



# Sensing New Opportunities: How to Find Value in the Next Generation of IT

November 5<sup>th</sup>, 2019

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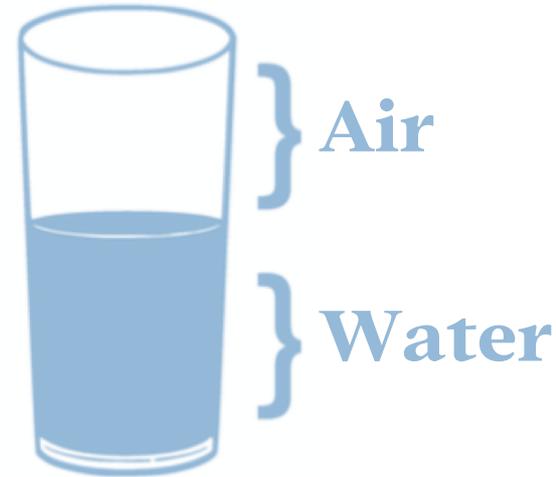
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# LBA Investment Approach

- Fundamental Approach
- Price Sensitivity
- Long Time Horizon
- ESG Integration
- International Perspective
- Public Markets



**Technically the  
Glass is always full**



# Revolutions in Computer Technology

1952

1965

1980

1990

2011



## Mainframes

Invented: 1952  
 Peak sales: 1962  
 Peak units: ~ 200k  
 Cost ~3M\$

## Mini Computers

Overtook M/F: 1965  
 Peak sales: 1986  
 Peak units: ~ 2M  
 Cost ~300k\$

## RISC Workstations

Overtook Mini: 1980s  
 Peak sales: early 90s  
 Peak units: ~20M  
 Cost ~30k\$

## x86 PCs

Overtook RISC:  
 1990s  
 Peak sales: 2011  
 Peak units: 363M  
 Cost :~1000\$

## ARM Smartphones

Overtook PC: 2011  
 Peak sales: ?  
 Peak units: 1.5B  
 ASP: 280\$

*Bell's Law: "Roughly every decade a new, lower priced computer class forms based on a new programming platform, network, and interface resulting in new usage and the establishment of a new industry."*



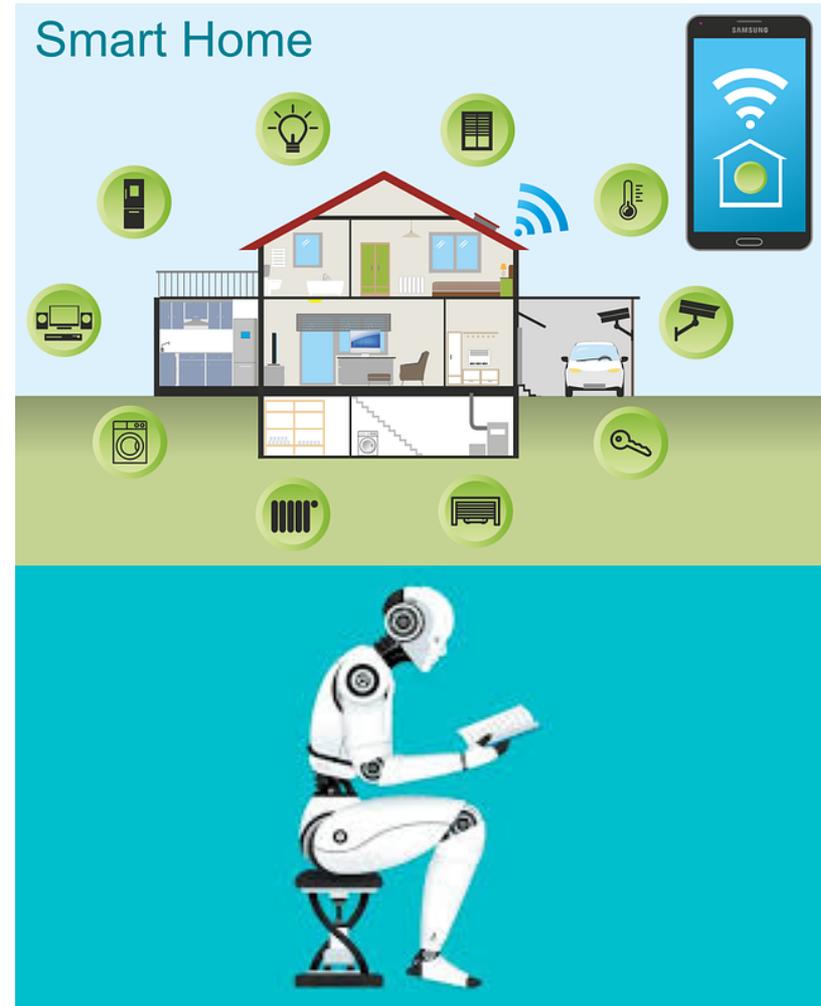
# The Ambient Compute Era: IoT and AI

## Internet of Things

- Trend towards inserting sensors and networking access in formerly “unintelligent devices”
- Will be deployed at home, in industry and in infrastructure
- Examples: Smart speaker, connected machine tools, smart thermostat
- Autonomous car – a mix of IoT and AI

## Artificial Intelligence

- Means ‘anything we thought only a human could do’
- Machine learning techniques are key
- Imitates human brain
- Needs lots of data to work



# The Cambrian Explosion: The First Sensor Revolution



Trilobite – the first animal with an eye – brought about an explosion of new life on this planet



# Sensors Technology Driver of the Ambient Compute Era

## Audio Sensors

- Exposure from: Cirrus Logic, Skyworks and AMS
- 1.2Bln USD Market
- Growing at 14% per year

## Image Sensors

- Exposure from: Samsung, Kyocera and AMS
- 13.4Bln USD Market
- Growing at 12% per year



# Sensors Technology Driver of the Ambient Compute Era

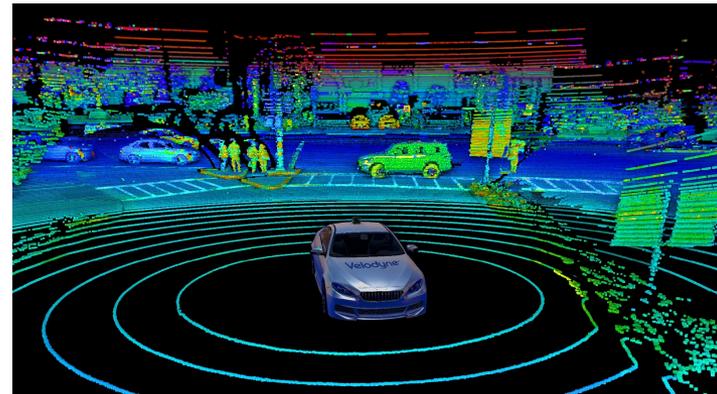
## Bio-sensors

- Exposure from: AMS
- 19Bln broad market size
- Growing at 8% per year



## 3D Sensors

- Exposure from: AMS – pioneer in this area
- 2.2Bln USD Market
- Growing at 44% per year



# Conclusion

## Price Sensitivity

- Sensor positions trade at P/E multiples of 8-18x vs. 23.4x for SP500 Tech sector
- Many positions have appreciated substantially since initiation

## Fundamental Approach

- IoT is driver of LT growth – sensors are key to this trend

## Long Time Horizon

- ST concerns about smartphone overwhelmed by LT potential in IoT

## ESG Integration

- Sensors help drive efficiency – needed in a world at its ecological limit

## International Perspective

- Companies cited are based in South Korea, Austria, US and Japan

## Public Markets

- No need for illiquid investments to get exposure to exciting trends

