

First Sensor 

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# NEXT PRESSURE GENERATION

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EXPANSION OF FIRST SENSOR'S PRODUCT  
FAMILIES

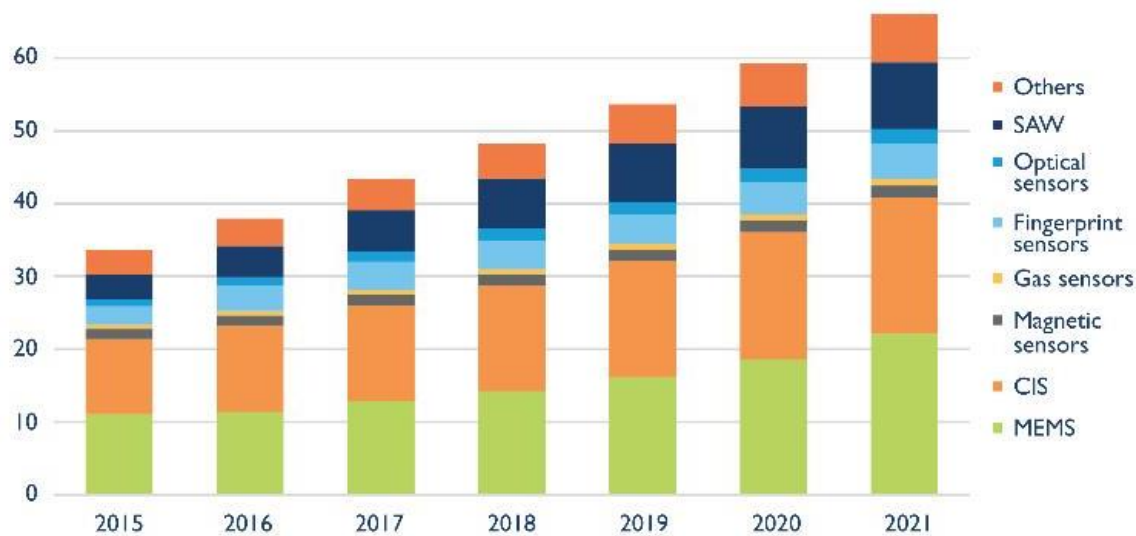


# FRAMEWORK CONDITIONS

## Continual growth of MEMS pressure sensor market

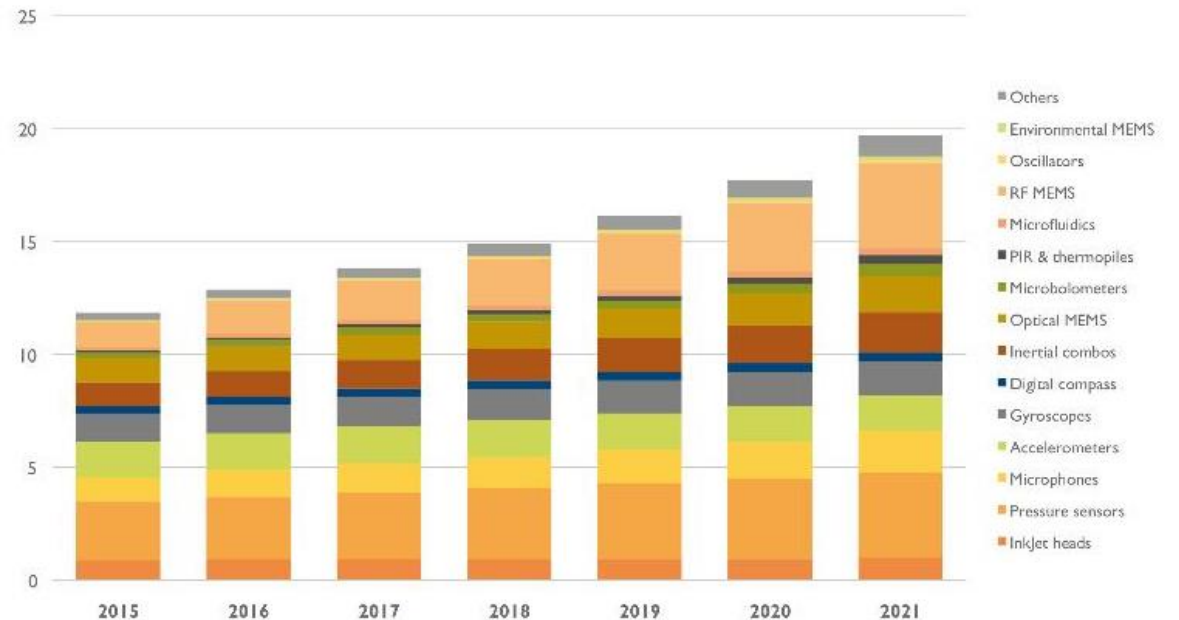
### MEMS and sensors revenue market in B\$

Source: Status of the MEMS Industry 2017, Yole Development, June 2017



### 2015-2021 MEMS market forecast in US\$B

Source: Status of the MEMS Industry report, Yole Development, May 2017



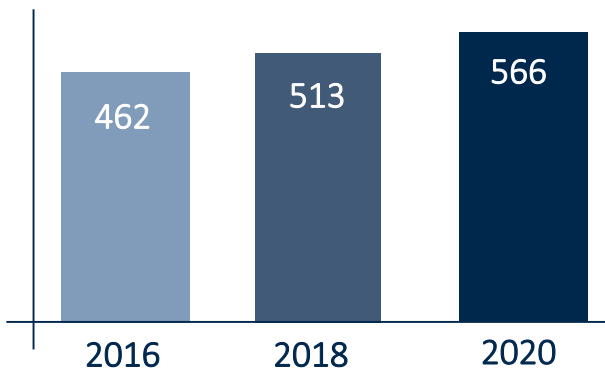
# FRAMEWORK CONDITIONS

## MEMS pressure sensors business is driven by megatrends

### Smart Factory



Global market (\$100 mn)

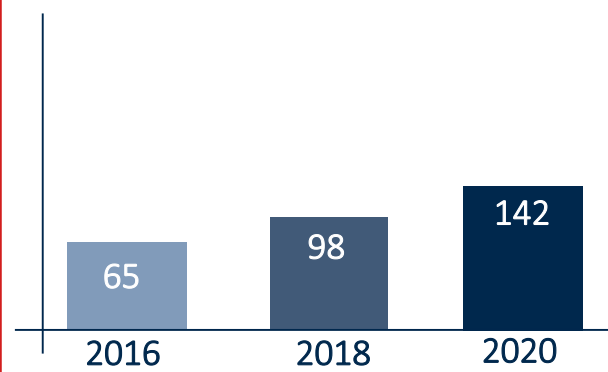


Source: MarketsAnd Markets, KESSIA

### Smart Health



Global market (\$100 mn)

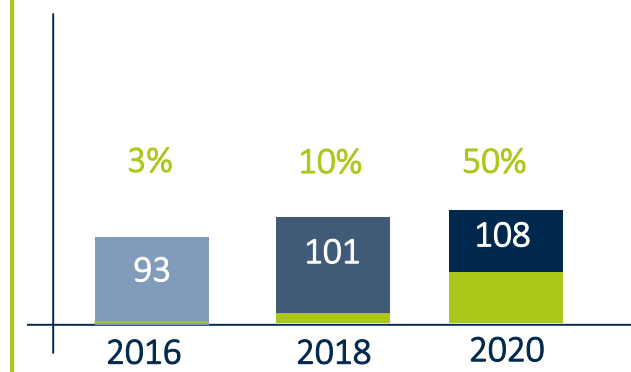


Source: Statista

### Green Mobility



Global light vehicle assembly & share of alternative drives (mn units)



Source: PwC Autofacts

# FRAMEWORK CONDITIONS

## Pressure measurement is extremely versatile



# FRAMEWORK CONDITIONS

## We have extensive experience in MEMS sensor technology



Standard products & solutions and distribution of standard sensors

# OVERALL OBJECTIVES

## Further strengthening our pressure sensor footprint



**Positioning as a provider of high-precision sensors for ultra-low to high pressure measurement that are suitable for the toughest conditions**

**1**



**Expand pressure platforms for ultra-low to high pressure:**  
For applications in the industrial, medical and mobility target markets

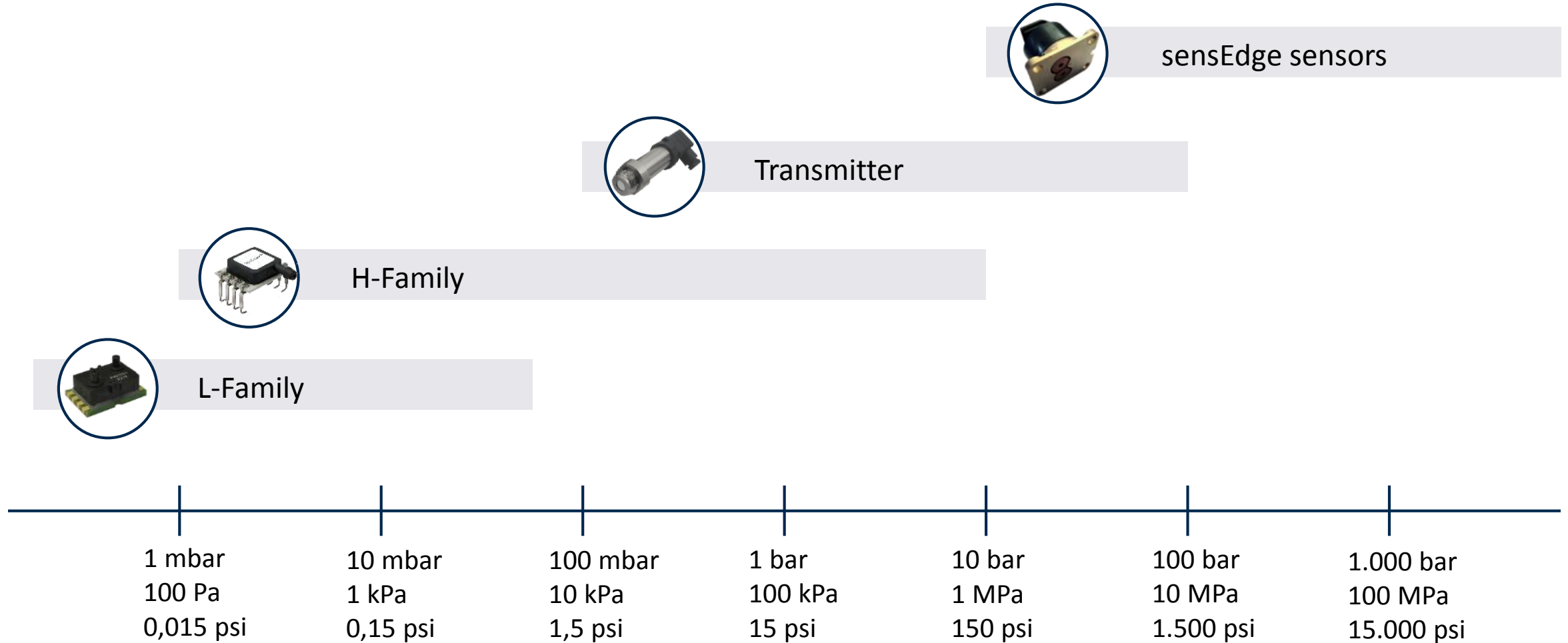
**2**



**Forward Integration:**  
All from a single source – from sensor chips to complex sensor systems

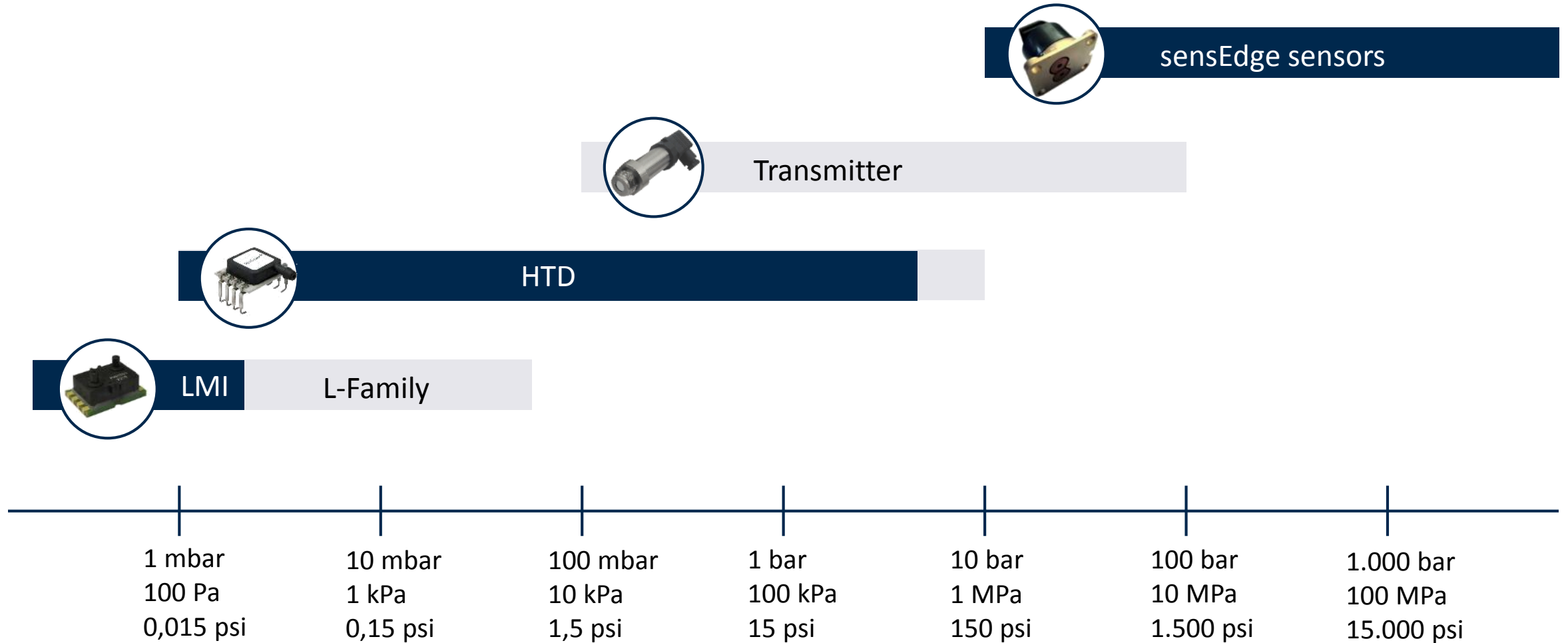
# 1. EXPAND PRESSURE PLATFORMS

We cover a broad range from ultra-low to high pressure sensors



# 1. EXPAND PRESSURE PLATFORMS

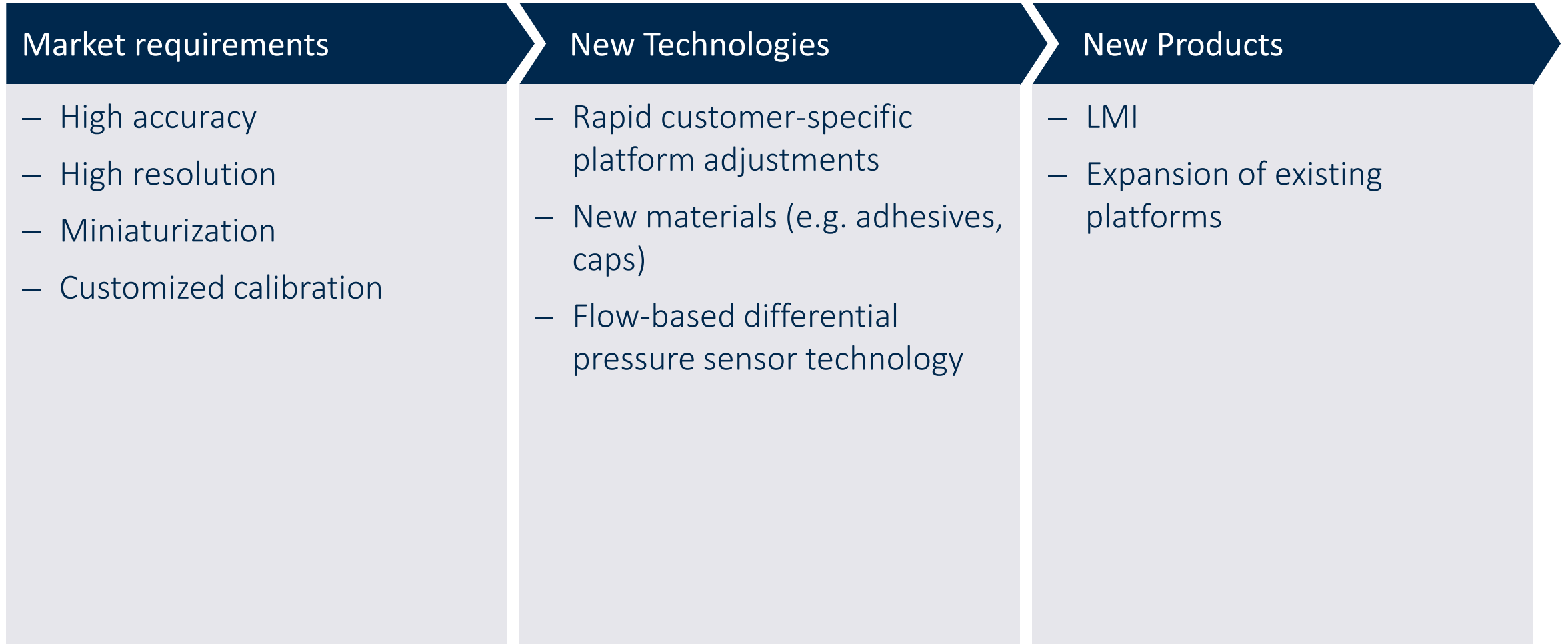
## We strengthen our platforms with new pressure sensors





# 1. EXPAND PRESSURE PLATFORMS

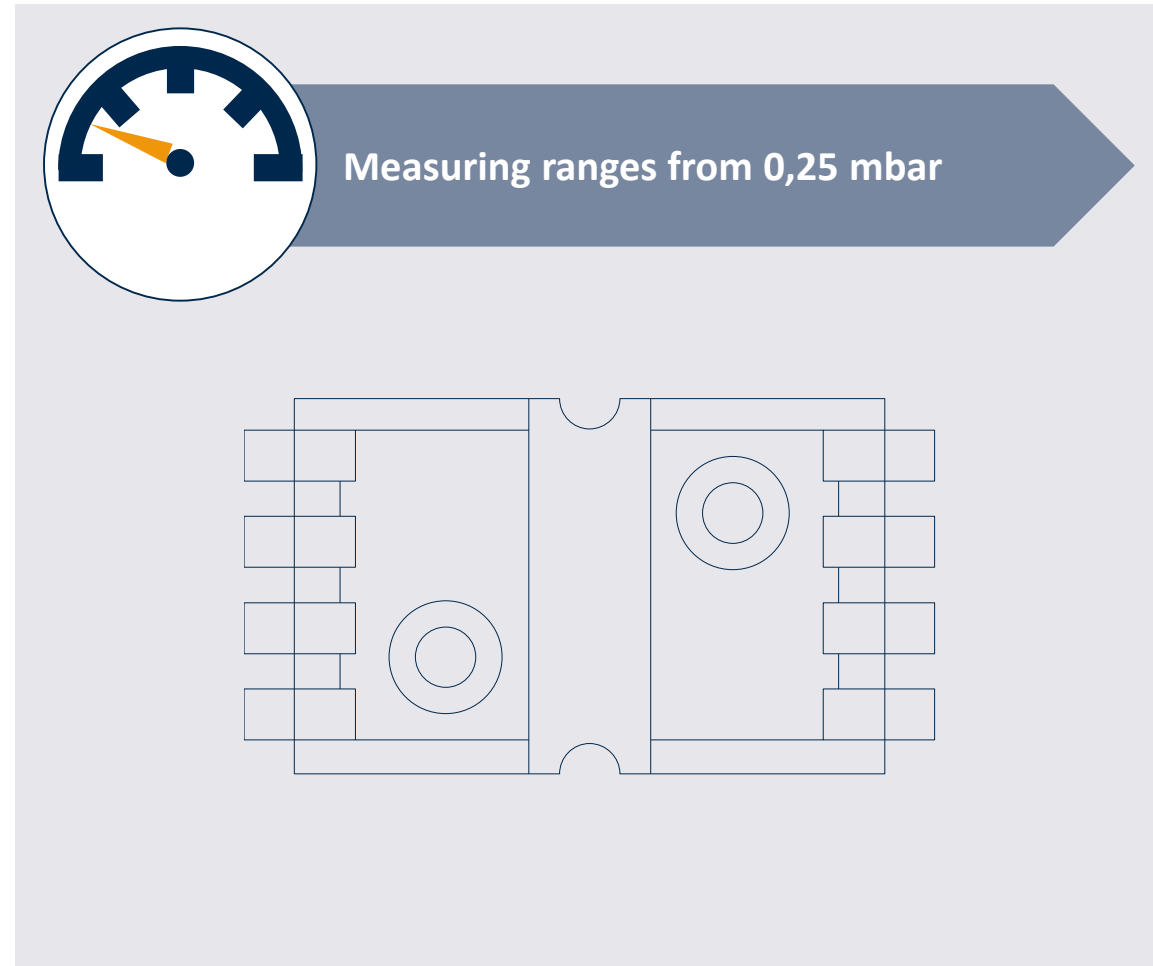
## L-Family: Our platform for ultra-low pressure measurement



# L-FAMILY

## Based on micro-flow: LMI series for ultra-low differential pressure

-  **Innovative micro-flow technology**
-  **Extreme miniaturization:** Micro-flow channel integrated within the silicon sensor chip
-  **Extremely low production tolerances** and cost-effective **mass production**
-  **Immunity** to both dust-laden and humid air
-  **Excellent sensitivity, accuracy, offset long term stability** and long service life



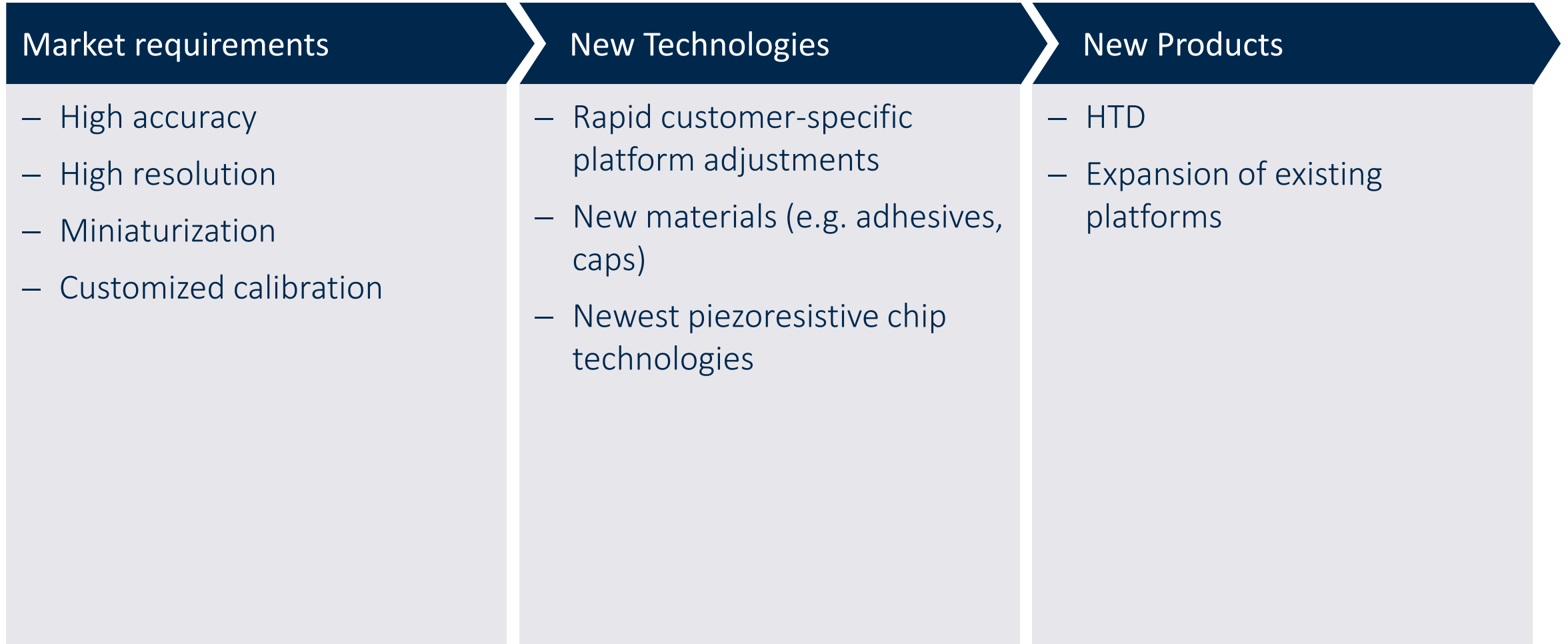
## L-FAMILY

LMI sensors are ideal for HVAC and medical device applications








# 1. EXPAND PRESSURE PLATFORMS

## H-Family: Our low & mid pressure platform



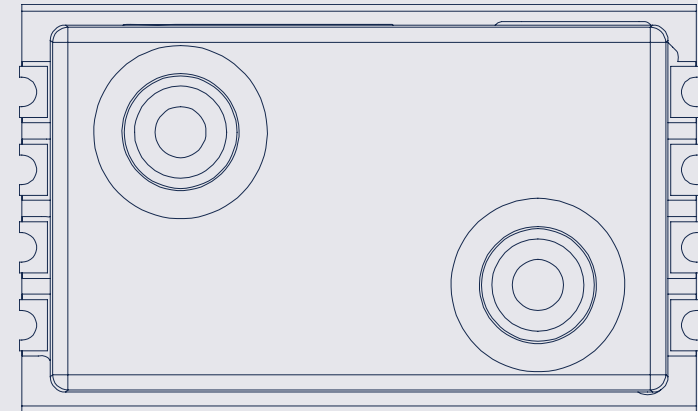
# H-FAMILY

## Piezoresistive measurement: HTD series for low differential pressure

-  **Distribution** of licenced standard products
-  **Piezoresistive measurement** in addition to LMI micro-flow series
-  **Very small and flat:** 8 x 13 mm, height <7 mm  
Ideal for space-saving manifold assemblies
-  SPI interface with 15 bit resolution
-  High-accuracy and long-term stability



Measuring ranges from  
1 mbar to 7 bar



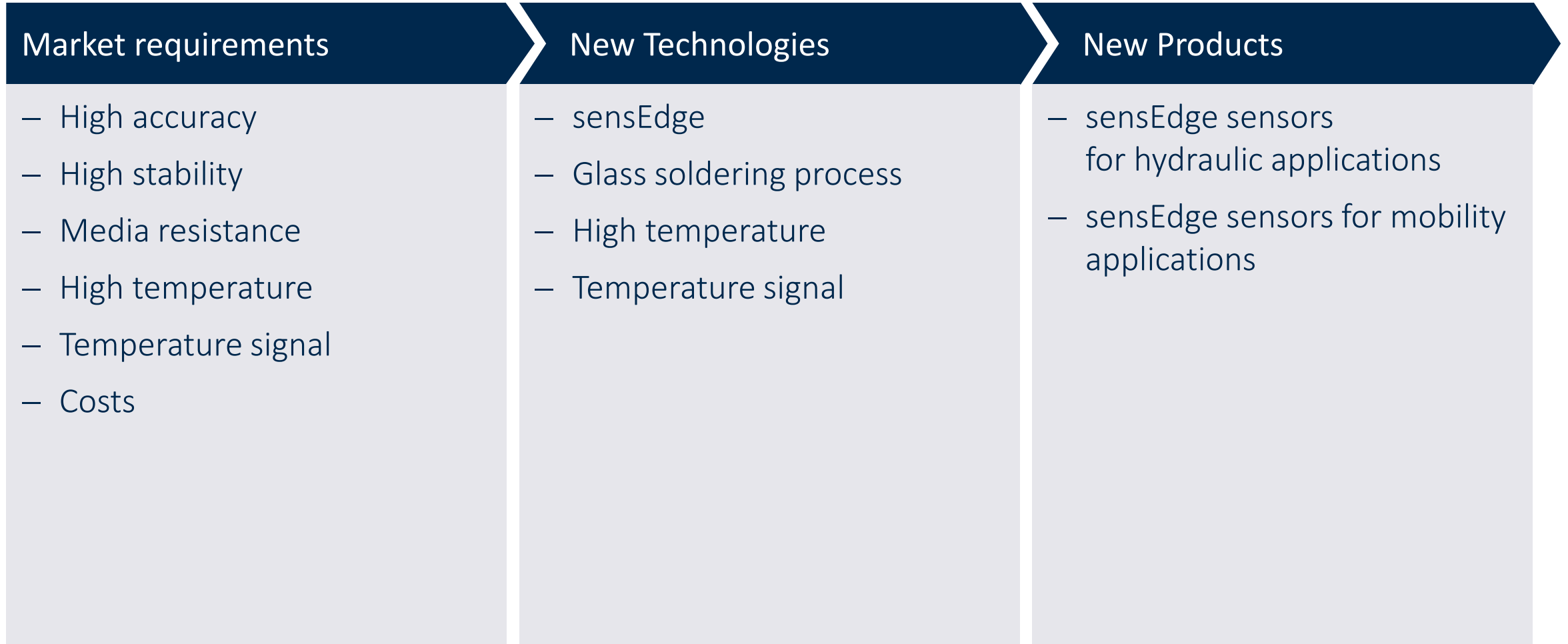
# H-FAMILY

HTD sensors are also suitable for HVAC & medical device applications








# 1. EXPAND PRESSURE PLATFORMS

## SensEdge sensors: Our high pressure platform



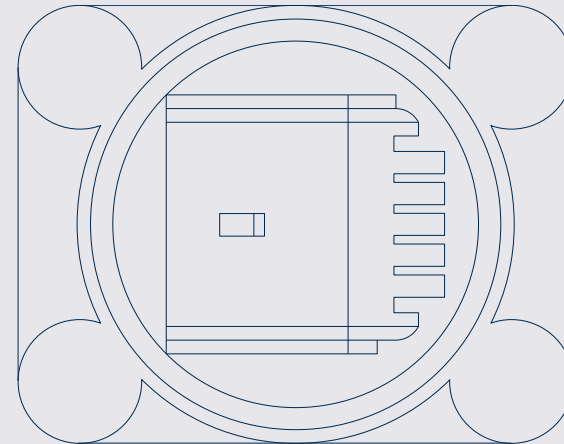
# SENSEEDGE SENSORS

## Pinpoint reading: Our technology for high pressure

-  **Piezoresistive sensor elements** manufactured separately from the main body section
-  Can be used to generate a **pinpoint reading** of mechanical stress
-  **Very small:** 0,8 x 0,8 mm
-  High measuring sensitivity
-  Not sensitive to heat



Measuring ranges up to 3,000 bar





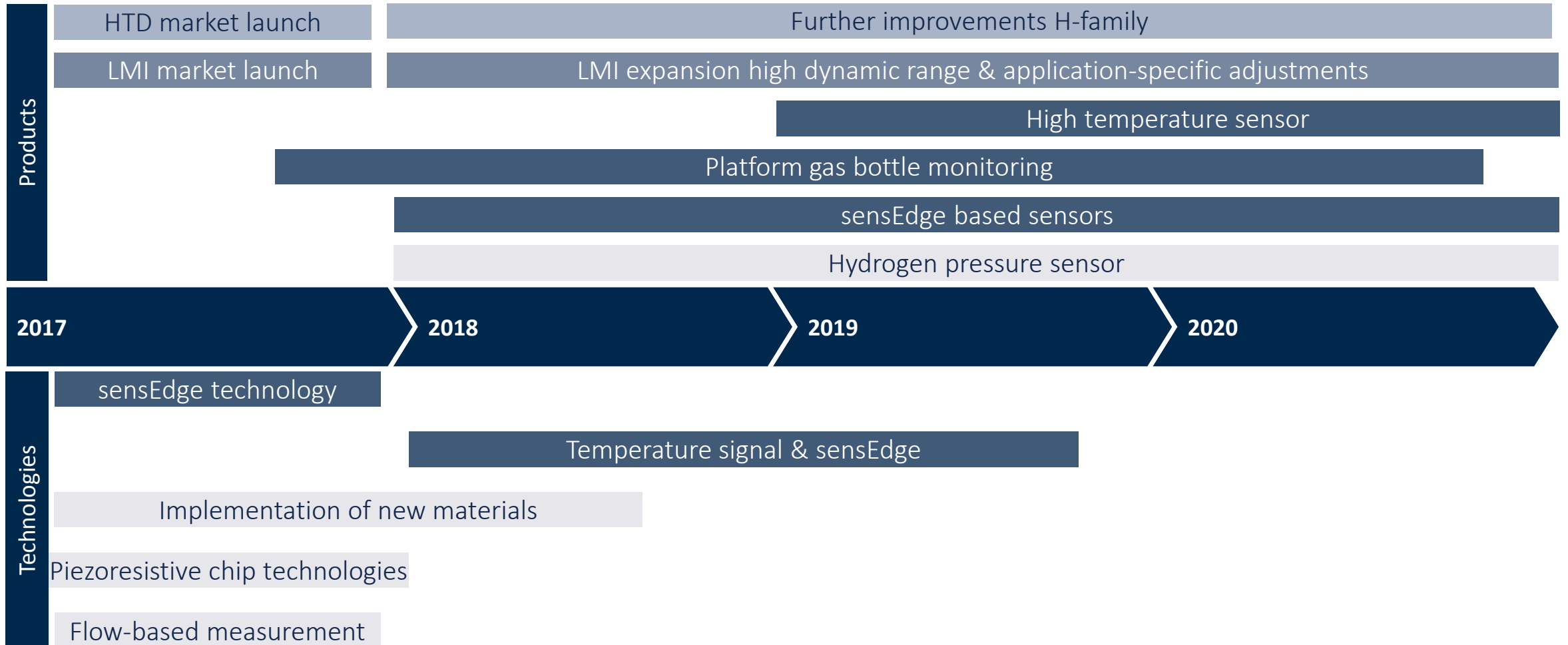
# SENSEGE SENSORS

We develop sensors for hydraulic & green mobility applications



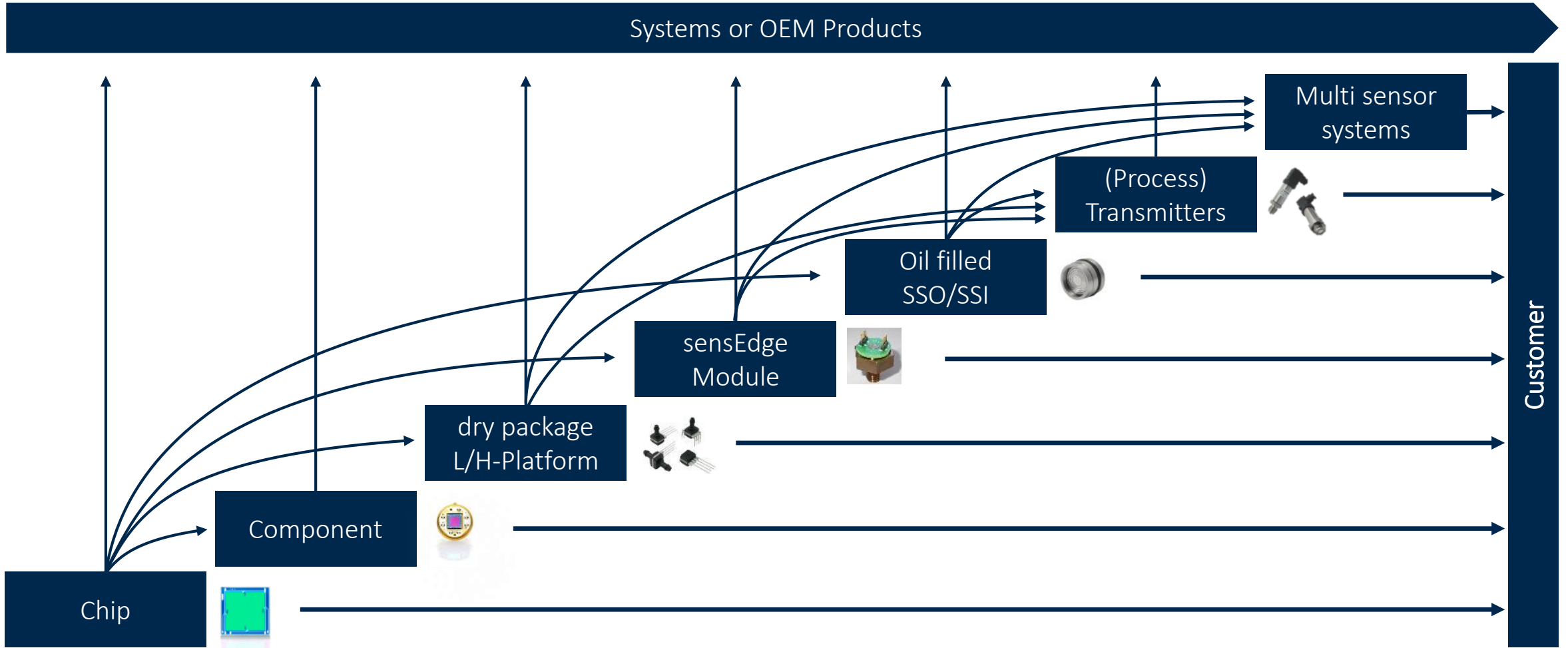
# 1. EXPAND PRESSURE PLATFORMS

## Our roadmap leads to the expansion of our pressure platforms



## 2. FORWARD INTEGRATION

From chip to system: We are able to offer all from a single source



## 2. FORWARD INTEGRATION

One example is a multi sensor system for HVAC



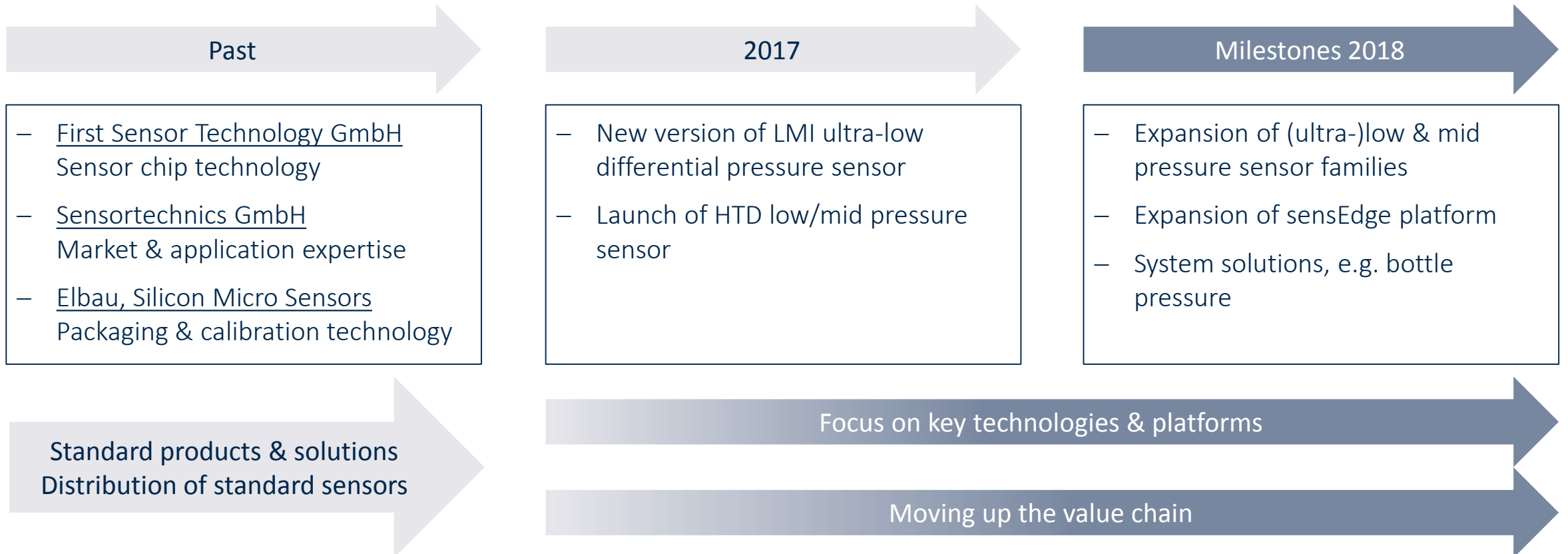
# EXPANSION OF FIRST SENSOR'S PRODUCT FAMILIES

## Summary

- 1 MEMS pressure sensors business is driven by megatrends
- 2 Pressure measurement is extremely versatile. We cover a broad range from ultra-low to high pressure sensors
- 3 First Sensor is focused on high-precision pressure sensor platforms
- 4 We strengthen our platforms with new pressure sensors
- 5 We use our pressure platforms and forward integration to grow with key products & customers

# EXPANSION OF FIRST SENSOR'S PRODUCT FAMILIES

## Milestones 2018



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# NEXT PRESSURE GENERATION: EXPANSION OF FIRST SENSOR'S PRODUCT FAMILIES

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## **Capital Market Day**

March 22, 2018

Dr. Marc Schillgalies

First Sensor AG

[www.first-sensor.com](http://www.first-sensor.com)

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