



# Company Presentation

September 2021



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# Presenting team



**Dr. Øyvind Isaksen**

*Chief Executive Officer*

- *Dr. Isaksen has been the CEO of poLight since August 2014*
- *Held several previous CEO positions, including 7 years at the publicly listed company Q-Free ASA until January 2014*
- *Isaksen holds a Ph.D in Applied Physics from the University of Bergen (UiB)*



**Alf Henning Bekkevik**

*Chief Financial Officer*

- *Bekkevik has been the CFO of poLight since February 2016*
- *Background from Arthur Andersen (EY), Wallendahl, Fjord Line, Grenland Group and Wood Group Mustand as VP Finance*
- *Holds a Master of Business & Economics (Siviløkonom) degree from The Norwegian School of Economics (NHH) and is a certified public accountant*



# Agenda

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Introduction

2

Business overview

3

Financials and outlook

4

Appendix



# poLight at a glance

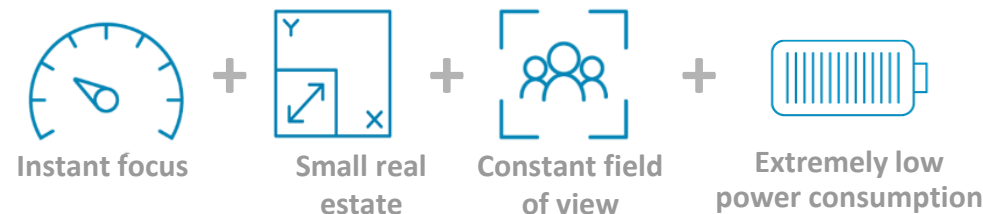
## Background and description

- Developer of unique photographic lens for use in the mobile, barcode readers, augmented reality and other markets
- Founded in 2005 and has since build state-of-the-art expertise in tunable optics, polymer and MEMS technology
- 15 worldwide patents families, 11 pending applications and 3 registered trademarks
- 30 employees (incl. long term consultants)
- Headquartered in Horten, Norway, with offices in Finland and China, and representation in France, UK, USA, Taiwan, Korea and Japan

## Geographical footprint



## poLight enables unique use cases



# TLens<sup>®</sup> already used in commercial products

MAXHUB UC W20



MAXHUB<sup>®</sup>

XUN Smartwatch Max Pro



xun 小寻

XIAOMI Mi Bunny 4 Pro  
smart watch



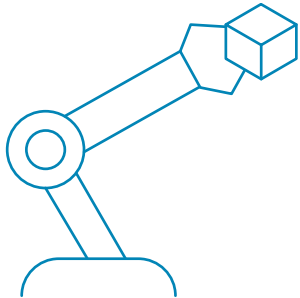
mi  
xiaomi

Honeywell EX 30 barcode  
scanner

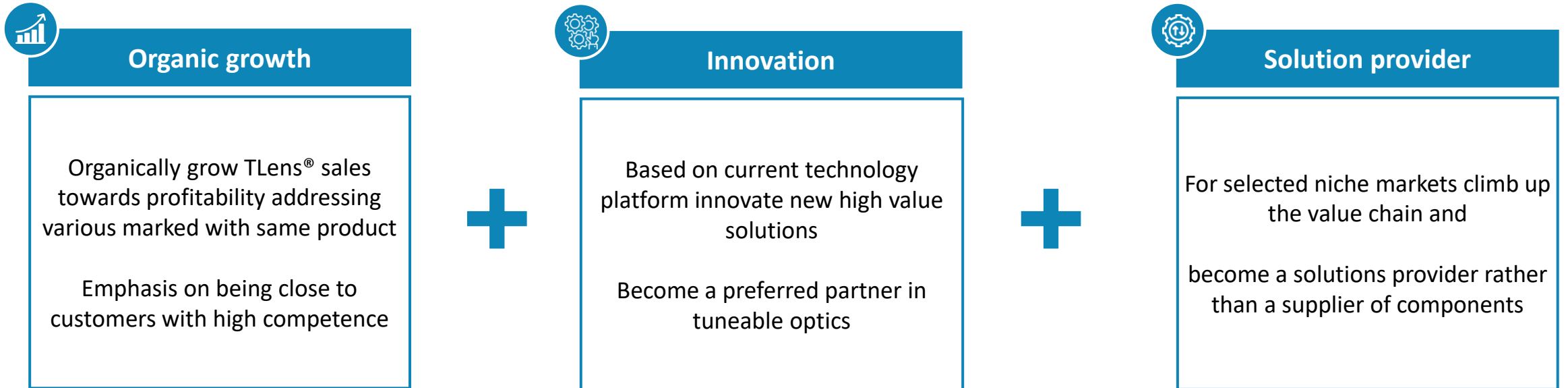


Honeywell

Machine Vision – direct  
marking reading



# Strategic direction



**poLight aims to become a preferred, technology-agnostic partner within tuneable optics**

# Investment highlights

Unique TLens® solutions with applications in smartphone market, professional market and future consumer markets (augmented reality)

TLens® already used in commercial products such as smart watch, web camera and barcode scan engine

A strong pipeline of new opportunities in both consumer and professional market segment maturing

Several OEM candidates for smartphone breakthrough in 2022

TLens® is under evaluation for use in next generation augmented reality products – “The next big thing”

The TLens® Technology is protected by a strong intellectual property position





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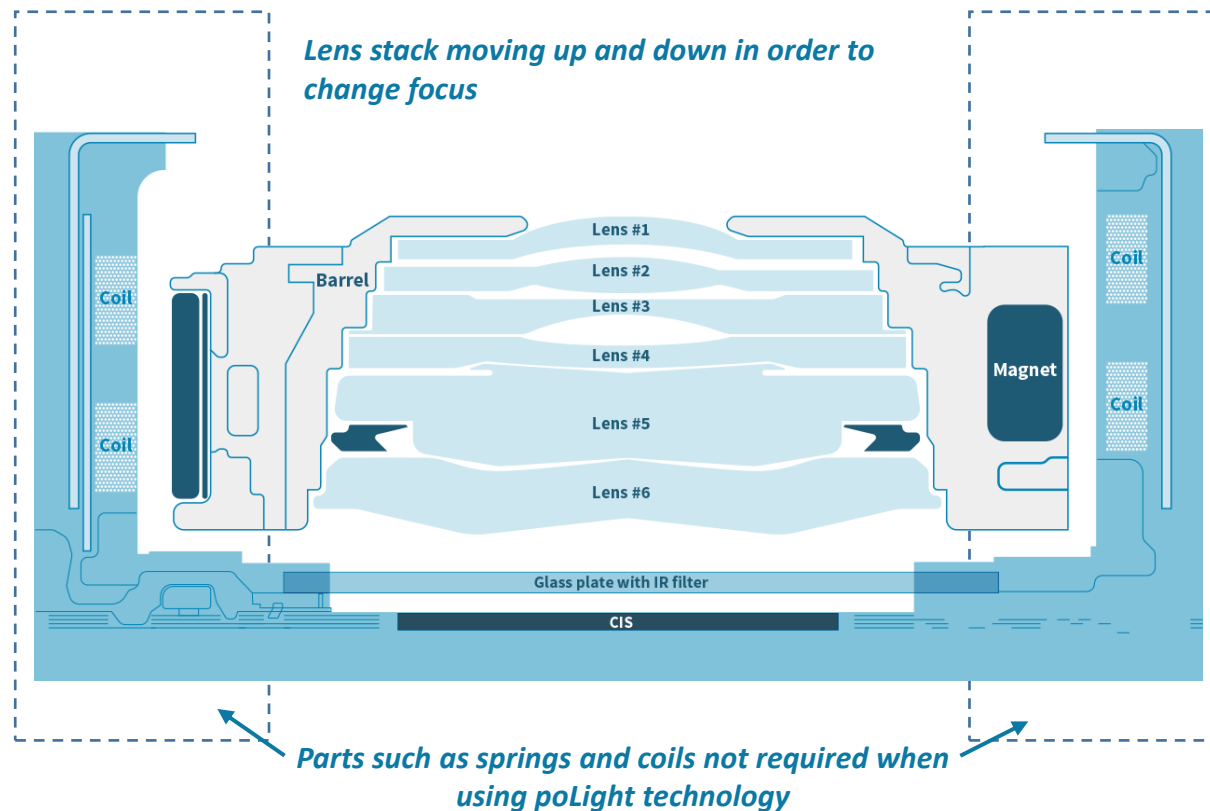
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Appendix



# The incumbent Technology - Voice Coil Motor (VCM)

## How the technology works



## Characteristics

### Complex

- Yield penalty
- Advanced calibration procedures needed to restrain image quality
- Complicates multi camera solution

### Magnets, springs and coils

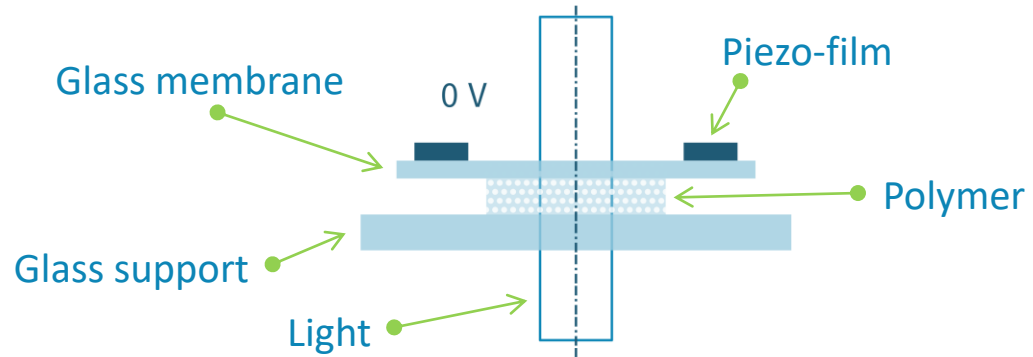
- Magnetic noise
- Interference with other coils and RF parts (e.g. 5G)
- Foot print penalty
- High power consumption lead to heating of image sensor (reduce image quality)

### Mechanical movement

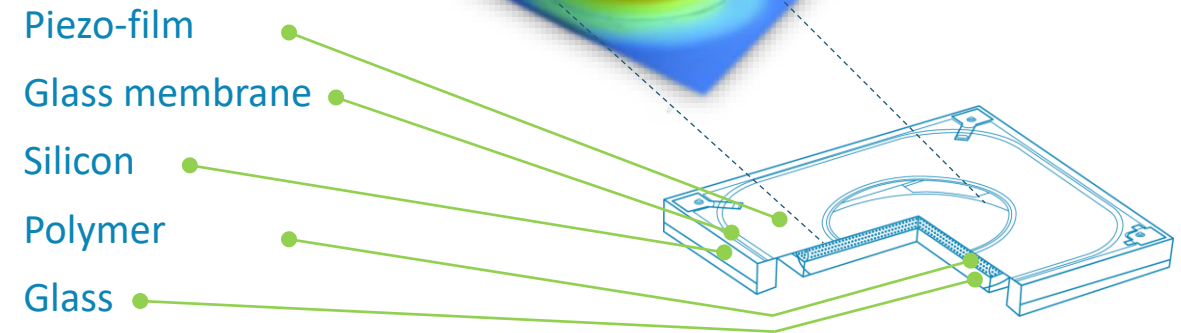
- Has to move the full lens to change focus -> slow
- Unstable optical axis
- Field of view change

# TLens<sup>®</sup> technology – Replicating the human eye

## Principle of operation



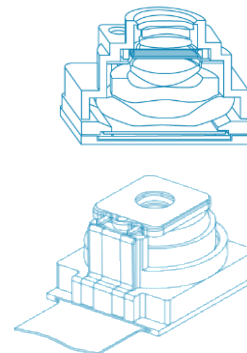
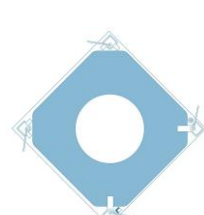
## Implementation



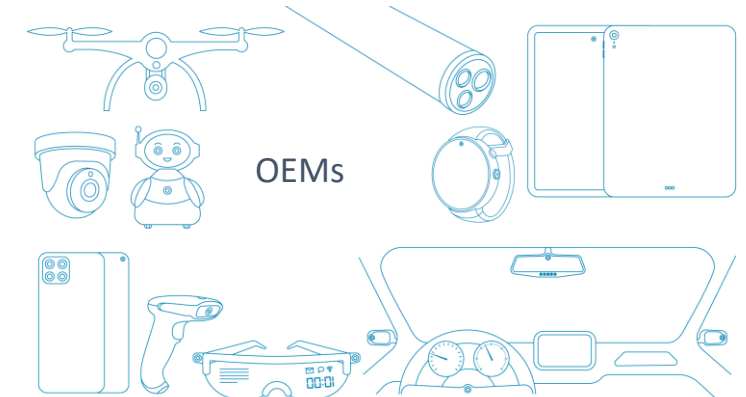
From Gel > MEMS Wafer > TLens<sup>®</sup> >

Camera module >

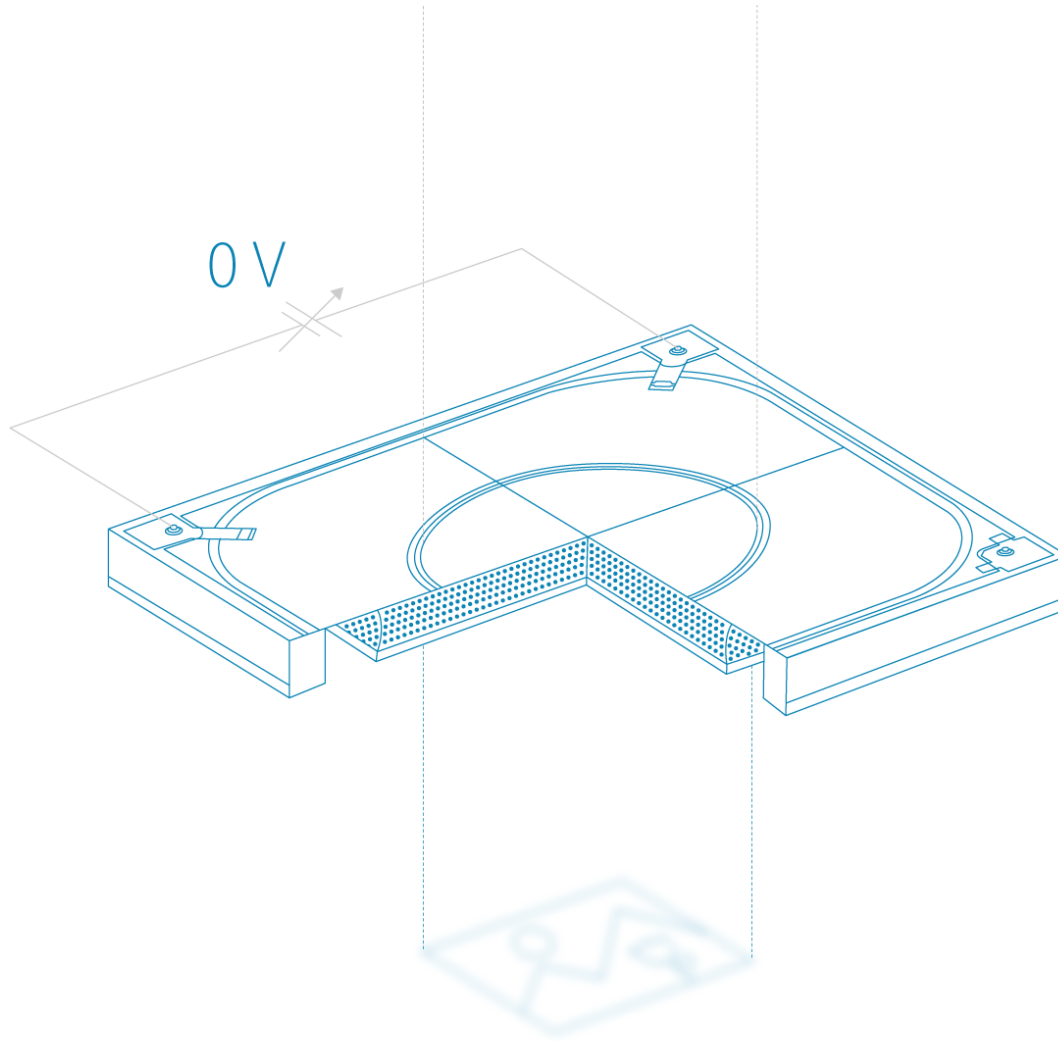
OEM



Camera  
Module  
Suppliers



# Operating principle animation



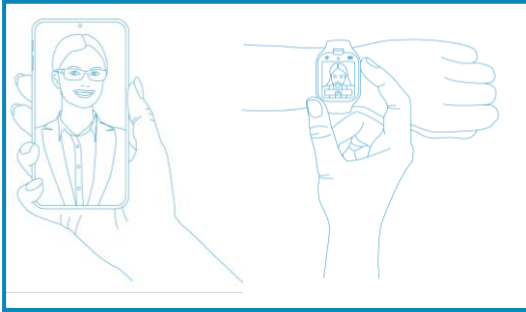
# Fast and accurate auto focus (AF)





# Technology well-suited for several applications

## Smartphone & wearable



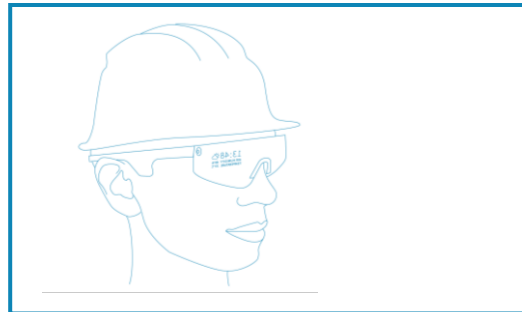
- Large addressable market, billions of cameras produced for the each year
- 1,5 billion phones/year (1 front cam + 3 (in average) back cam) -> 6 billion cam/year
- Potential addressable market for TLens/poLight technology : 1 front cam + 1 back cam -> 3 billion/year
- Focus on camera functionality increasing

## Barcode/industrial



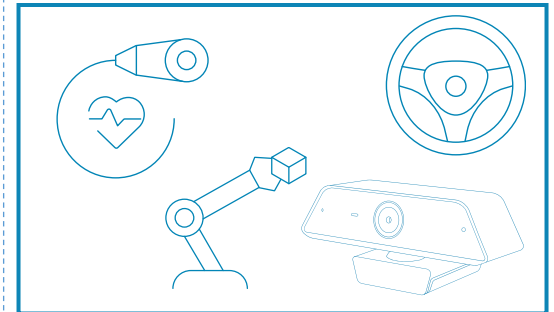
- Evolving from 1D laser to 2D imaging barcode readers
- Lasers replaced by camera systems. Autofocus will improve efficiency in scanning and portfolio
- Barcode technology spreading to new industries
- OEM scan engine vendors today are increasingly looking towards enabling machine vision capabilities on current offerings

## Augmented Reality (AR)



- Augmented reality expected to be "the next big thing"
- AR glasses will be firstly be deployed for professional use cases and gradually become a consumer device
- Potential for several TLens per device

## Other



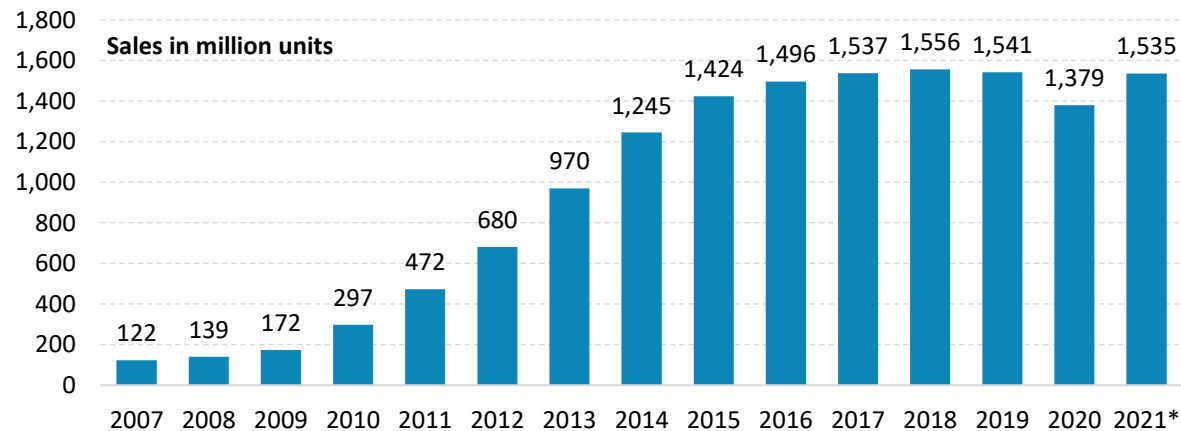
- New opportunities emerging and may represent significant potential
- Video conferencing and medical use case are some recent examples of new opportunities for poLight technology

# Smartphone market first priority – today's volume market



- Camera growing as share of total phone cost (from USD 40 to USD 100, 10-16% in few years)
- AF front camera will become mainstream
- 5G may drive new trends and needs
- 3D / XR / sensing
- Zoom (-> OIS for folded camera)
- Multi camera solutions
- Under display camera
- Speed, stable Field of View, compactness, non-magnetic interference, optical quality are key features which make TLens® a favourable option

## Smartphone sales<sup>1</sup>

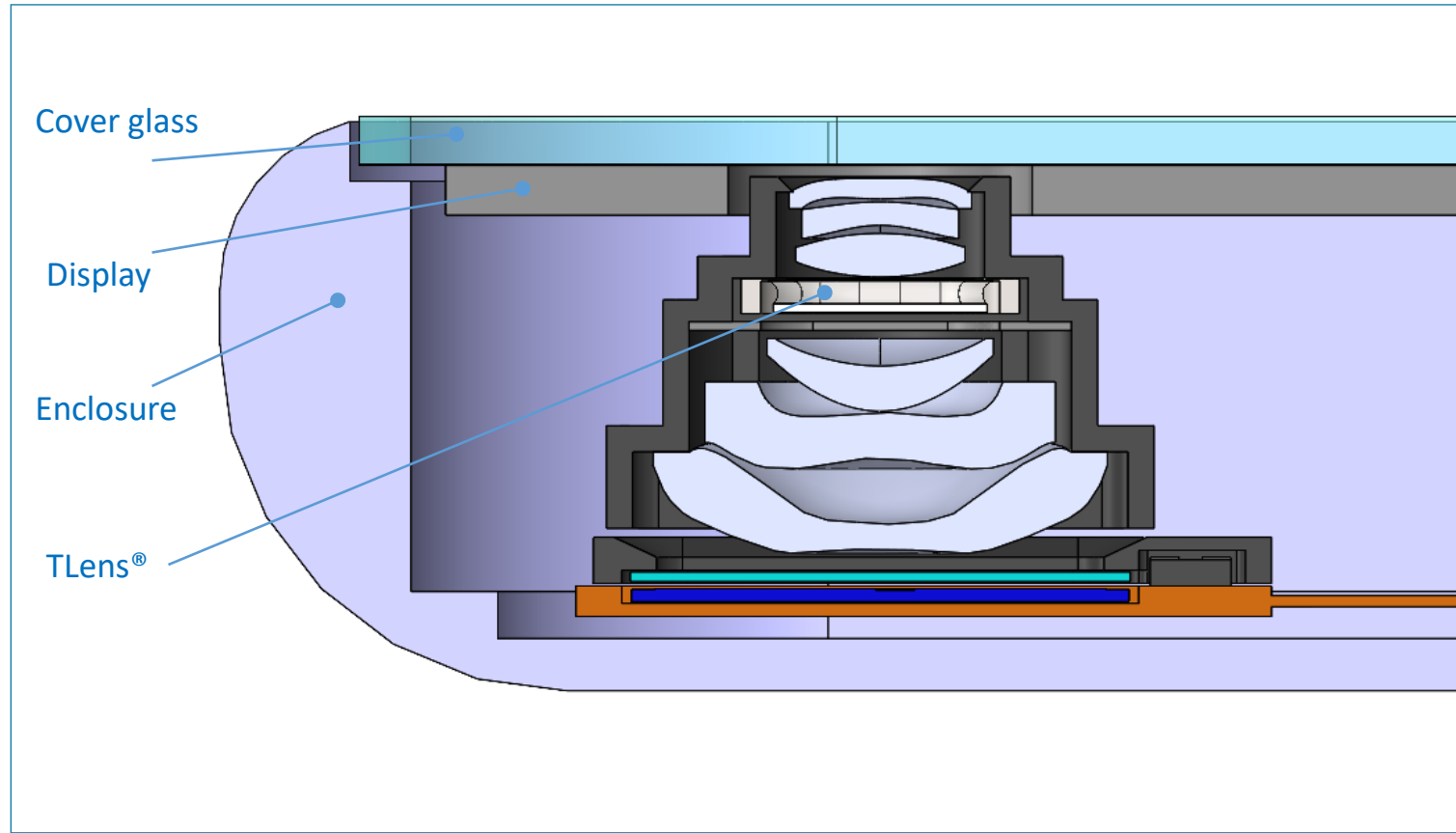


Source: 1) Gartner Feb 2021; ID 263437

## Addressable market

- 1 front camera for all
- In average 3 camera in back
- Camera market 6 billion/year
- The growth in number of cameras means that each camera becomes more specialised
- Assume every front cameras is addressable and one of the rear cameras is addressable with each TLens® and/or a “new” product -> 3 billion/year

# poLight TLens<sup>®</sup> enables small Slim Face camera



## Benefits

- Speed, constant FoV, All-in focus, bokeh, etc
- Significant size reduction compared to traditional VCM technology
- No magnetic interference, provides OEMs with extensive design freedom
- Immune against acceleration, vibration, gravity
- Improved optical stability (image stability when focusing)
- Enables small Slim Face camera compared to slim VCM module

# Auto Focus increasingly important for front cameras



Blurred background

Face in focus

*Picture taken with high end smartphone*



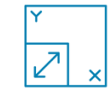
Face in focus

Background in focus

*TLens enables all-in-focus*

# poLight offers more to the smartphone user...

## Technological advantages



Small footprint



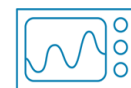
Extremely low power consumption



Constant field of view



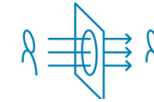
High speed



Low test & calibration cost



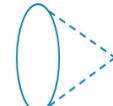
No gravity impact



High optical axis stability



No magnetic interference



10 cm to  $\infty$

*poLight products offer design freedom to the OEMs*

## User advantages



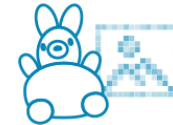
Touch & re-focus



All in focus



AF to the selfie camera @ no screen size penalty



Bokeh using one camera only



Instant focus



All in Focus Video



Constant field of view



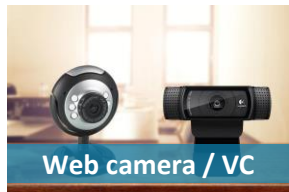
# Adjacent markets represent further potential



- Barcode industry is evolving from 1D laser to 2D imaging barcode readers, implying that **laser is replaced by camera system**
- Demand for greater levels of automation and distributed data capture and image analysis adds opportunities for OEM scan engines across most market sectors
- OEM scan engine vendors today are increasingly looking towards enabling machine vision capabilities on current offerings
- Speed, stable Field Of View & optical axis and low power consumption are key features which make **TLens® a favourable option for the barcode**



- AR provides the ability to overlay a visual and audio experience to a real-world environment as viewed through a computer, mobile device or special hardware
- Use cases span from pure entertainment such as gaming, visiting places or seeing events, to real-world applications in medicine, education or the workplace. Big players such as Apple, Facebook, Google, MagicLeap and Microsoft are investing heavily in AR
- Low power consumption, Speed, stable Field Of View & optical axis and are key features which make **TLens® a favourable option for AR**



- The pandemic has forced us to cooperate more and more virtual, and video conferring has increased in use
- poLight technology will be potential good fit for web camera application due to constant field of view and speed
- Longer term volumetric video conferencing based on dual camera and light field imaging will benefit from TLens speed and constant field view



- Regular endoscope use small cameras where auto focus capability will bring zooming capability as well as depth from Focus and potential 3D capture from cameras
- In capsule endoscopy, cameras with AF enables doctors to change focus while pills are “traveling” through the body
- Low power consumption is vital to avoid temperature increase in the body. Small size and low weight combined with fast focusing are other key advantages



- An emerging trend that integrates electronics into daily activities, and can be worn on any part of the body
- The ability to connect to the internet is the driving factor that promotes the trend of wearable technology
- Smart watches, smart glasses, pens/rings/other with camera
- TLens could be a good fit due to power consumption, compactness, speed, no gravity impact, constant field of view

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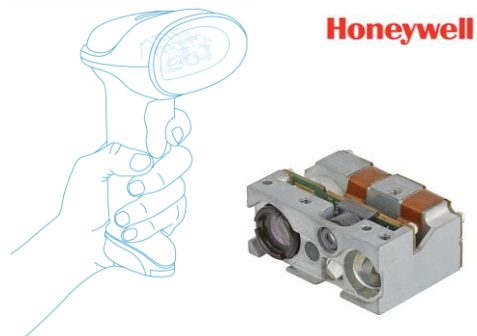
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Appendix



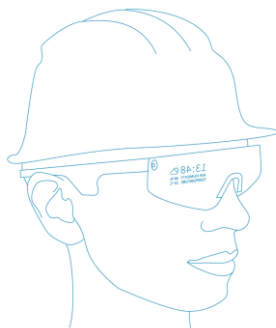
# Key events in the quarter (Q2 2021)

## Follow-up order for EX30



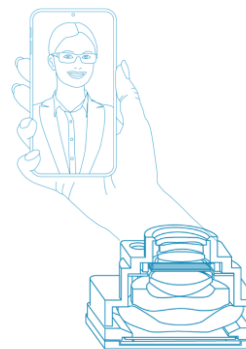
- poLight received a follow-up purchase order related to the Honeywell EX30 barcode scan engine
  - Accumulated order intake of NOK 4.7m
- The EX30 is sold to other OEMs for use in various barcode products
- Release of EX30 has build more appetite among other potential customers and number of PoC has increased
- Expected to be an important gross margin contributor in the longer term

## TLens® considered for next generation AR glasses



- Involved in cases both for professional and potential consumer use case (3 projects and 3 PoC)
- Testing/prototype building ongoing with promising results
- 3 potential design-wins within H1 2022 (professional use case)
- Long-term potentially the most important consumer segment for poLight

## Smartphone: Interest in TLens® remains high



- Ongoing & planned PoC's with several OEM's and camera module (CM) vendors based on add-in design(s)
- Improvement initiatives and new add-in designs in process
- Several candidates for phone project in H2 2022
- Ramp-up preparation continues
- Significant effort and investments are being made by several players to evaluate/prepare themselves for use of TLens based cameras

## Maxhub web cam design win

### Instant Autofocus Puts You in the Spotlight

The UC W20 can quickly focus on your face from the moment you sit in front of the lens. Automatic focusing ensures a smoother meeting experience from the second you start your conversation. TLens® technology means the focusing process remains seamless.

Auto Focus | TLens®

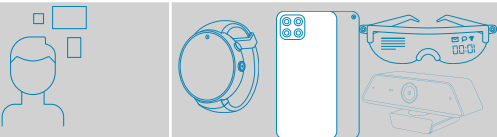




- poLight received a first design-win for a web camera application in Q2

“By adopting TLens® technology, it ensures a smoother meeting experience by instant autofocus. We do see several other opportunities for applying the TLens® in the future

Vice General Manager  
Darren Lin, MAXHUB

# Good progress in most customer cases during the quarter

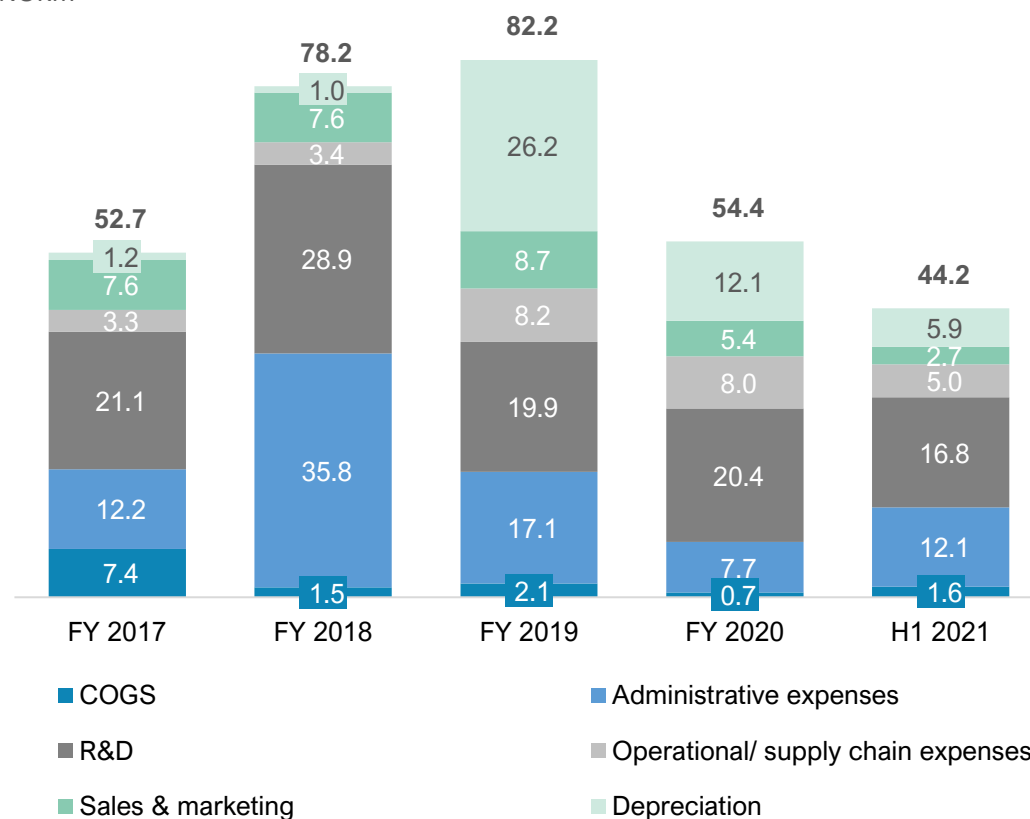
		Ongoing supply	Project	Completed PoC	Ongoing PoC	Planning PoC
Consumer		3 (3)	0 (1)	16 (14)	15 (14)	3 (7)
Industrial		2 (1)	4 (4)	15 (12)	4 (7)	6 (3)
Other (e.g. medical)			1 (1)	1 (1)	4 (4)	1 (0)
		5 (4)	5 (6)	32 (27)	23 (25)	10 (11)

(x): last quarter number

# Financials status

## Operating expenses

NOKm



## Cash flow

- Cash at hand per end of Q2 2021 at NOK ~56m is sufficient to finance the company throughout 2021
- YTD 2021 R&D expenditures of NOK 16.8 million, compared with NOK 9.5 million similar period 2020
- NOK ~12.9m in cash burn in Q2 2021, increased NWC of NOK ~0.3m
- Cash burn expected to increase up to NOK 20m per quarter in the rest of 2021
  - Inventory at NOK 17m at year-end (up 8m)
  - R&D-costs at NOK 30m level for FY2021



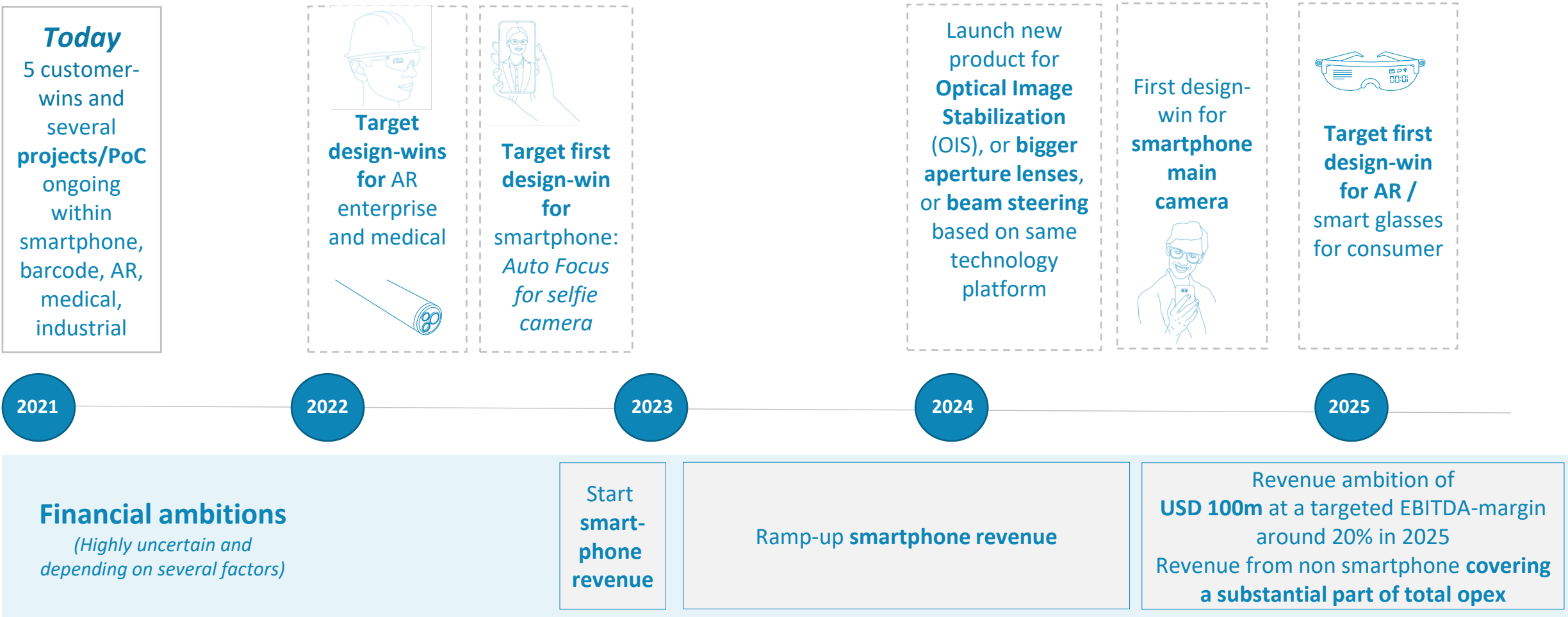
# Key figures (IFRS)

Consolidated statement of income (in NOK 000')	2016	2017	2018	2019	2020	H1 2021
Revenue	216	613	1,038	2,988	3,019	4,430
Operating profit	-37,468	-52,107	-77,133	-79,170	-51,369	-39,750
Profit before tax	-36,747	-50,566	-76,922	-77,740	-50,952	-39,517
<b>Profit for the year</b>	<b>-36,784</b>	<b>-50,657</b>	<b>-77,165</b>	<b>-77,864</b>	<b>-51,155</b>	<b>-39,562</b>
Earnings per share	-0.011	-0.009	-12.66	-9.59	-5.83	-4.36

Consolidated statement of financial position (in NOK 000')	2016	2017	2018	2019	2020	H1 2021
<b>Assets</b>						
Total non-current assets	45,224	69,318	77,434	57,094	45,448	44,863
Inventory	0	1,781	7,372	7,728	9,166	8,571
Trade and other receivables	6,543	5,260	6,399	6,147	6,040	10,557
Other current assets	826	1,127	901	565	3,897	1,302
Cash and cash equivalents	166,953	93,647	127,424	73,463	77,209	55,631
<b>Total currents assets</b>	<b>174,321</b>	<b>101,816</b>	<b>142,095</b>	<b>87,903</b>	<b>96,312</b>	<b>76,060</b>
<b>Total assets</b>	<b>219,545</b>	<b>171,134</b>	<b>219,529</b>	<b>144,997</b>	<b>141,761</b>	<b>120,923</b>
<b>Equity and liabilities</b>						
Total equity	195,037	149,996	201,456	128,378	128,840	94,346
Total non-current liabilities	1,800	600	0	766	0	4,358
Total current liabilities	22,708	20,538	18,073	15,853	12,921	22,219
Total liabilities	24,508	21,138	18,073	16,619	12,921	26,577
<b>Total equity and liabilities</b>	<b>219,545</b>	<b>171,134</b>	<b>219,529</b>	<b>144,997</b>	<b>141,761</b>	<b>120,923</b>

# Operating and financial targets

## Operating milestones



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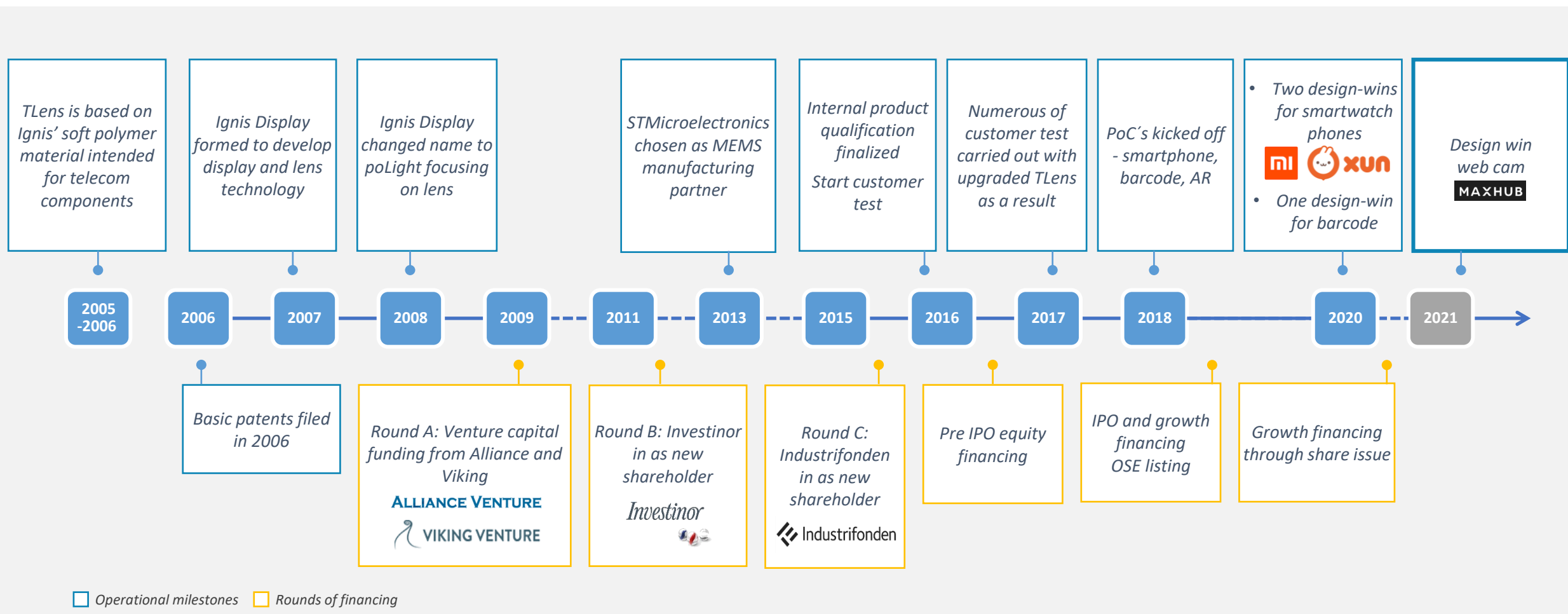
Financials and outlook

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# Key milestones



# Status on manufacturing

## Status

- poLight primarily **works with two sub-contractors**;
  - **ST Microelectronics** (ST) – Produces the actuator/wafer
  - **Assembly partner (2)** – Assembles and test the complete product
- **Ongoing build-up of inventories to prepare for first smartphone design-win to create short lead-time for delivery**



## Tong Hsing Electronic

- Provide state-of-the-art microelectronic packaging and substrate technologies to various industries, such as wireless communications, MEMS, image sensors, optical electronics, high brightness LED, solar cell, fuel cell, automotive electronics, computer peripherals, medical and network equipment. Further information can be found at [www.theil.com](http://www.theil.com)



## ST Microelectronics

- ST employees 46,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. ST technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. Further information can be found at [www.st.com](http://www.st.com).



## Lingsen Precision Industries

- Mitsubishi Electric Corp. and Dahsen Electronic Industries, Ltd. founded LINGSEN PRECISION INDUSTRIES, LTD. (LPI) in 1970 as a joint venture in Taipei, Taiwan. In 1973, LPI moved to the Taichung Export Processing Zone (TEPZ) and was reorganized as an entirely owned and independent assembly house. Further information can be found at [www.lingsen.com.tw](http://www.lingsen.com.tw)



# Management Team



**Dr. Øyvind Isaksen**

*Chief Executive Officer*

Dr. Isaksen has been CEO of poLight since August 2014. He has previously held several CEO positions, most recently in the publicly listed company Q-Free ASA, which he left in January 2014, after 7 years as CEO. Øyvind Isaksen holds a PhD in Applied Physics.



**Alf Henning Bekkevik**

*Chief Financial Officer*

Bekkevik is a senior executive with a background from Arthur Andersen (E&Y), Wallendahl, Fjord Line, Grenland Group, and, most recently, as VP Finance for Wood Group Norway AS. He holds a master's degree in business & economics (Siviløkonom) from NHH, and is a certified public accountant.



**Pierre Craen**

*Chief Technology Officer*

Craen is a senior executive with more than 20 years' experience in opto-mechanical systems engineering. Prior to joining poLight, he managed product development teams at Varioptic, Barco and Motorola/Symbol. Mr Craen holds an MSc in Optical Engineering from Sup-Optic, as well as an MSc in Applied Physics.



**Marianne Sandal**

*Chief Operating Officer*

Sandal is a senior executive with background from Tele-communications (Nera) and Road User Charging (Q-Free). She holds a BSc in Mechanical Engineering in addition to courses from Norwegian School of Management (BI). She has been responsible for world wide operations for more than 15 years.

# Board of Directors



## Ann-Tove Kongsnes - *Chairman*

Ms. Kongsnes is an Investment Director at Investinor AS. Kongsnes has over her career gained extensive experience from investments, development, M&A, IPO's and exits of technology companies. Prior to this, she worked 7 years with international marketing, and was formerly a Director of Marketing and Operations. Kongsnes has extensive board experience, and currently serves on the boards of 6 of Investinor's portfolio companies in addition to 4 Chair/member seats in Nomination Committees. She holds an MSc in Economics and Business Administration from HIB and took the Advanced Program in Corporate Finance at NHH.



## Grethe Viksaas - *Board member, independent*

Grethe Viksaas has a long career from the Northern European managed service provider Basefarm AS. First as founder and CEO, and later as executive chair and member of the board of directors. Prior to Basefarm, Ms Viksaas served as CEO for SOL System AS and in several management positions in IT companies. She has experience from numerous board positions, including Telenor ASA. She is currently a non-executive director on the boards of Link Mobility Group Holding ASA and Crayon Group Holding ASA. She also serves as Chair of the Board in No Isolation AS and Farmforce AS. Ms Viksaas has a master's degree in computer science from the University of Oslo.



## Dr. Juha Alakarhu - *Board member, independent*

Juha Alakarhu is the VP of Imaging at Axon in Tampere, Finland. He runs the Axon R&D office in Finland and is responsible for the imaging system for Axon camera products. Dr Alakarhu's entire career has been devoted to developing cameras. Before joining Axon in 2018, he worked for Nokia and Microsoft, where he developed several pioneering camera solutions, such as oversampling (the 41-megapixel camera), optical image stabiliser, and virtual reality technology. Juha Alakarhu holds a PhD from Tampere University of Technology.



## Svenn-Tore Larsen - *Board member, independent*

Mr. Larsen is an Electronic Engineer from the University of Strathclyde, UK. He was appointed Chief Executive Officer of Nordic Semiconductor in February 2002. Mr. Larsen has broad international experience in the semiconductor business, previously as Director for the Nordic region for Xilinx Inc. He has also been working at Philips Semiconductor.

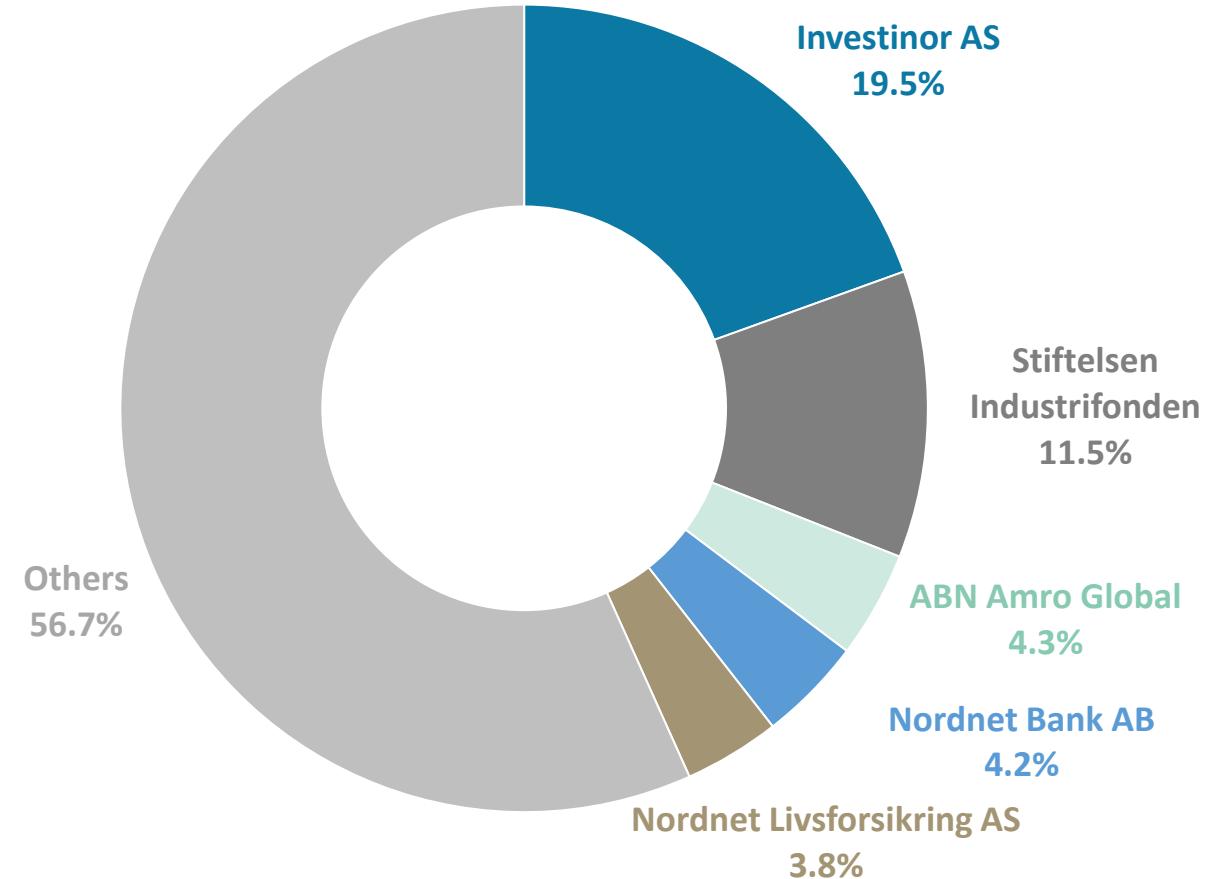


## Thomas Görling - *Board member*

Thomas Görling is a Senior Investment Director at Stiftelsen Industrifonden (Sweden) with a comprehensive involvement in building successful technology companies. Representing Industrifonden, he has been engaged in a number of portfolio company boards, at present Medtentia International Ltd Oy (Finland) and eBuilder AB (Sweden). Before joining Industrifonden in 1998, Mr. Görling held management positions within the European optical instrument and systems industry. Thomas holds a Master of Science from the Royal Institute of Technology in Stockholm, and studied business economics at Stockholm University.

# Shareholder structure

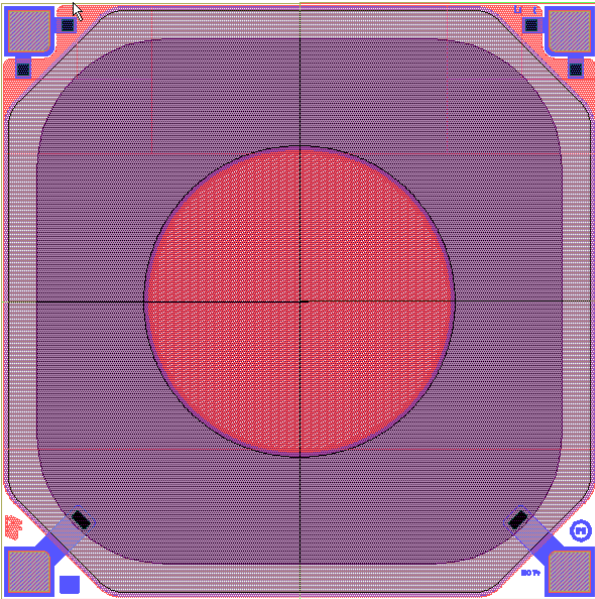
- There are 9,128,200 shares outstanding in the company
- The board is authorised to issue shares through share option schemes up to a total nominal value of NOK 176,877, equal to 884,386 shares. Since May 2020, 102,517 shares were issued in order to satisfy the obligation to deliver shares following exercise of share options. As of 30 June 2021, 679,311 share options (equal to 7.4% of shares outstanding) were outstanding, all at weighted average strike price of NOK 51.8/share.



# TLens<sup>®</sup> Products comparison

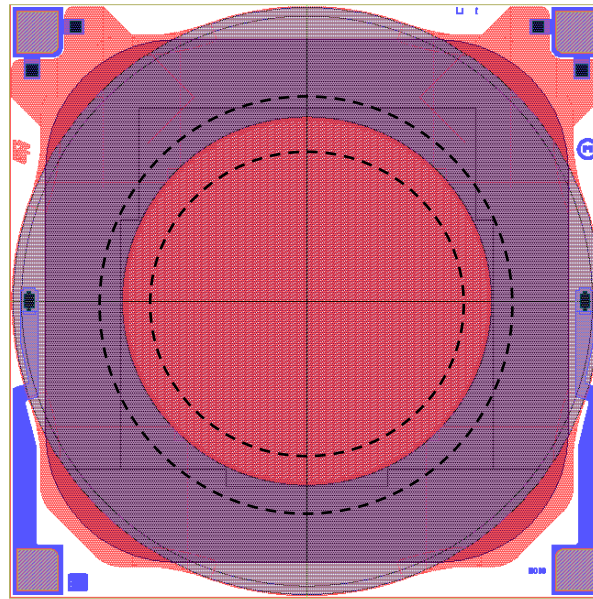
## *'Silver'*

XY-size: 3.2mm  
Membrane Aperture: ø1.55mm  
Back window Aperture: ø1.90mm



## *'Silver Premium'*

XY-size: 3.2mm  
Membrane Aperture: ø1.9mm  
Back Window Aperture: ø2.25mm



## *'Platinum'*

XY-size: 3.75mm  
Membrane Aperture: ø2.2mm  
Back Window Aperture: ø2.55mm

