



AHEAD OF WHAT'S POSSIBLE™

Emerging Sensors

BRIAN COFFEY (BEng, MBA)
Marketing Manager – Emerging Sensors

Limerick, Ireland

brian.coffey@analog.com

December, 2015



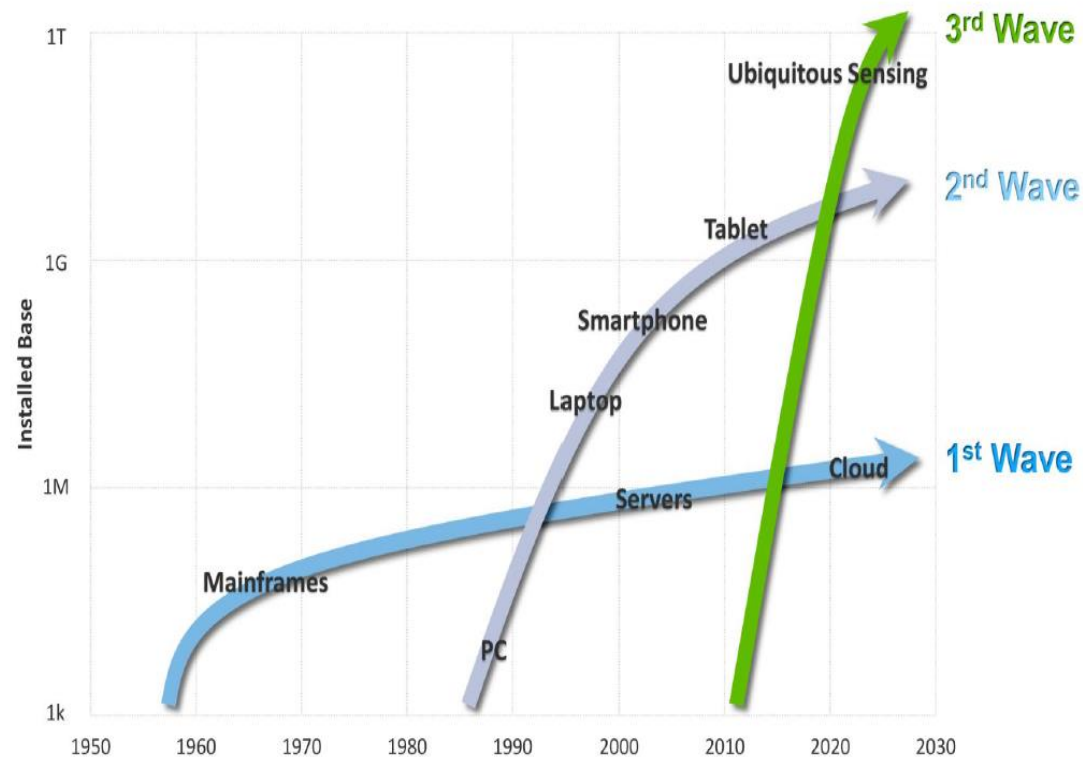
Analog Devices

Looking forward to the 3rd Wave of Ubiquitous Sensing

We have a 50 year heritage in measuring, sensing and interpreting the real world

Notable Facts:

- Founded in Boston in 1965 by Ray Stata & Matt Lorber (MIT classmates)
- Market leader in data converters and high performance amplifiers
- \$3.4B in Sales (FY15), 19% R&D
- Over 9000 employees (nearly 1/3 engineers)
- 100,000 customers and 20,000 products
- Three CEOs in 50 years
- First semiconductor company in Ireland
- Approx. 1/3 revenue from Europe



Innovation within A Global Supply Chain

Design, Development, FAE, Manufacturing, Packaging, Test Centers



ADI Locations in Europe



Norwood
Corporate World HQ



Limerick
Design & Manufacturing Ctr.



Beijing
Design Center



Greensboro
Design & Manufacturing Ctr.



Bangalore
Design Center



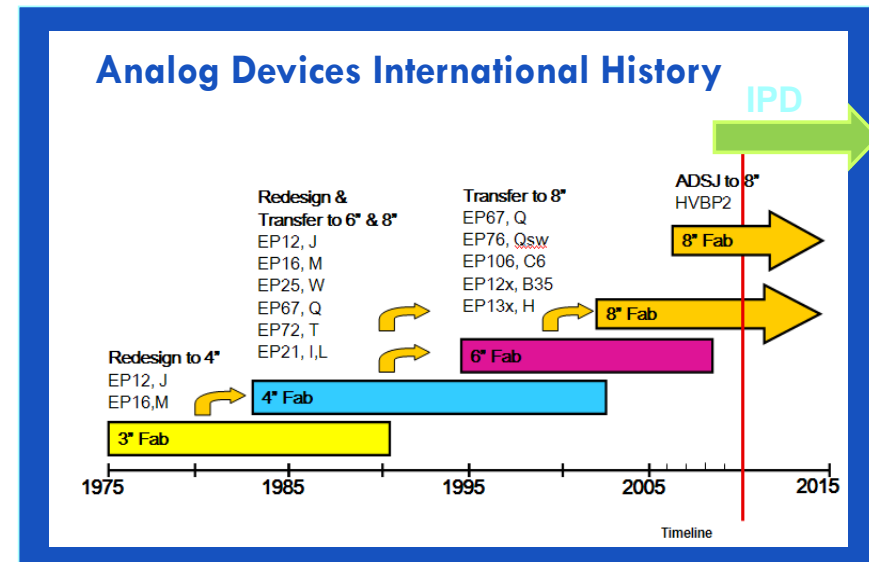
Shanghai
Greater China HQ

- Application Engineering, Design, Development, Technology Ctr
- Combined Design, Development, Technology & Manufacturing Ctr
- Manufacturing, Assembly, Test Ctr (includes 3rd-party facilities)
- Field Applications Engineering Ctr



Analog Devices International Limerick Ireland

- Established in 1976 as ADI's CMOS Facility : 40 Year Milestone in Limerick in 2016
- 1,100 Employees in the Limerick Campus
- 2 Fabs:
 - State-of-the-art 200mm Wafer Fabrication Facility
 - “More than Moore” 200mm fab with Integrated Passives and Advanced Material Capability
- New EU R&D Building opened in July 2015 : €50M investment by ADI in this 14,000m² building
- First office building in Ireland to achieve LEED Platinum Certification
- Campus with six different Business units
- New Product development and R&D : >100 new products / annum



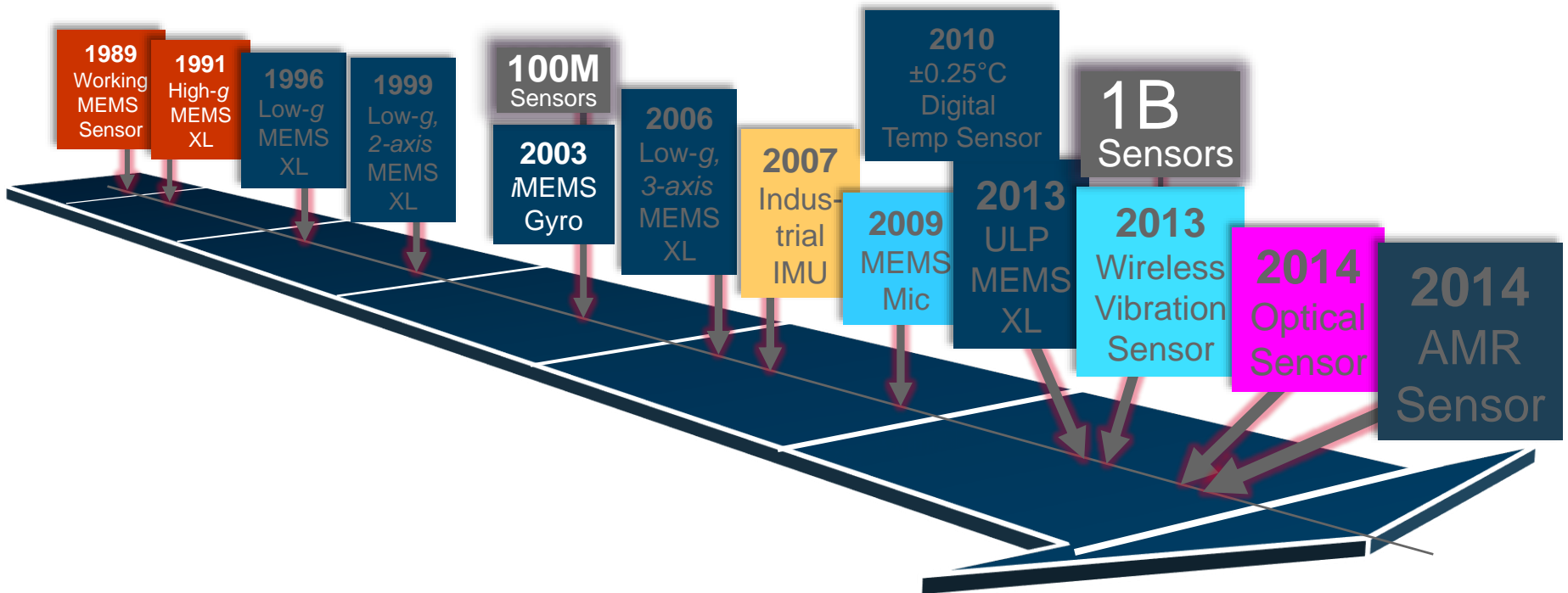
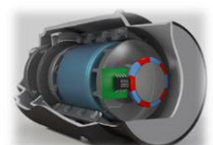
Industrial Sensing

▶ *Enabling a smarter and connected Industrial world...*



MEMS & Sensor Leadership From Analog Devices

25 Years of Firsts and Milestones

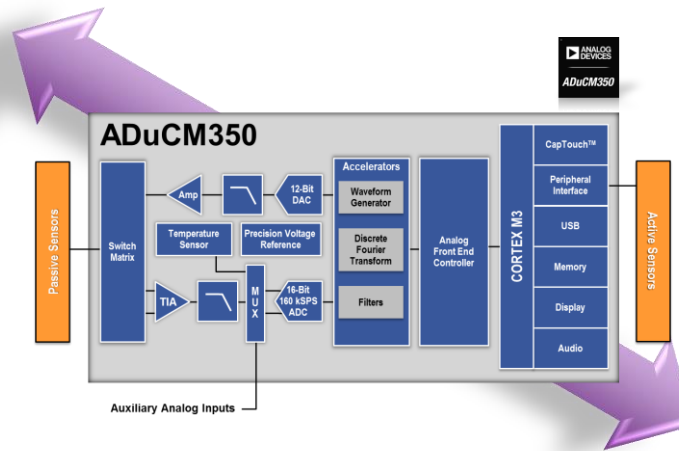


Electrochemical Sensor ASSPs Healthcare Meter on a Chip

Blood Glucose



*High Precision, Low Power Smart Sensor Signal Processing IC
for Portable Health Applications*



*General purpose Electrochemical Sensor system
Gas Sensing, Biological Lab Assay Interface*

Body Composition



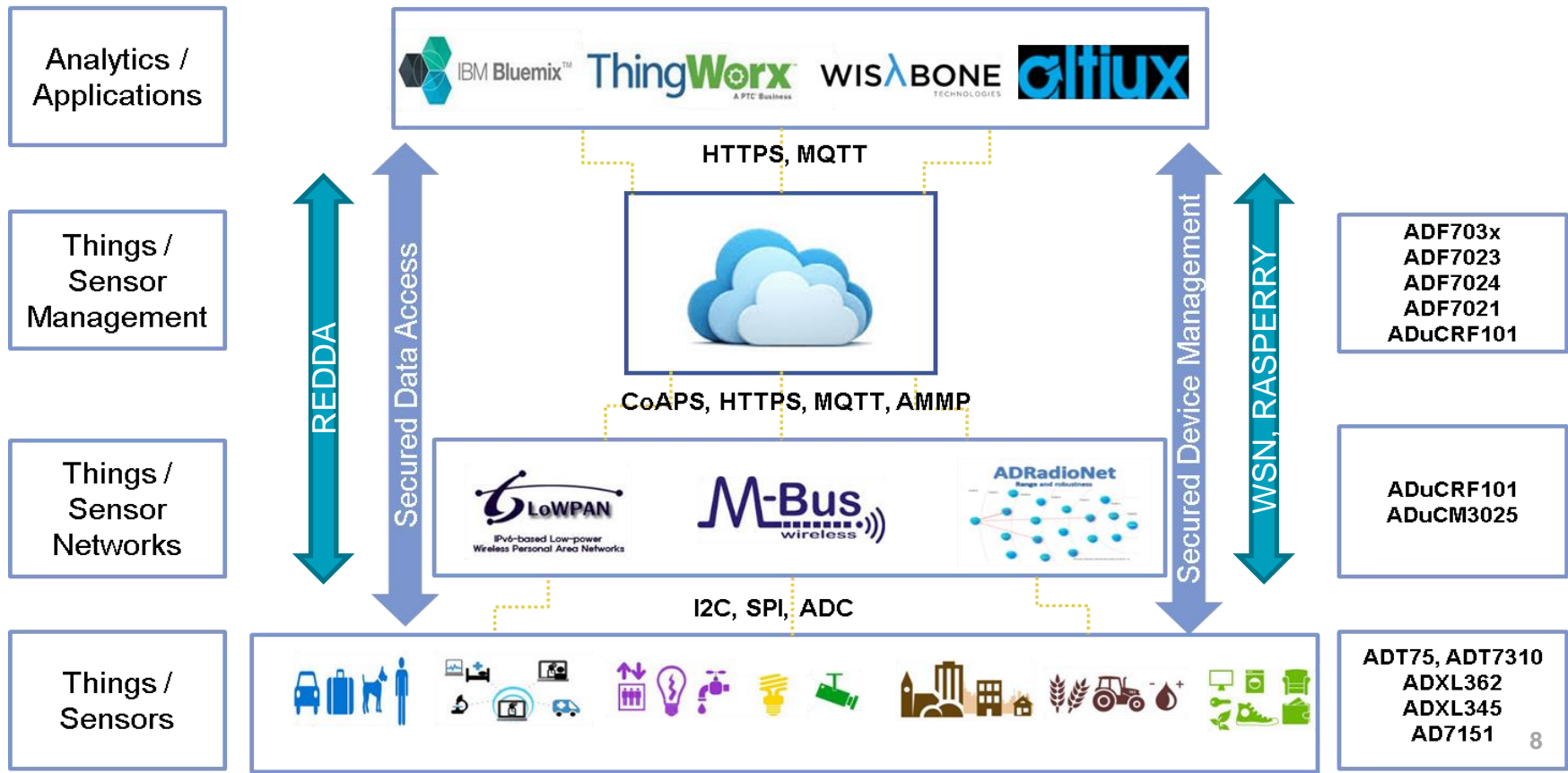
Analog Devices Confidential Information



AHEAD OF WHAT'S POSSIBLE™

ADI Sensor to Cloud Spectrum

Industrial Internet of Things



Summary

- ▶ ADI is focused on delivering real world examples of value capture within the IoT spectrum
 - Indoor and Outdoor Air Quality Sensing are of strategic interest to ADI
- ▶ ADI has a strong background and capability in smart sensors
 - 8" MEMs and Advanced Material Fabrication, High Precision & Low Power Signal Processing, Complex Assembly, Gas Characterisation/Test Lab and IoT eco-system
- ▶ Customers want more complete solutions
 - We want to partner with innovative sensor technology and system experts to enable us to deliver compelling solutions to the market
- ▶ Next exponential wave and opportunity is upon us
 - Growth rate and Timing of this wave will be dictated by
 - Enabling technology
 - Protocol and standards
 - Regulatory requirements
 - Business model challenges

Final thoughts...



"We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run"

Roy Amara

This elastic market is illustrated by the case for computers in the home. On the one hand are the disbelievers who state that there is only a small range of operations for which the householder will ever need a computer — estimating his taxes once a year, paying bills and balancing budgets once a month and very little else. On the other hand are the optimists who argue that if **microelectronics can make small computers as inexpensive as telephones then people will buy them, even though they are in use for a small fraction of the time. Once in the house, or small office, new uses will be found for them and eventually they will affect life to an even greater extent than the TV set has.** If the optimists are right then the market is huge. Other markets which are waiting to be opened up are ground and air traffic control, process control of all sorts, medical as well

Thank You

Questions/Comments?

brian.coffey@analog.com