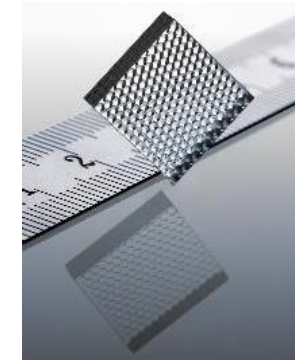
Source: FIG-IOF, Jena



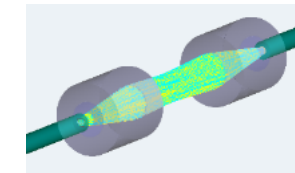
SUSS MICROOPTICS – WE SET THE STANDARDS



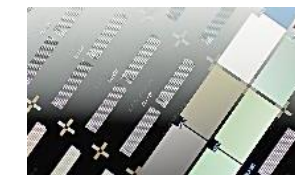
We are a leading supplier for **high-quality Micro-Optics** delivering **Key-Enabling Components** for **Data/Telecom, Sensing, Automotive, SEMI** and **Medical**.



Microlens Array



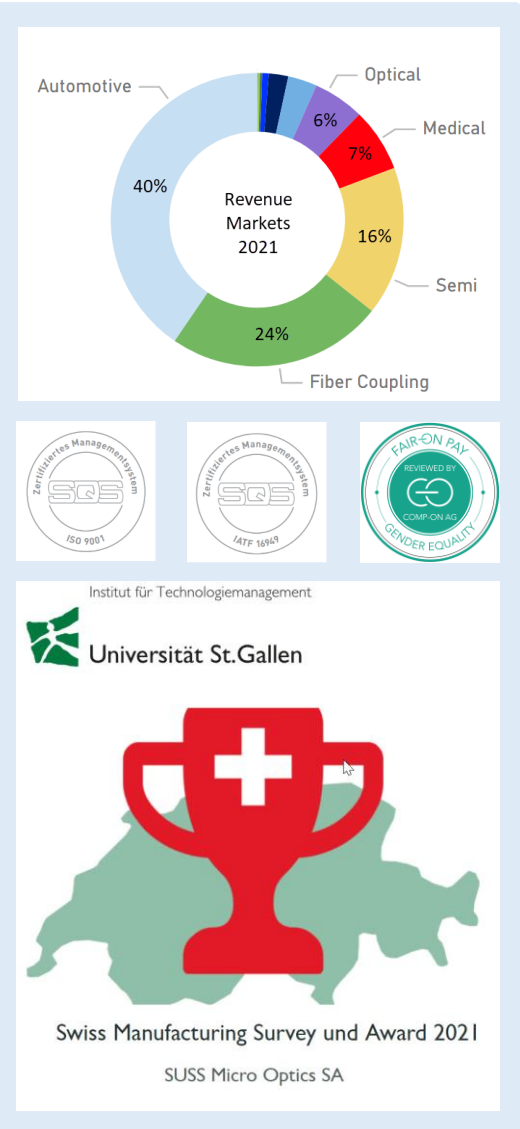
Fiber Coupler



Diffractive



UV Illumination



FIBER COLLIMATOR AND REFOCUSING FOR DATAKOM & TELECOM

confidential



www.anguerde.com

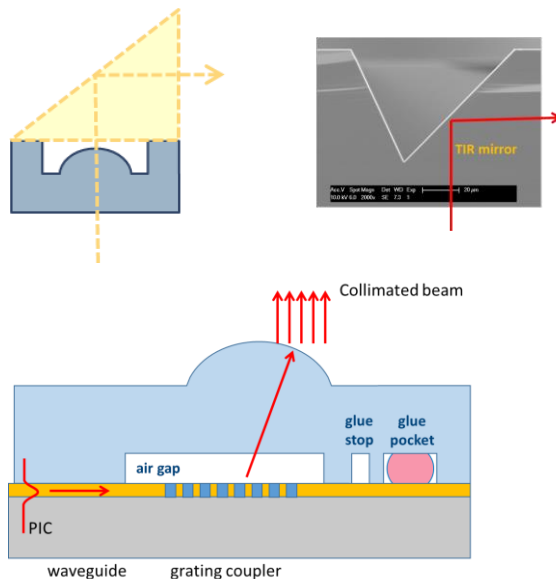
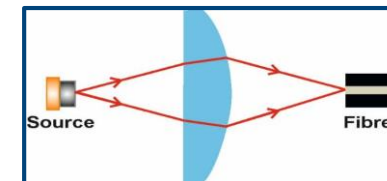
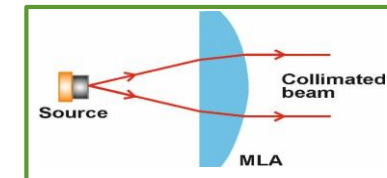
FTTX: Fiber to the X

FTTN: Fiber to the Neighborhood

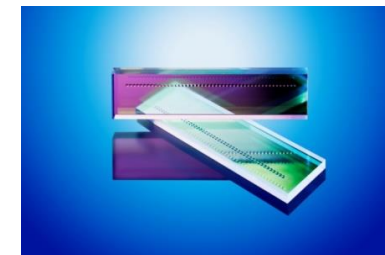
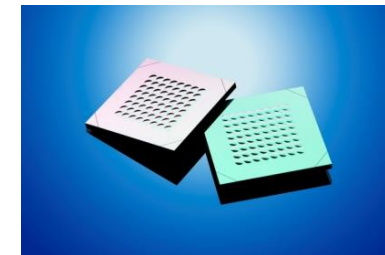
FTTC: Fiber to the Cabinet

FTTB: Fiber to the Building

FTTH: Fiber to the Home



- The closer the fiber comes to the your home/office, the more switches are needed
- Switches are getting smaller, need to be cheaper and higher volume




www.intelfreepress.com/news/revolutionizing-computing-with-lasers/57/

FIBER COUPLER – NEW COMPETITOR

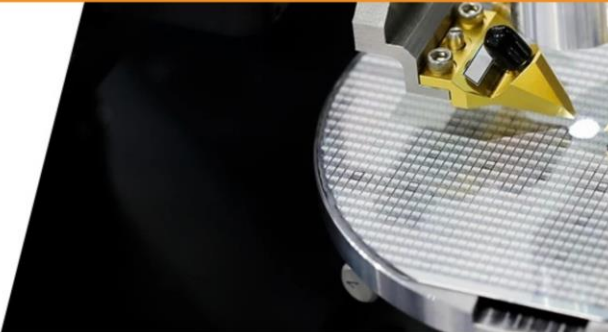
confidential



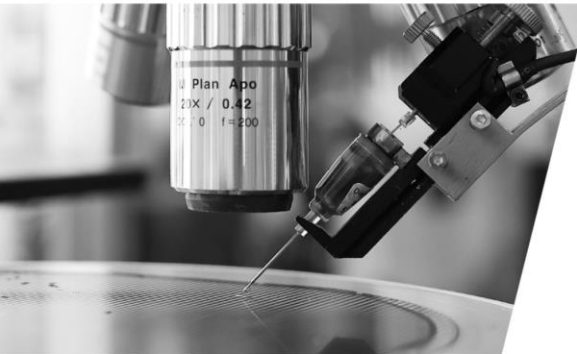
HOME Products **Advantages** About Us News Contact Us Q



National production, high cost performance and customization are the unique advantages of the company's chip products.



Silicon microlens series products are in a leading position in China. More than 90% of domestic optical module companies are Suna customers, and more than 7 million units have been shipped in batches.





The third company in the world to successfully launch a spherical silicon microlens/aspheric silicon microlens manufacturer for 400G modules











苏州苏纳光电有限公司
Suzhou Suna Opto-electronics Co., Ltd

\$24m funding (government) in 5 years

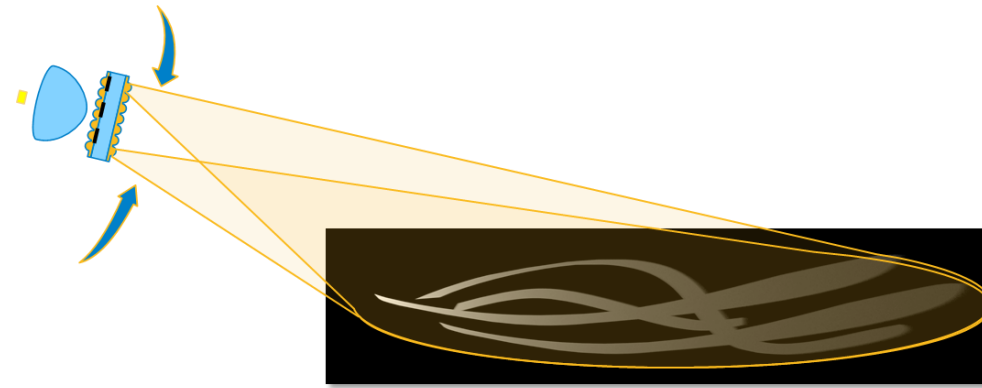
Sources: Angerde, Suna

THE MICRO-OPTICS REVOLUTION IN AUTOMOTIVE LIGHTING

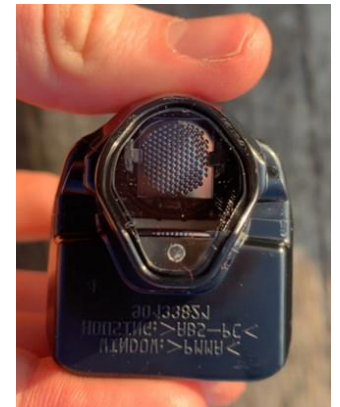
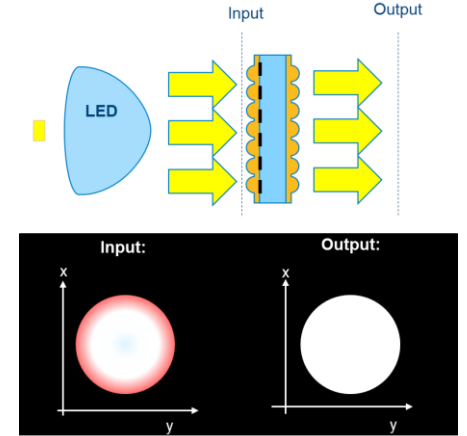
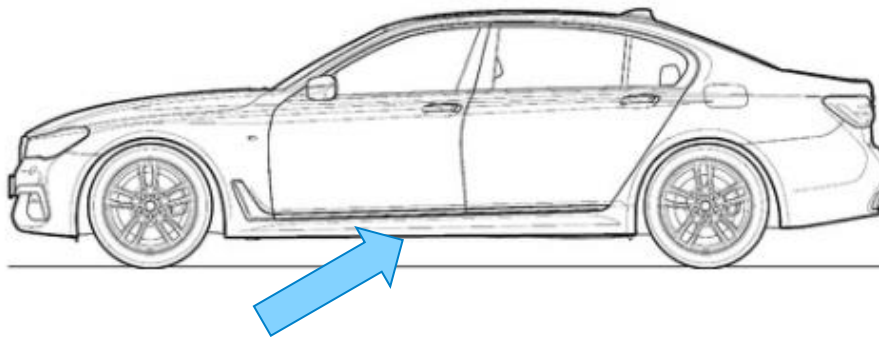


LIGHT CARPETS FOR BMW WELCOME LIGHT

+ Development by Fraunhofer IOF (Jena) started 2014



Projected Image



LIGHT CARPETS: DESIGN AND SAFETY



BMW, www.glowwing.com

MICROLENS HEADLAMPS

The Opportunity

- + Head lamps are bulky and often look ugly
- + Car industry has only few novel concepts for next generation of head lamps
- + Micro-Optics is a promising approach for next generations of automotive lighting

Keys to Success

- + Design flexibility
 - Size, weight and color saturation
- + Higher efficiency
 - Lower energy consumption (EV)
- + Visible innovation and uniqueness
 - Premium cars, individualization
- + Cost reduction, Performance



BMW Laser Light (ZKW)



Lucid Air – Microlens Headlights

MICRO-OPTICS HEADLIGHTS



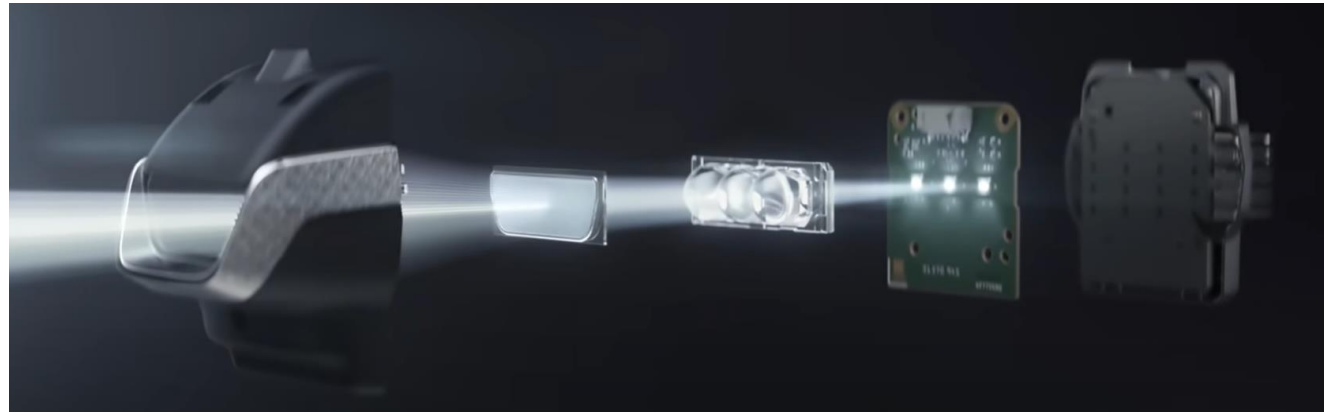
Lucid Air, top view



Headlight



Module



Module, exploded view

MICROLENS - ULTRA-SLIM HEADLIGHTS

- + Why do people buy new cars?
 - Innovative features, technology
 - Design, beauty and uniqueness
- + 1st microlens headlamps in cars in 2021
- + Ultra-slim headlamps are the new trend



Lucid Motors, Hyundai

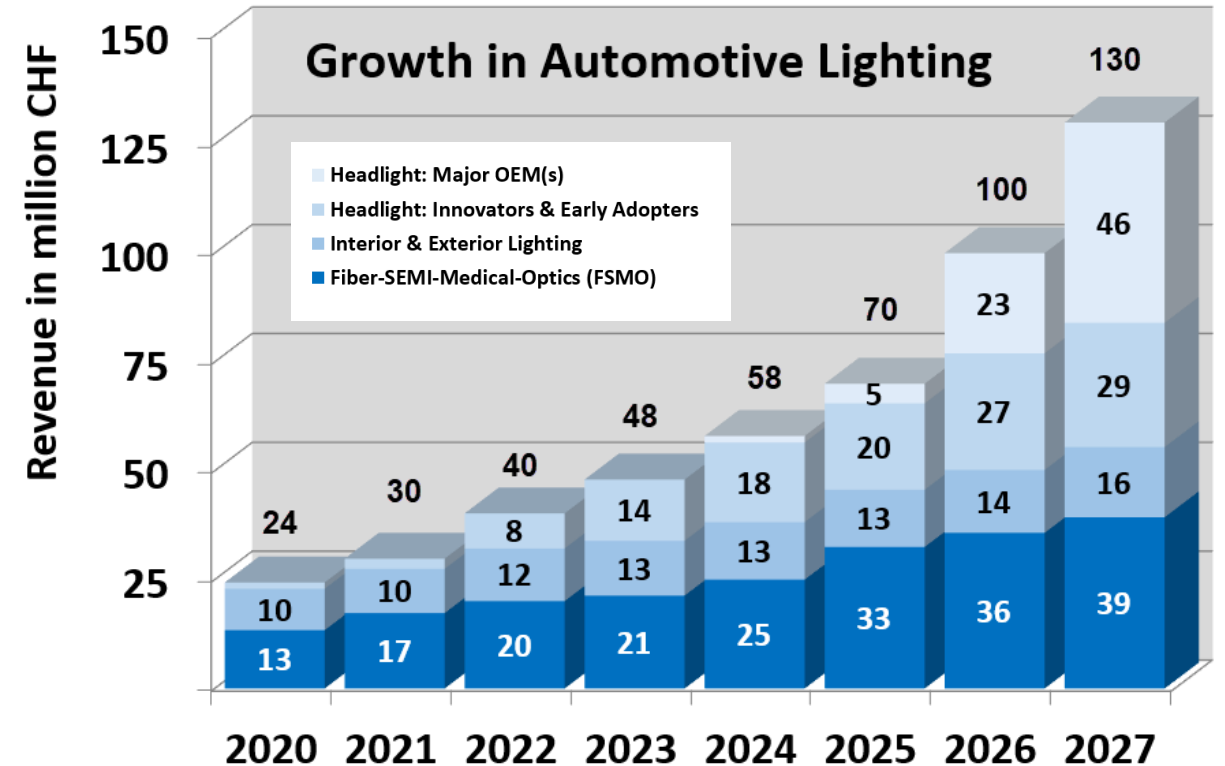
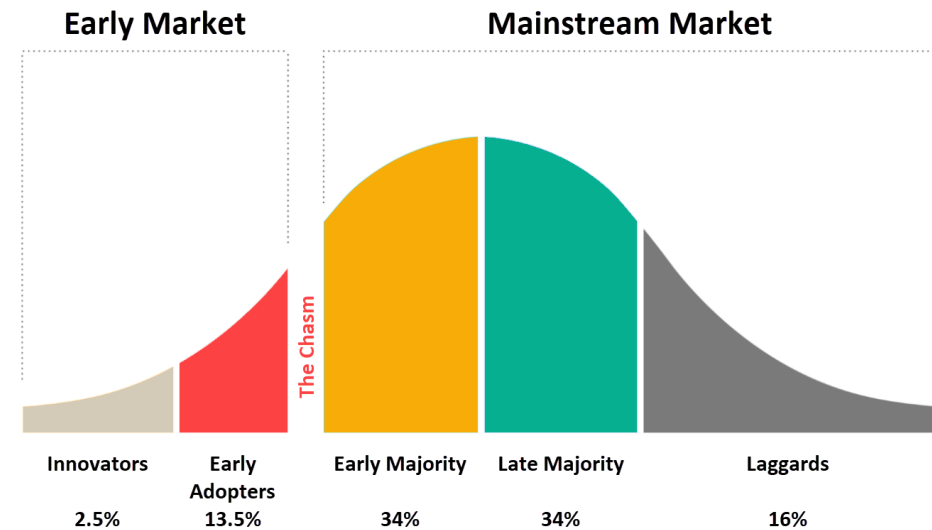
THE NEXT DISRUPTIVE THING?



Micro Optics approaching the Market. The next disruptive Thing?

- + DVN Newsletter March 2022
- + ISAL 2022, International Symposium on Automotive Lighting, Darmstadt, 4-6 April, 2022

EVEN STRONGER GROWTH AHEAD!



A close-up photograph of a hand holding a black marker, writing the words "Thank you!" in a cursive script on a white surface. The hand is positioned on the right side of the frame, with the index and thumb fingers visible. The marker is black with a silver band near the tip. The text is written in a fluid, cursive style, with the exclamation mark being a simple vertical line with a dot. The background is a plain, light-colored surface.

Thank you!