
COMPANY PRESENTATION

12TH ODDO BHF GERMAN CONFERENCE

21ST & 22ND FEBRUARY, 2018



OUR EXECUTIVE BOARD

Dr. Rothweiler and Dr. Gollwitzer are experienced industry managers.



Dr. Dirk Rothweiler
CEO

since Jan. 1, 2017

- 2017 CEO, First Sensor AG
- 2008 Executive Vice President Optical Systems, Jenoptik AG
- 2005 Vice President Sales and Service, TCZ
- 2000 Managing Director Asia-Pacific, Süss Microtec Co. Ltd.
- 1999 Director Sales & Marketing, Süss Microtec AG
- 1995 Project Manager for the Semiconductor Technology Division, Carl Zeiss
- 1995 Doctorate from the Department of Engineering, RWTH Aachen



Dr. Mathias Gollwitzer
CFO

since Aug. 10, 2015

- 2015 CFO, First Sensor AG
- 2012 Vice President Group Controlling, EnBW Energie Baden-Württemberg AG
- 2008 CFO, Mercedes-Benz France SAS
- 2006 Director Corporate Controlling, DaimlerChrysler AG
- 2005 CFO, DaimlerChrysler Belgium/Luxembourg NV/SA
- 2002 Director Research and Technology, Daimler AG
- 1999 CEO, Temic Sprachverarbeitung GmbH
- 1995 Director Division Controlling, Telefunken Systemtechnik GmbH
- 1992 Expert Adviser Finance/Controlling, Deutsche Aerospace AG

FIRST SENSOR AT A GLANCE

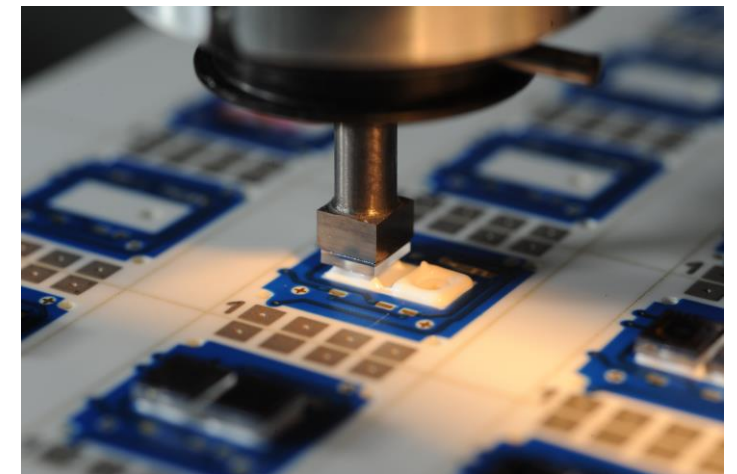
OUR COMPETENCE

We are an expert for semiconductor production.



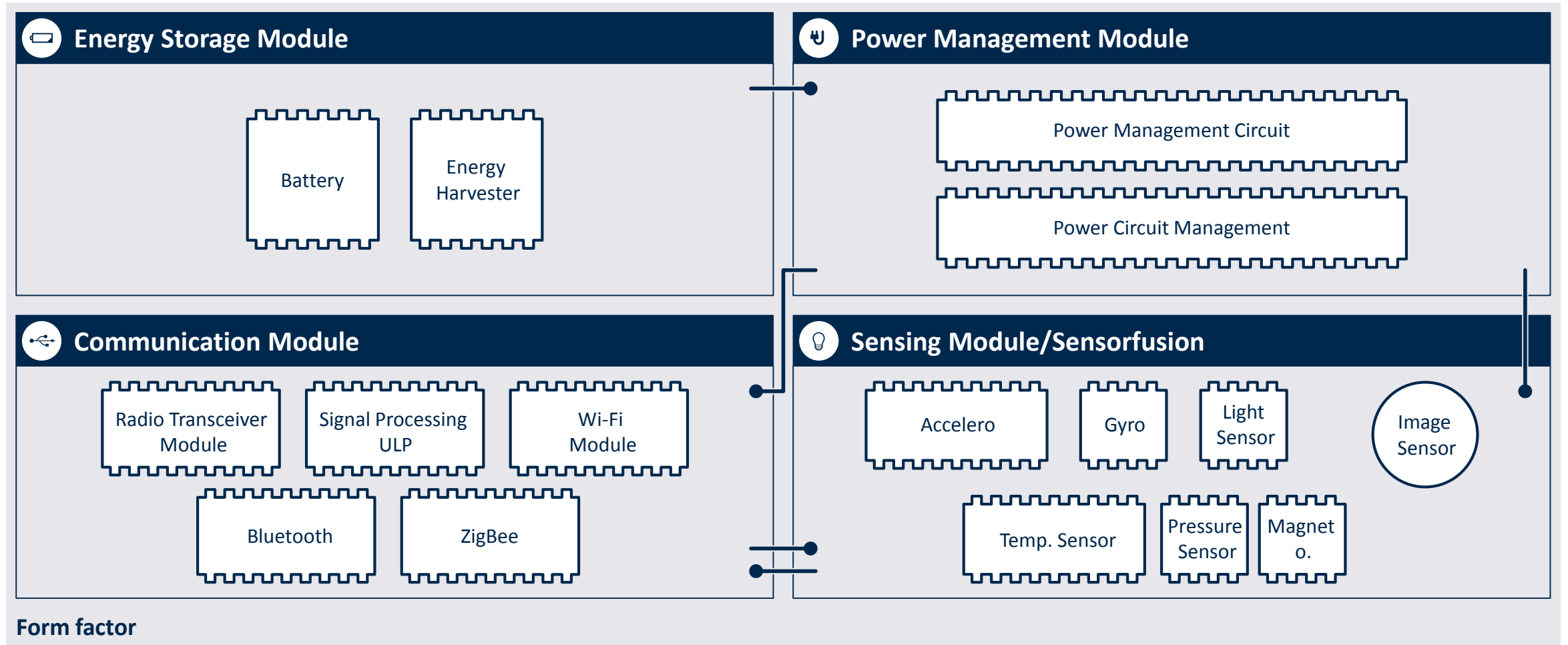
OUR COMPETENCE

And possess extensive experience in micro systems technology.



OUR COMPETENCE

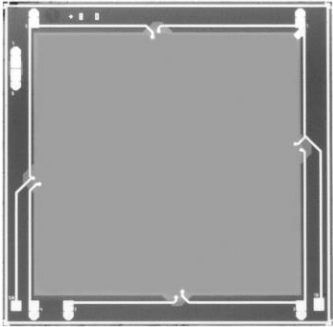
We combine these competences with profound system expertise.



OUR COMPETENCE

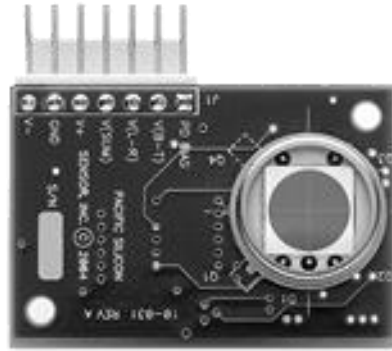
Thereby, we cover the entire value chain of sensor technology.

Sensor chip



- Silicon based
- converts physical parameters into electrical signals

Packaging



- Connecting microelectronic and non-electronic micro components to a housing

Sensor



- Consists of a sensor chip, a housing and electronics
- The measurement signal can be calibrated

Sensor system



- Measures and preprocesses data
- communicates with other systems

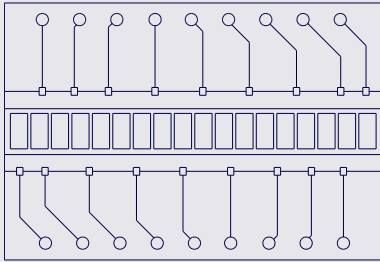
Detect

Detect & Understand

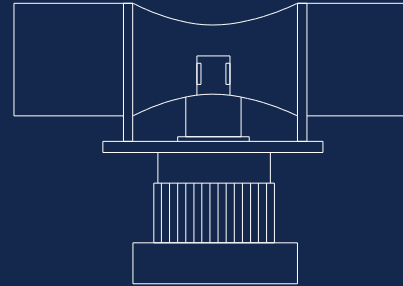
OUR RANGE OF SERVICES

We develop and produce standard products and sensor solutions.

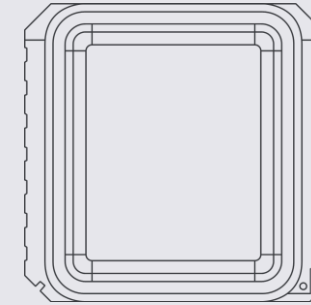
Radiation



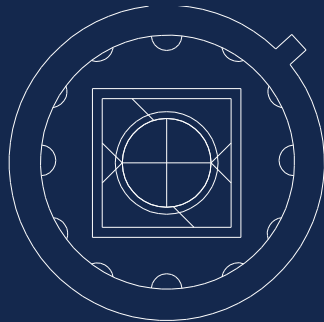
Flow



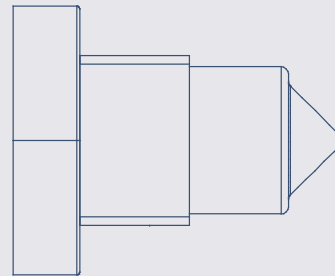
Acceleration



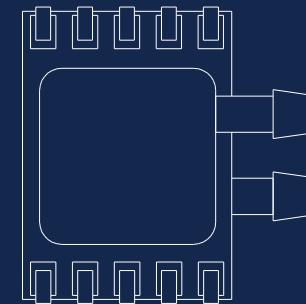
Light



Level

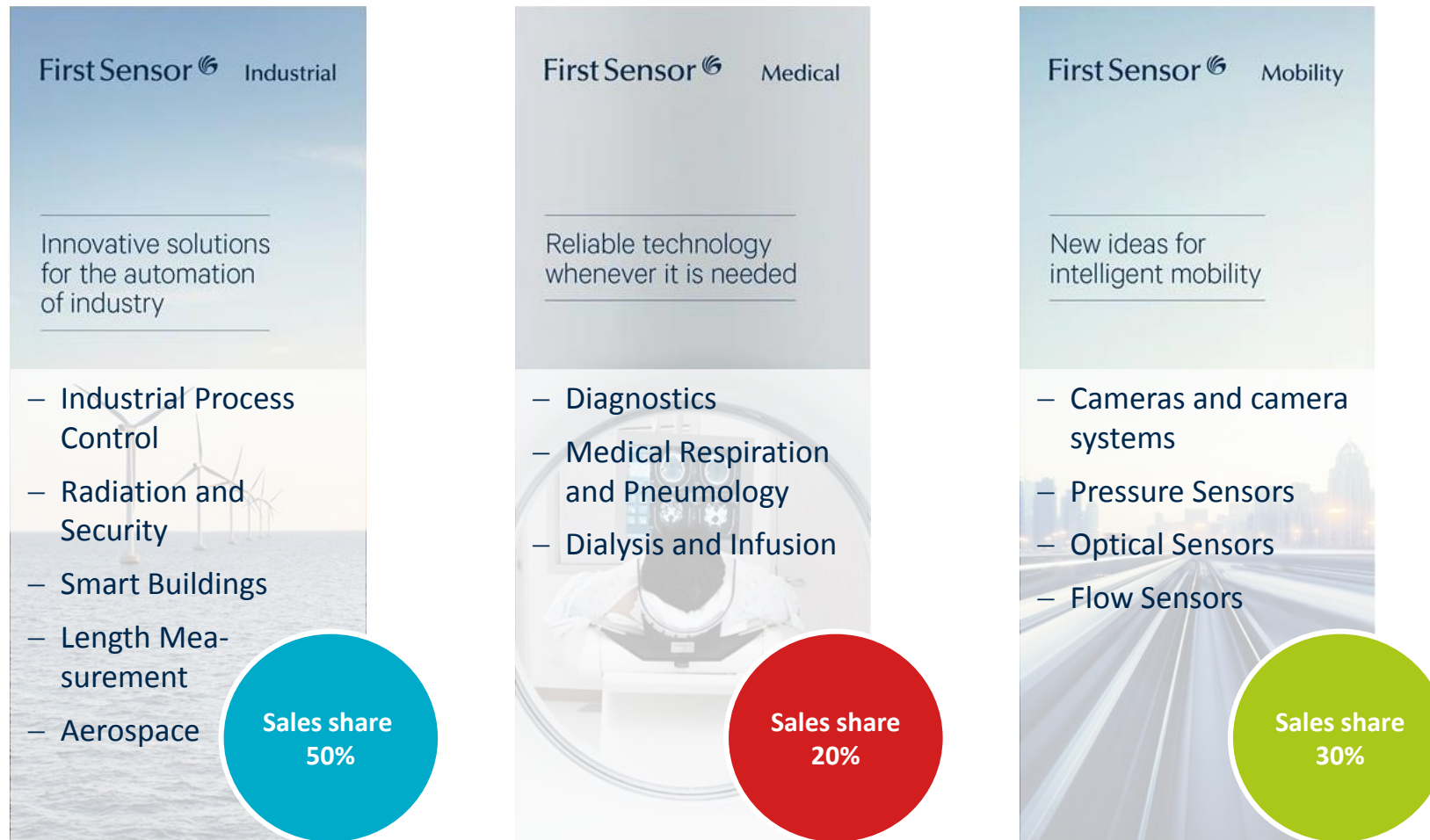


Pressure



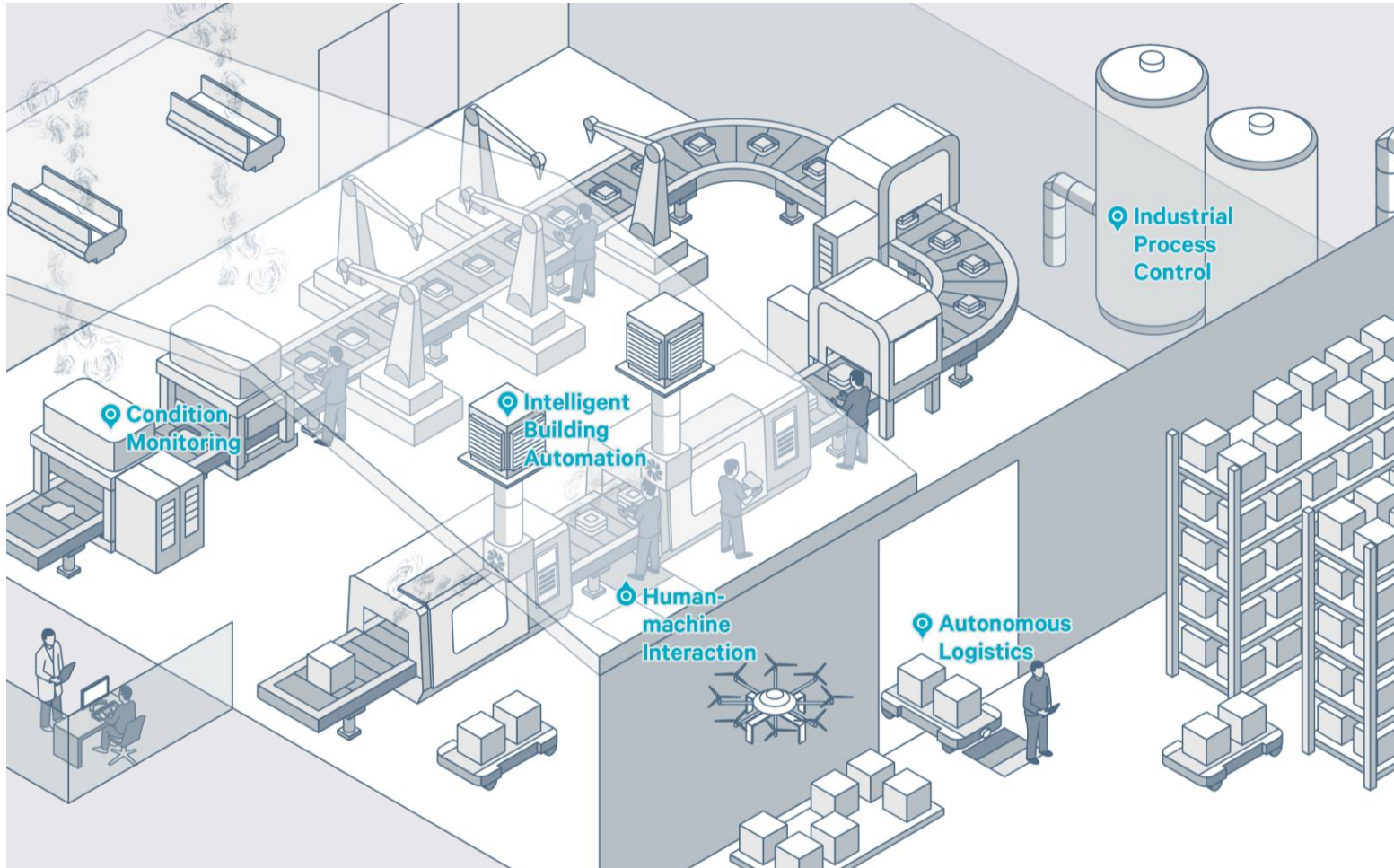
OUR MARKETS

We focus on the growth markets Industrial, Medical and Mobility.

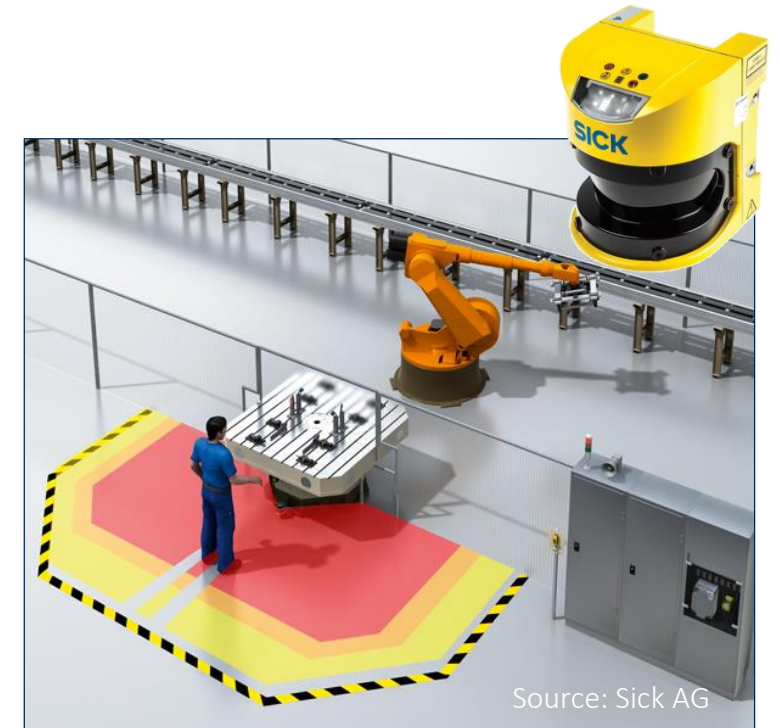


OUR MARKETS

The industrial market is marked by smart processes.

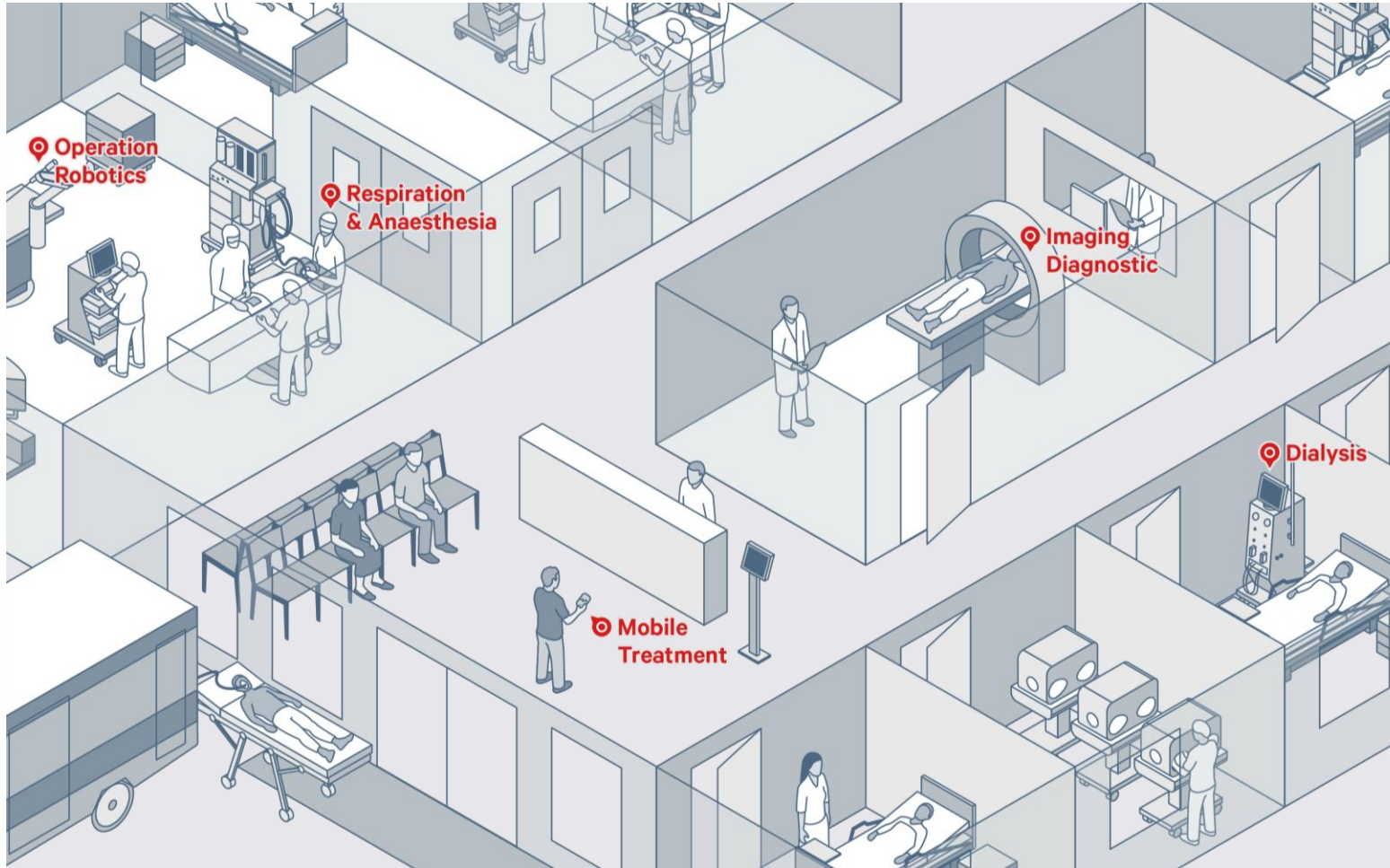


Intelligent sensor systems control applications such as condition monitoring, predictive maintenance or human-machine collaboration.

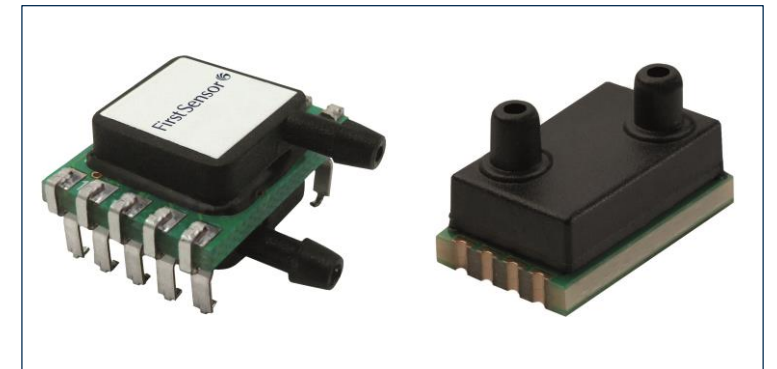


OUR MARKETS

The medical market is characterized by miniaturization & digital health.

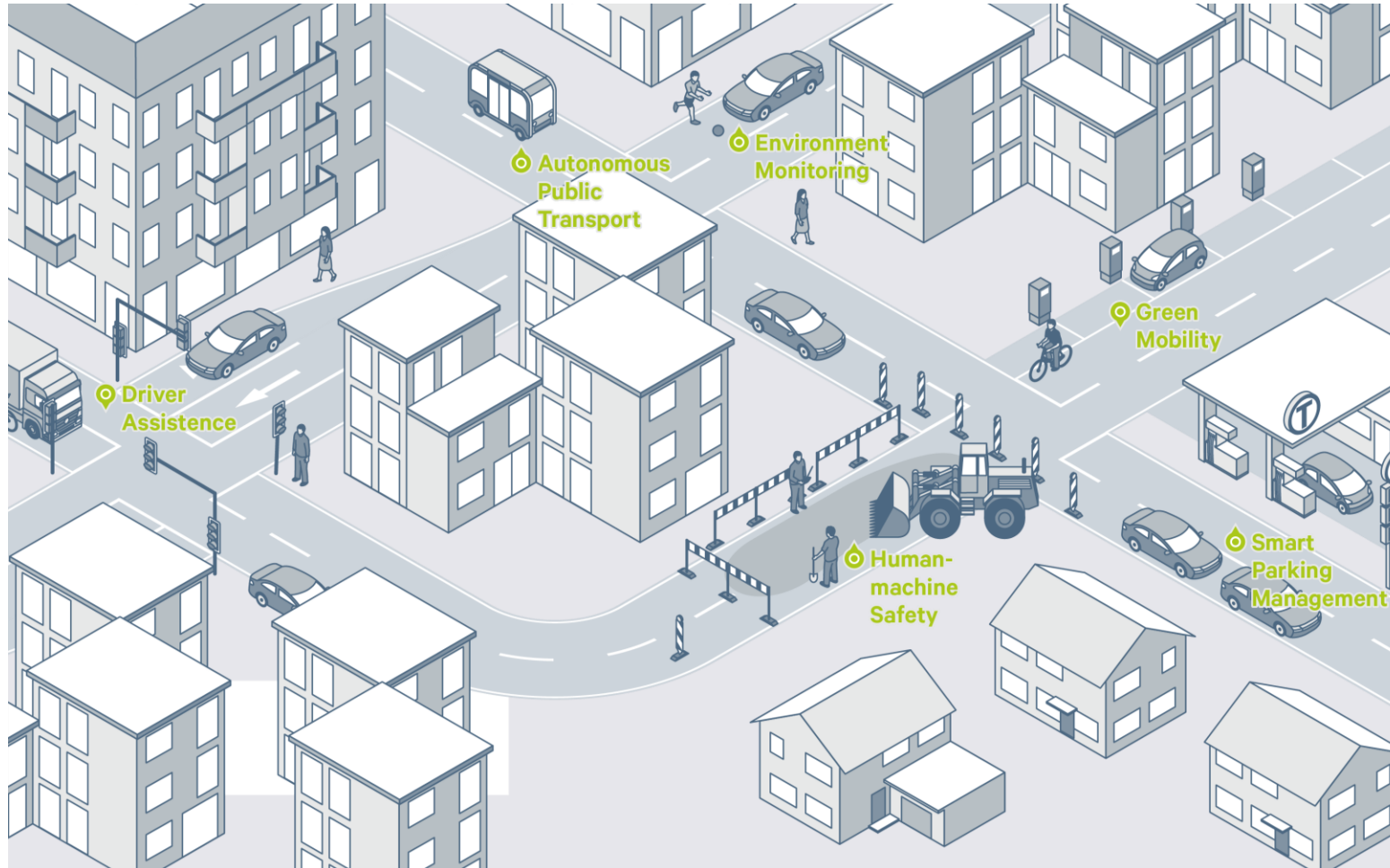


Devices in the nanometer range for new applications, e.g. ventilators for home use, are no longer merely visions of the future.

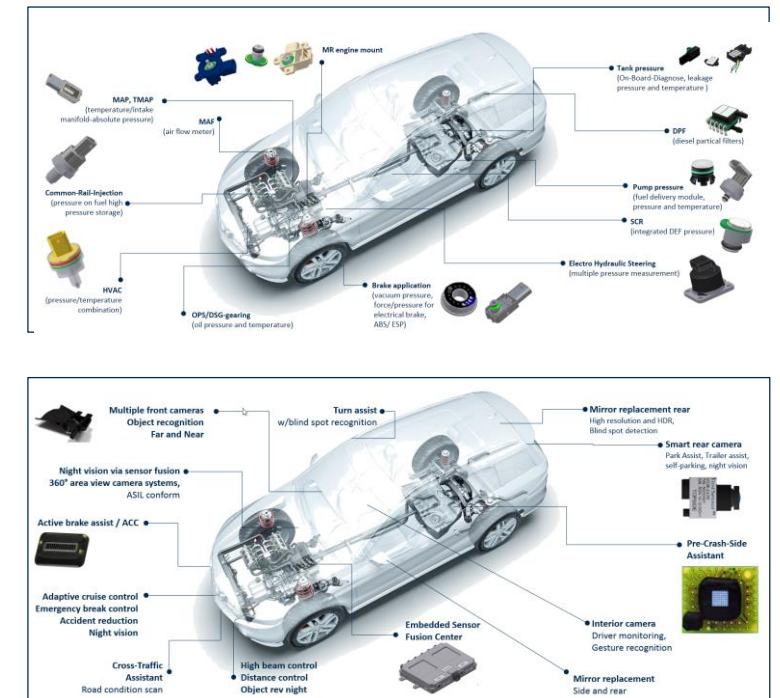


OUR MARKETS

The mobility market is driven by a new idea of transportation.



The trend towards partially and fully autonomous vehicles is possible only thanks to sensor-based driver assistance systems.



OUR PRESENCE

We grow in our core market as well as in high potential sales regions.

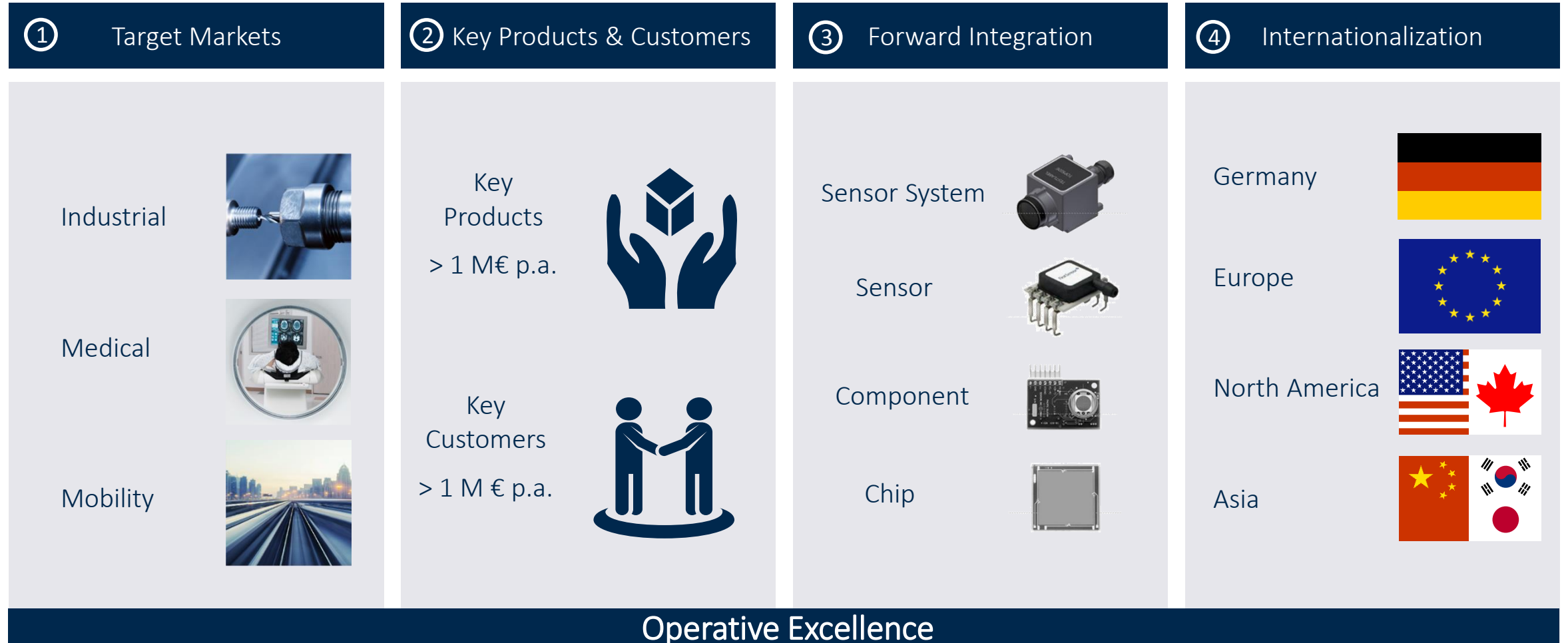


*Q3 2017

STRATEGIC PERSPECTIVE FOR PROFITABLE GROWTH

OUR STRATEGY FOR PROFITABLE GROWTH

We generate and utilize economies of scale in 4 dimensions.



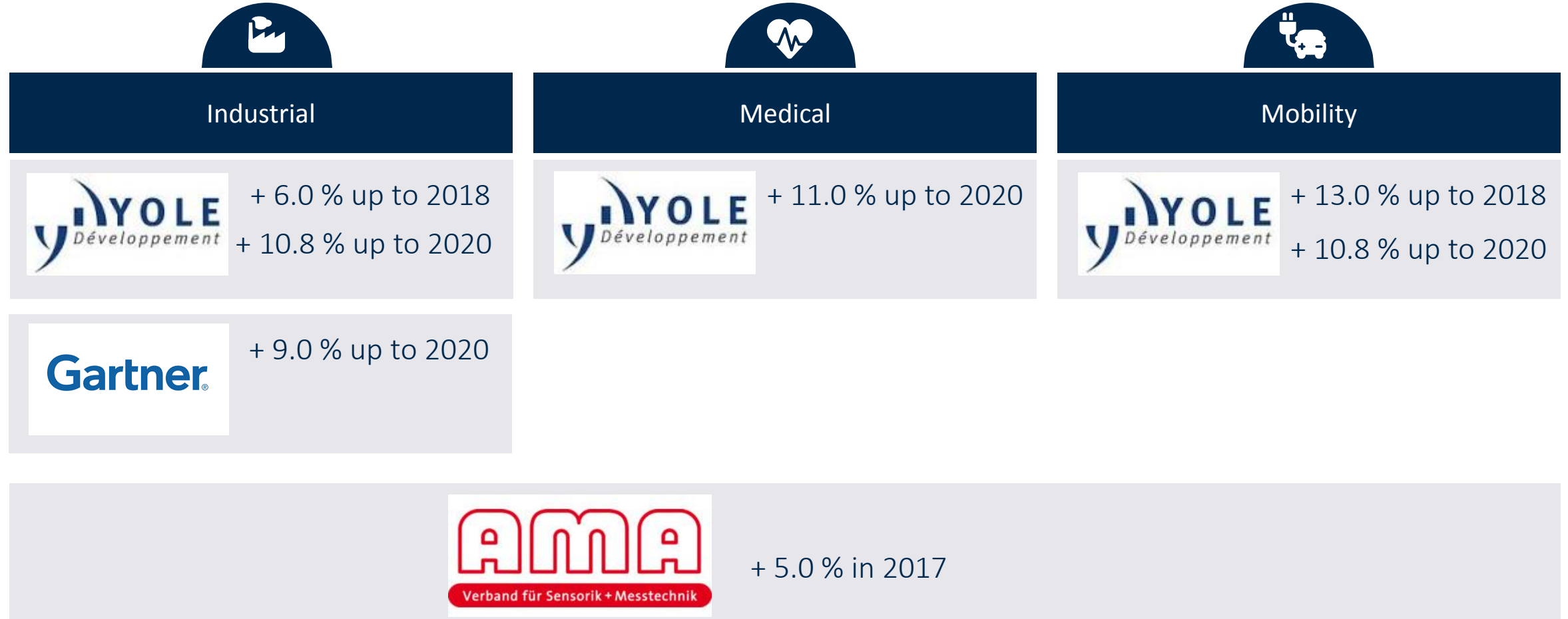
OUR STRATEGY FOR PROFITABLE GROWTH

We generate and utilize economies of scale in 4 dimensions.



DIMENSION 1: CLEAR FOCUS ON OUR TARGET MARKETS

We participate in above average growth markets.



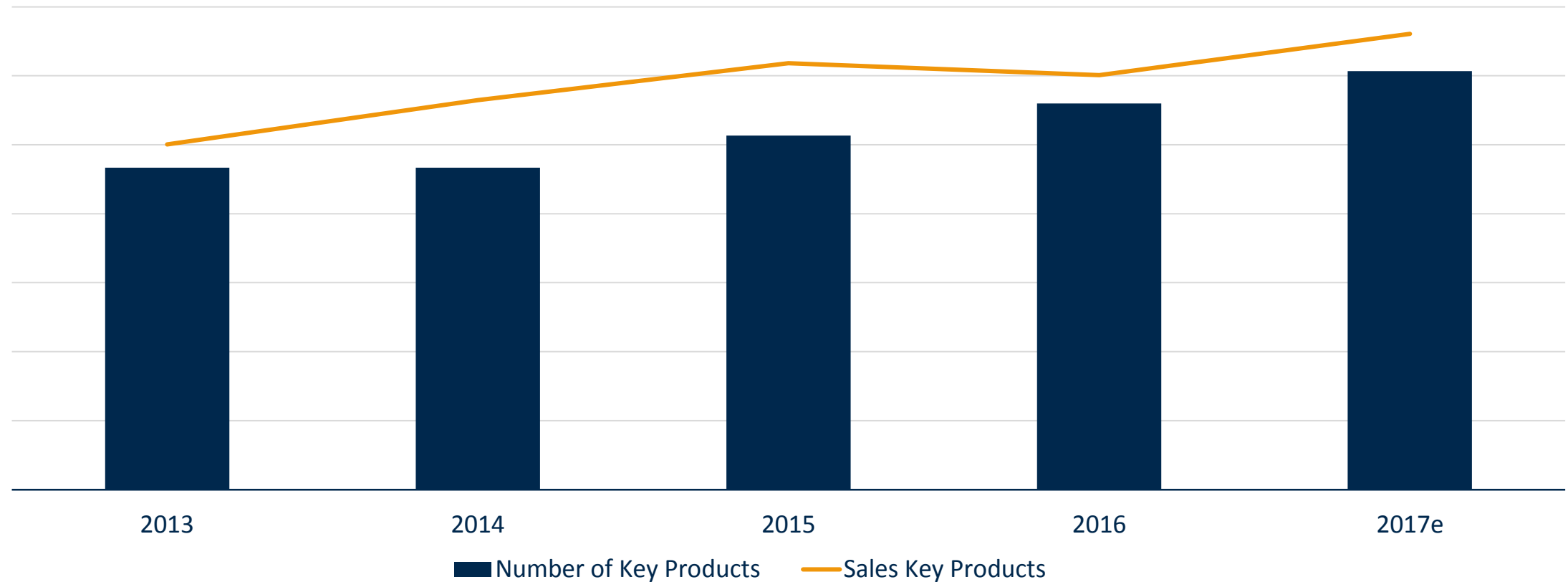
OUR STRATEGY FOR PROFITABLE GROWTH

We generate and utilize economies of scale in 4 dimensions.



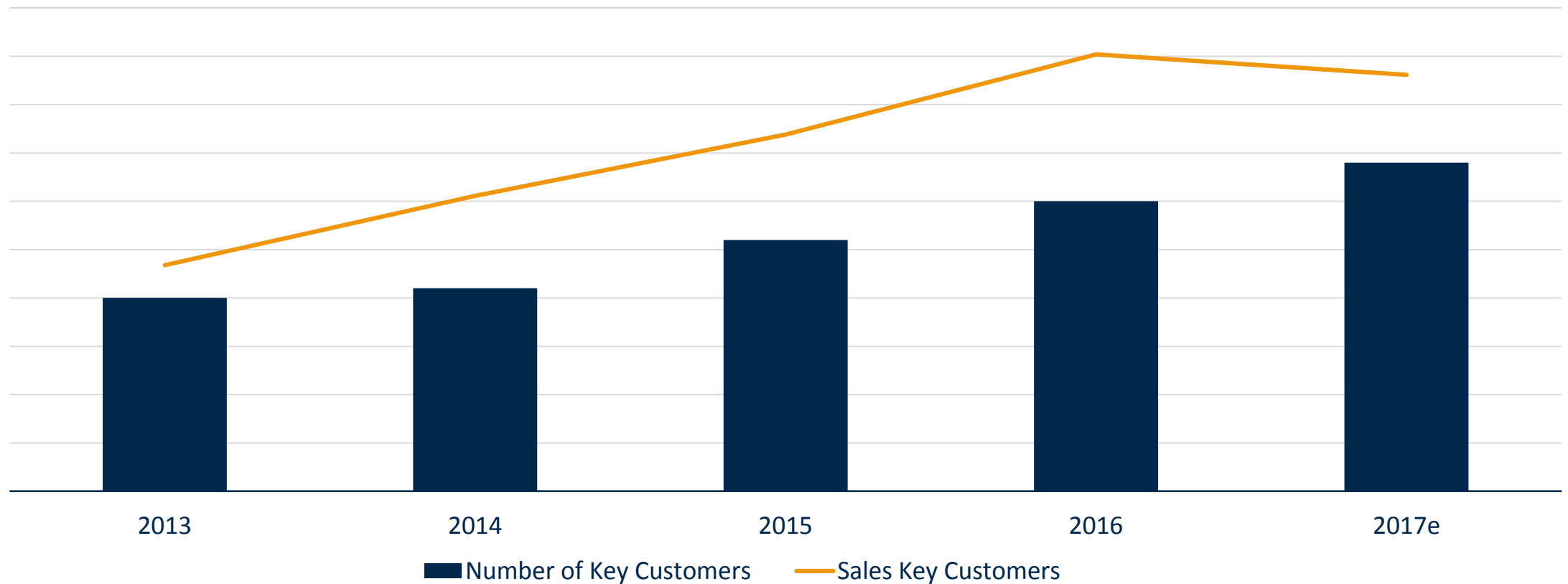
DIMENSION 2: CLEAR FOCUS ON KEY PRODUCTS

In the next years, we will grow with existing and new key products.



DIMENSION 2: CLEAR FOCUS ON KEY CUSTOMERS

In the next years, we will grow with existing and new key customers.



DIMENSION 2: CLEAR FOCUS ON KEY PRODUCTS & CUSTOMERS

Why is this efficient?

Key Products

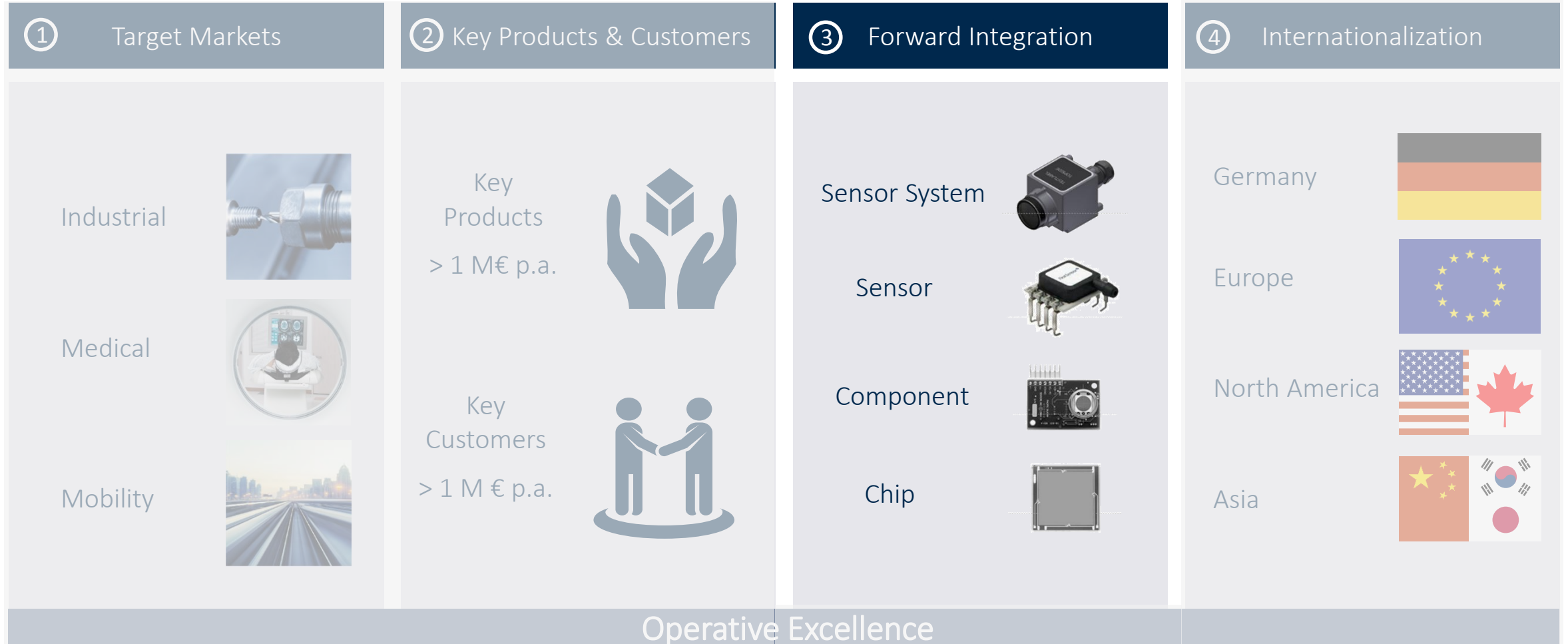
Key Customers

- ▶ Single respective product developments result in relatively large quantities and therefore sales volumes.
- ▶ Sales per head in both sales and engineering increases – our existing team will be able to handle larger revenue streams.
- ▶ „Mix & Noise“ in operations are decreased due to reduced parts variety and transactions per revenue.
- ▶ Our supply chain and own production will gain in productivity and can be managed with fewer resources per revenue.
- ▶ With higher quantities per part our purchasing power will increase.
- ▶ With more varietal purity we increase the stability of our value creation process.
- ▶ Lead time, on time delivery and quality will improve as a result.

Our growth becomes more scalable and our profitability increases.

OUR STRATEGY FOR PROFITABLE GROWTH

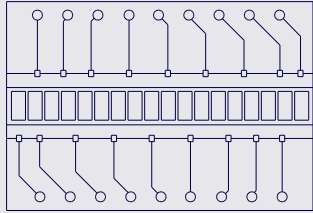
We generate and utilize economies of scale in 4 dimensions.



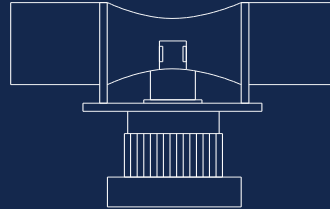
DIMENSION 3: CLEAR FOCUS ON FORWARD INTEGRATION

We base our forward integration initiatives on clear product roadmaps.

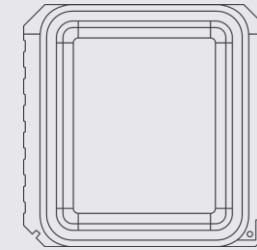
Radiation



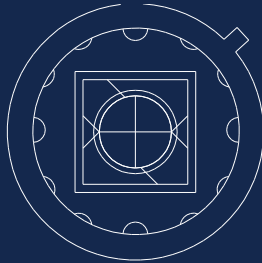
Flow



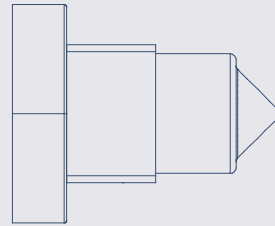
Acceleration



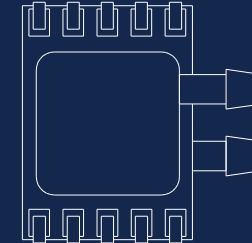
Light



Level



Pressure



Integrated Manufacturing Services



Multi Sensor Systems



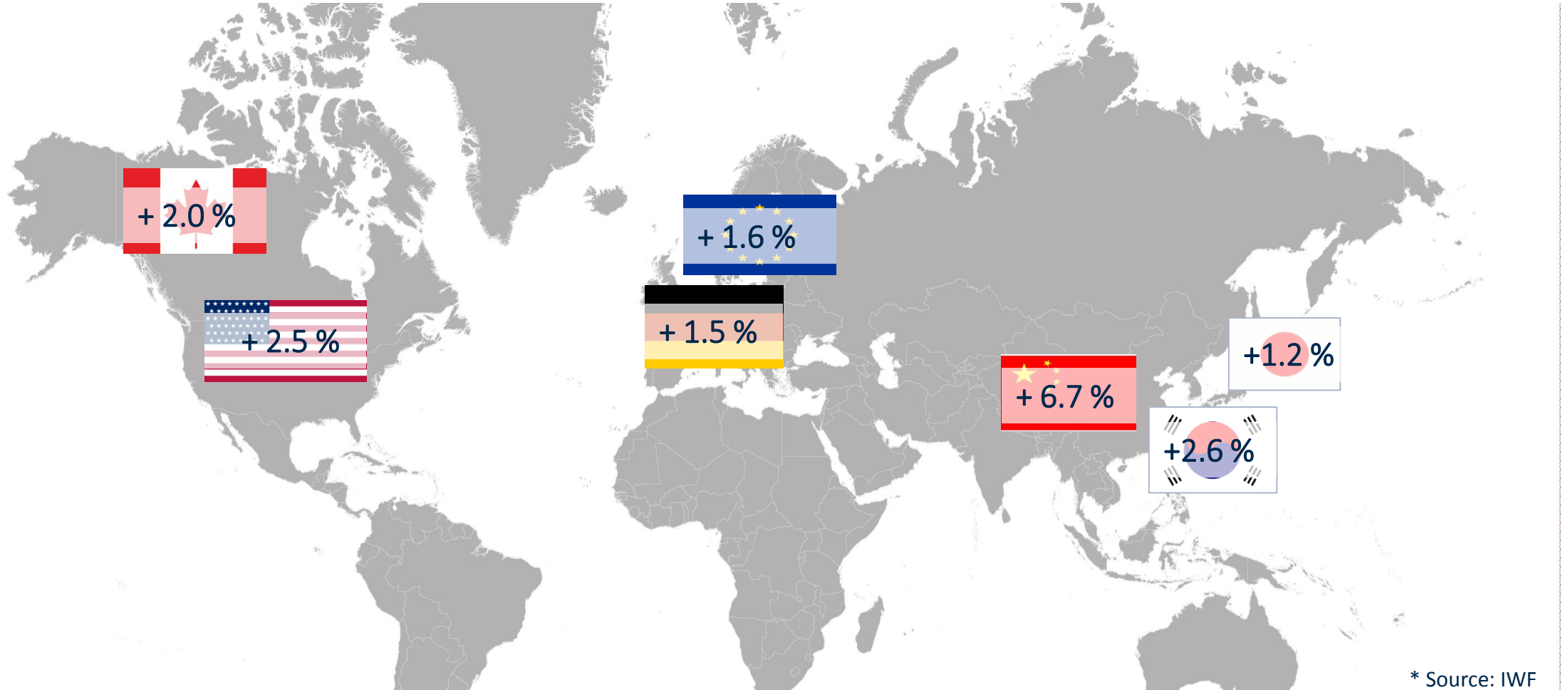
OUR STRATEGY FOR PROFITABLE GROWTH

We generate and utilize economies of scale in 4 dimensions.



DIMENSION 4: CLEAR FOCUS ON INTERNATIONALIZATION

We will participate in the solid growth* of our targeted sales regions.



OUR STRATEGY FOR PROFITABLE GROWTH

We generate and utilize economies of scale in 4 dimensions.



THE FUNDAMENT: FOCUS ON OPERATIVE EXCELLENCE

We concentrate on five core initiatives.

Top Initiatives

- ▶ Lead Time, On-Time Delivery, Quality
- ▶ Core Processes
- ▶ OneERP
- ▶ T's & C's Harmonization
- ▶ Portfolio Optimization

WITH THIS APPROACH TOWARDS PROFITABLE GROWTH WE
ALREADY EXCEEDED OUR TARGETS FOR 2017.

Guidance 2017

Result 2017

Sales	140 - 145	M €
EBIT-Margin	5 - 6	%

Sales	147.5	M €
EBIT-Margin	7.1	%

GROWTH DRIVER LIDAR

GROWTH DRIVER LIDAR

LiDAR is a relevant factor within our strategy for profitable growth.



GROWTH DRIVER LIDAR

Main reason for accidents are preventable human mistakes.

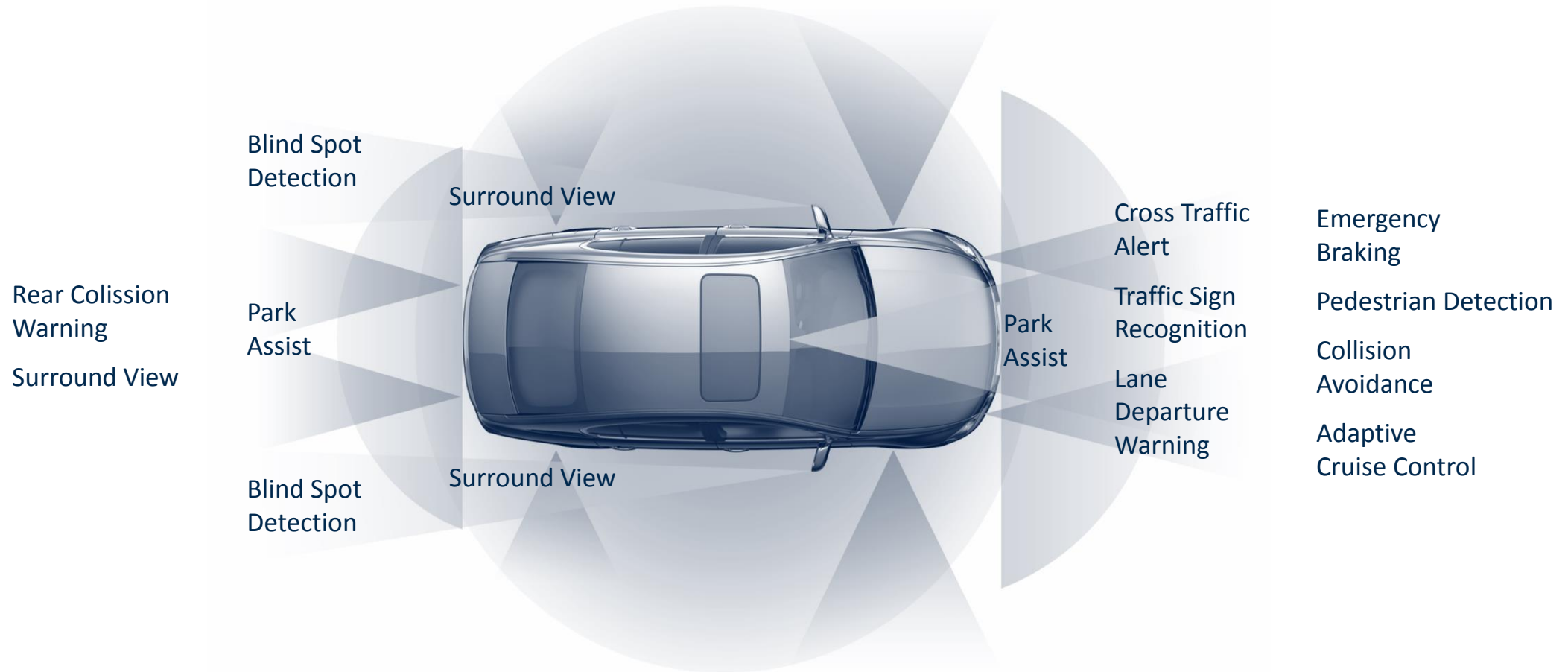


1	Mistakes of car drivers	63.9 %
2	Mistakes of bicyclists	13.5 %
3	Bad road conditions	7.7 %
4	Mistakes of motorbike riders	7.2 %
5	Mistakes of truck drivers	5.7 %
6	Mistakes of pedestrians	3.5 %
7	Technical issues	0.9 %

Source: German Federal Statistical Office 2016

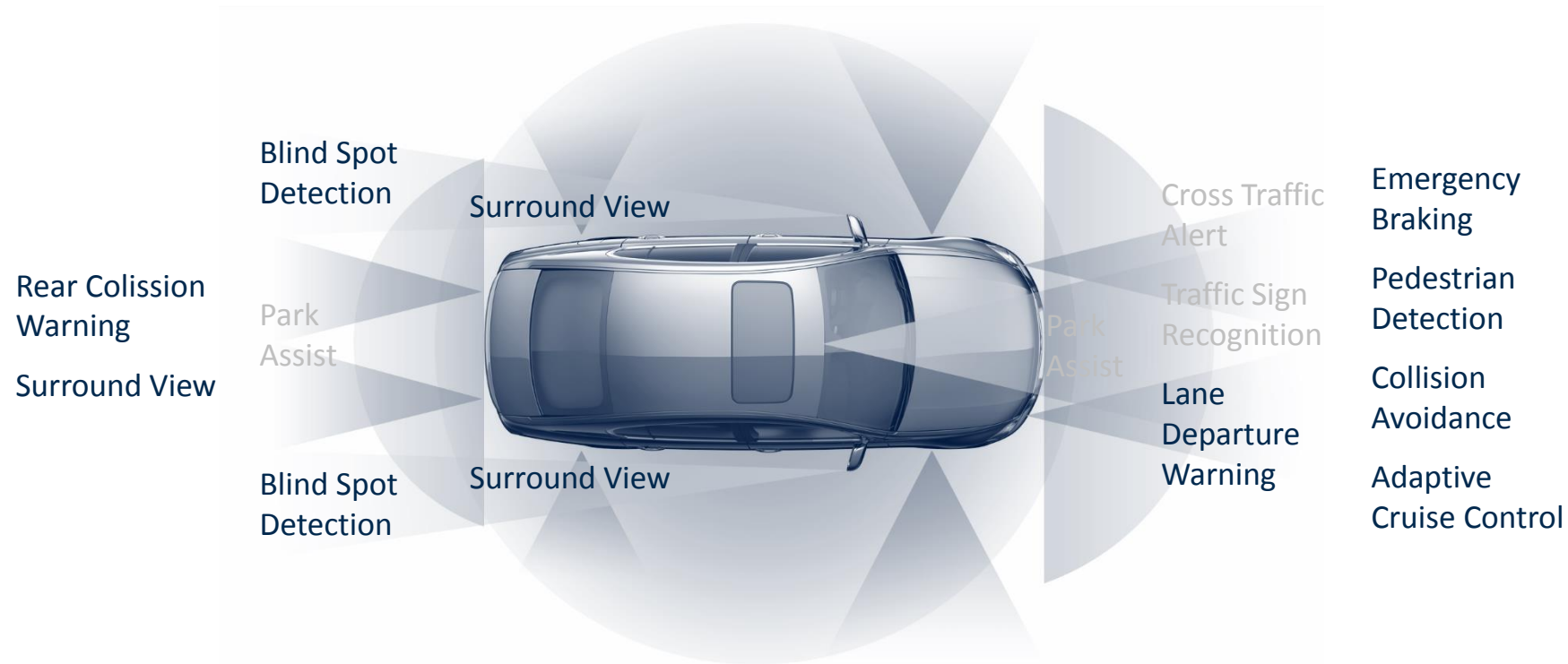
GROWTH DRIVER LIDAR

Sensors in vehicles assist the drivers and provide more road safety.



GROWTH DRIVER LIDAR

LiDAR is an important technology for many of these safety applications.








GROWTH DRIVER LIDAR

Reason: LiDAR provides the highest resolution even for large distances.

Criteria	LIDAR (pulsed ToF)	Radar		Ultra-sonic	Cameras		PMD
		Short distance	Long distance		Mono	Stereo	
Max range (m)	150 - 250	55 - 100	150 - 200	2 - 4	40 - 60 (120 coarse)	60	7 - 10
Min range (m)	1	0,25 - 1	1	0.25	0.3	0.3	0.3 – 0.8
Precision (m)	0.1 (newer: 0.04)	0.25 – 0.75	0.3 – 3.75	Very good	3	0.2 – 0.3	good
Velocity measurement	Indirectly via distance t1-t0	directly via Doppler effect		hardly	hardly	Indirect via dist.	Indirect via dist.
Horizontal field of view	30° - 180°	55° Scan: 120°	16°, Scan: 60°	60°	45° - 190°	45°	40 - 69°
Horizontal resolution	0.01° - 1°	10.5°	3.5°	bad	< 0.1° - 0.3°	< 0.1°	0.2°
Vertical field of view	3° - 16°	3° - 13°	3° - 13°	30°	45°	45°	40 - 56°
Vertical resolution	0.8° - 1°	4.5°	4.5°	bad	< 0.1°	< 0.1°	0.2°

GROWTH DRIVER LIDAR

Besides LiDAR, cameras are irreplaceable for a safe surround view.

On Board Sensor Capability			 LIDAR (Detection & ranging)	 Camera (Monitoring & classification)	 RADAR (Detection & ranging)	 V2X & Cellular* (Information)	 Map & Location (Information)
Detection Performance	Traffic objects	Car/Trucks	★ ★	★	★ ★ ★	★	
		Motorcycle	★ ★	★	★ ★	★	
		Bicycle	★ ★	★	★	★	
		Pedestrian	★ ★ ★	★	★	★	
		Animal	★ ★	★			
		Debris	★ ★	★			
	Infrastructure traffic constraints	Road marking	★	★ ★			★ ★
		Traffic signs		★ ★			★ ★ ★
		Traffic lights		★ ★		★ ★ ★	★
	Path/Road structure	Curve	★				
		Guard rails	★ ★		★ ★		
		Wall/Obstacle	★ ★	★	★ ★		
	360° View		★ ★ ★	★ ★ ★			
Robustness		Rain/Snow	★ ★	★	★ ★ ★	★ ★ ★	★ ★ ★
		Fog			★ ★ ★	★ ★ ★	★ ★ ★
		Night	★ ★ ★		★ ★ ★	★ ★ ★	★ ★ ★

* Depends on coverage

GROWTH DRIVER LIDAR

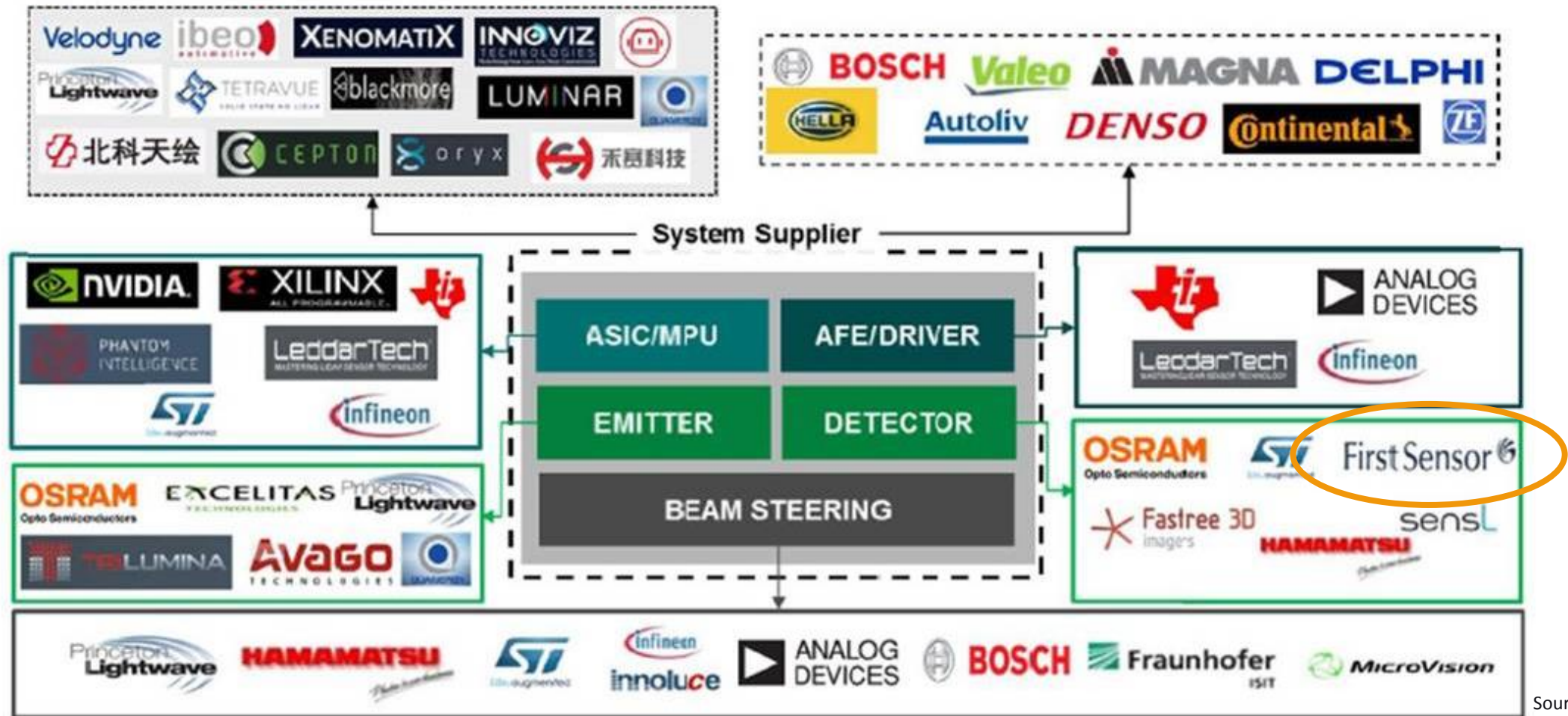
In LiDAR systems different components work hand in hand.



Source: Velodyne

GROWTH DRIVER LIDAR

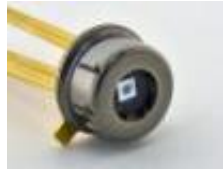
First Sensor is an important supplier for the detectors in LiDAR systems.



Source: YOLE

GROWTH DRIVER LIDAR

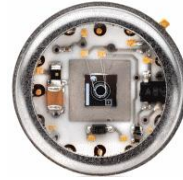
With our APD we have captured a leading share for more than 10 years.



Single APD with amplifier



DARPA Urban Challenge; First Sensor APDs in all winning teams



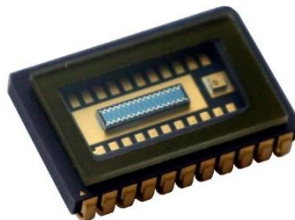
Industrial hybrids (APD+TIA in one package)



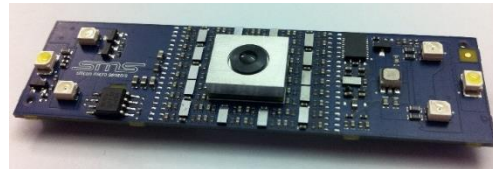
Few Pixel APD-Array in SMD package for ACC / AEC-Q 101 qualified by FIS



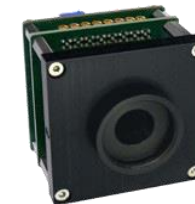
12 Pixel APD-Array in ceramic package for ACC



Gesture recognition with 64 pixel APD-Array



Receiver module with APD-Array, HV, TIA, MUX, Timing discriminator

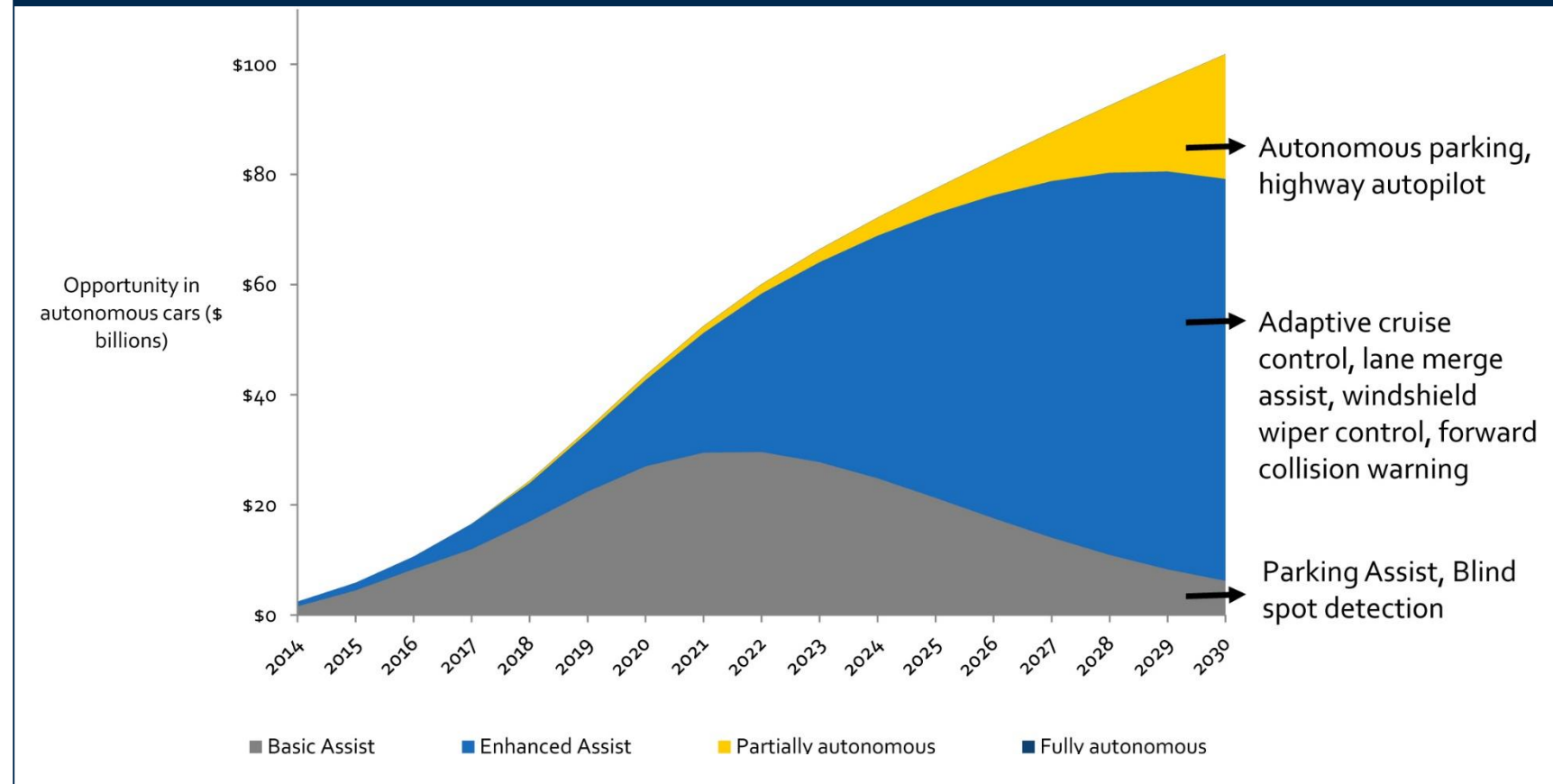


Receiver module with APD and electronics integrated in one package

GROWTH DRIVER LIDAR

Therefore we will participate in the growth of the driver assist market.

Global driver assist market will grow to \$102 billion by 2030

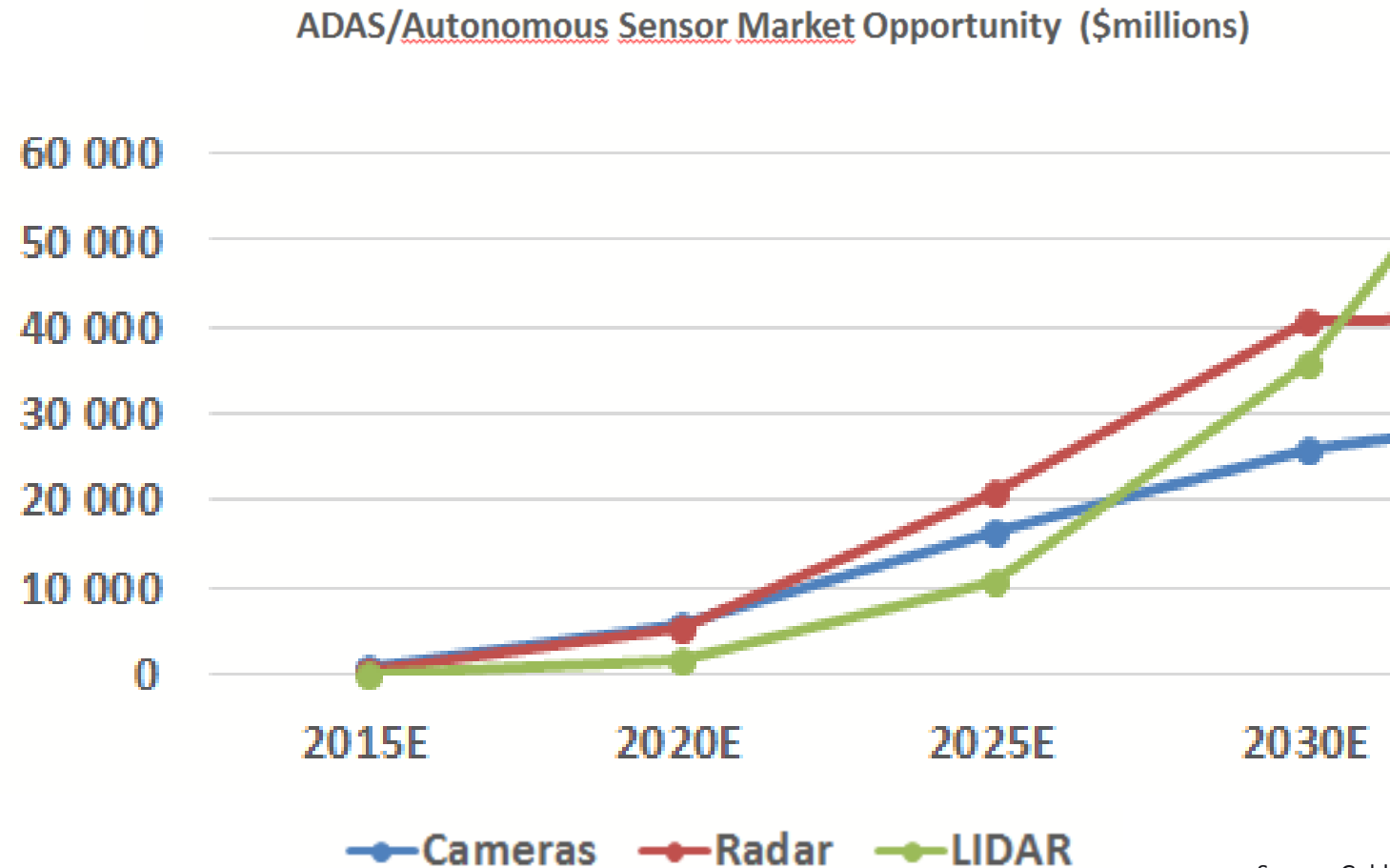


- 2017: 94 m vehicles produced (2.2% CAGR 17-22, 2017 IHS Markit)
- Automotive semiconductor revenue for ADAS grows with 20.9% (CAGR 17-22, 2017 IHS Markit)
- Estimates as high as 10% of new cars with self-driving features in 2020

Source: Lux Research 2017

GROWTH DRIVER LIDAR

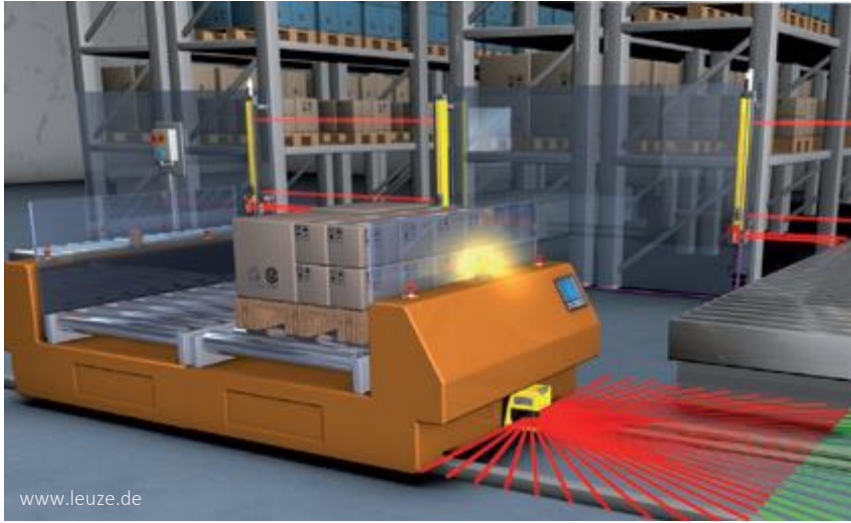
In this growing mobility market LiDAR will play the most important role.



Source: Goldman Sachs Global Investment Research

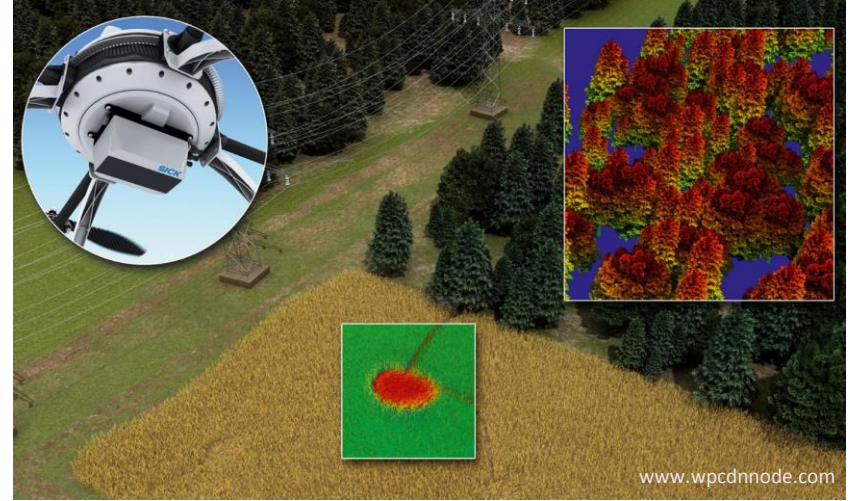
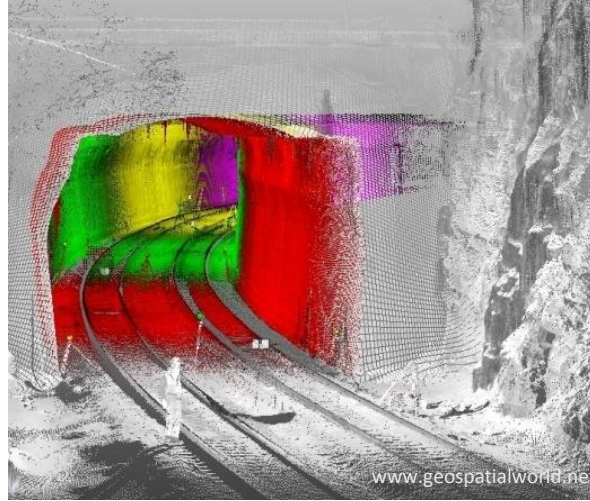
GROWTH DRIVER LIDAR

But LiDAR also has applications in the industrial market, e.g. logistics...

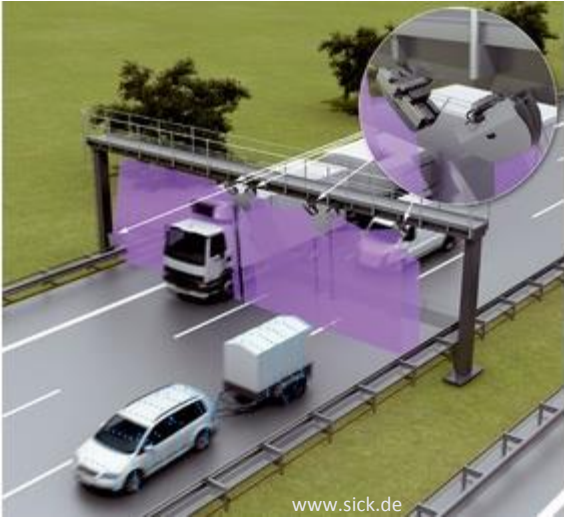


GROWTH DRIVER LIDAR

...mapping and construction...



GROWTH DRIVER LIDAR ...and traffic control & security.



THE SHARE

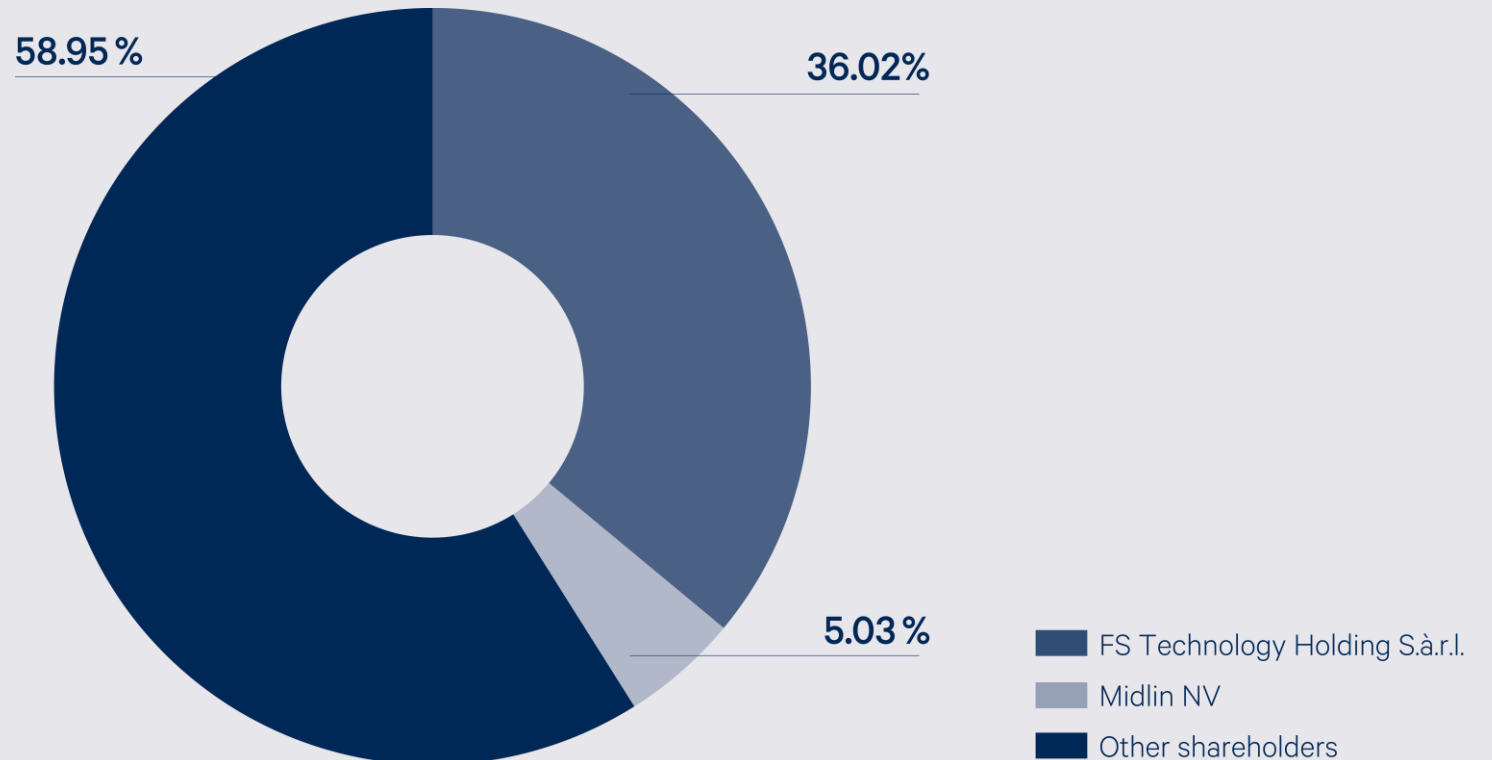
FIRST SENSOR SHARE

Currently, our free float amounts to nearly 59 percent.

Key facts*

Market Cap:	€ 214.54 m
Traded stocks/day:	28,754
30 Day High:	25,5
30 Day Low:	20,5
Index Ranking Free Float Market Capitalization:	53
Index Ranking Turnover:	53

* January 31, 2018



FIRST SENSOR SHARE

Increase of 50% while the DAX increased by 13% over the year 2017.



FINANCIAL CALENDAR

Financial Press Conference & Capital Market Day: Meet us on March 22.

When?	What?
March 22, 2018 8.00 a.m.	Annual Report 2017
March 22, 2018 10.00 a.m.	Financial Statement Press Conference & Capital Market Day
May 14, 2018	Interim Report Q1 2018
May 23, 2018	Annual General Meeting 2018, Penta Hotel, Grünauer Str. 1, 12557 Berlin
August 13, 2018	6-Month Financial Report 2018
November 12, 2018	Interim Report Q3 2018
November 26-28, 2018	German Equity Forum 2018

FIRST SENSOR AG

Contact

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Mail to: corinna.krause@first-sensor.com