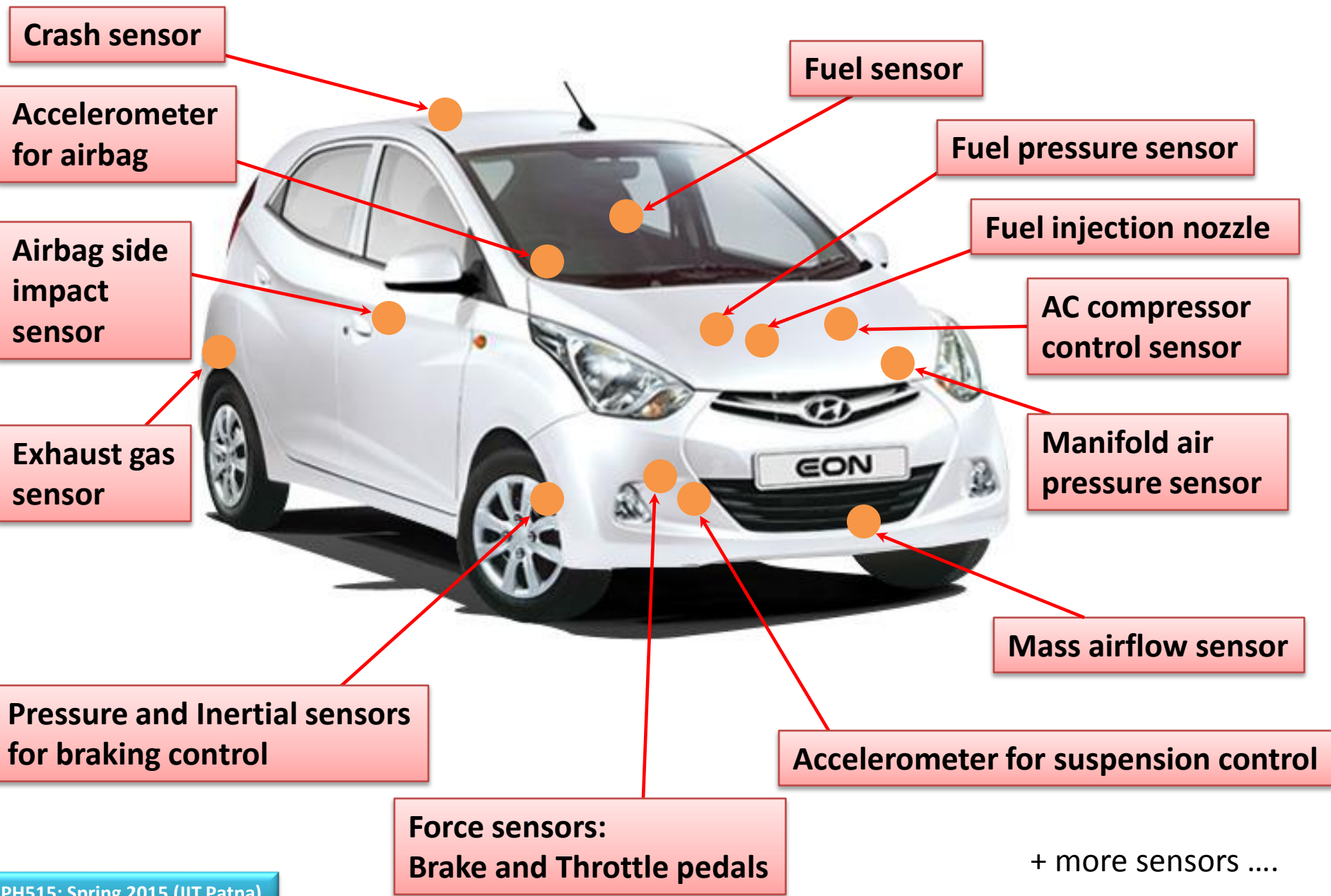




PH515: MEMS and NEMS

Dr. Ajay D. Thakur
Department of Physics
&
Center for Energy and Environment
Indian Institute of Technology, Patna

Possible role for MEMS in automobiles



Homework 1_1



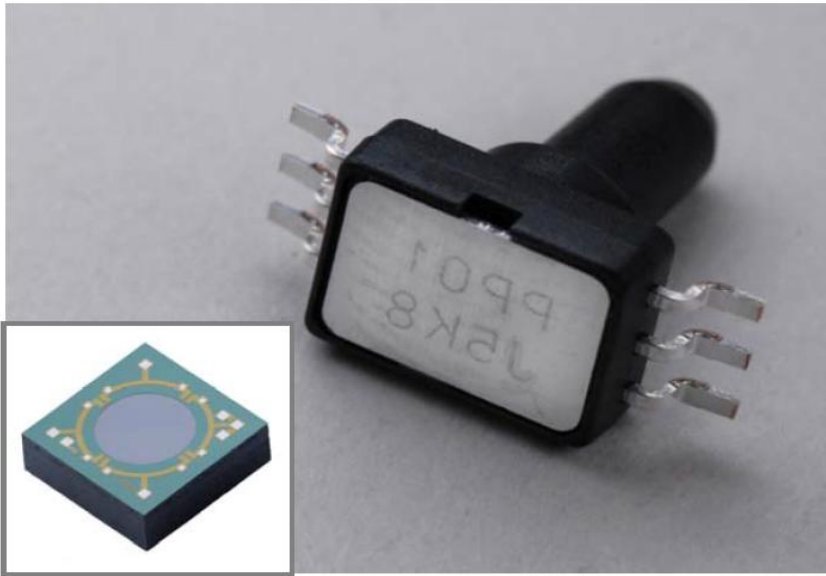
Source: wiki HAL_Tejas

Explore www and find out which all MEMS devices have gone into making this VTOL LCA?

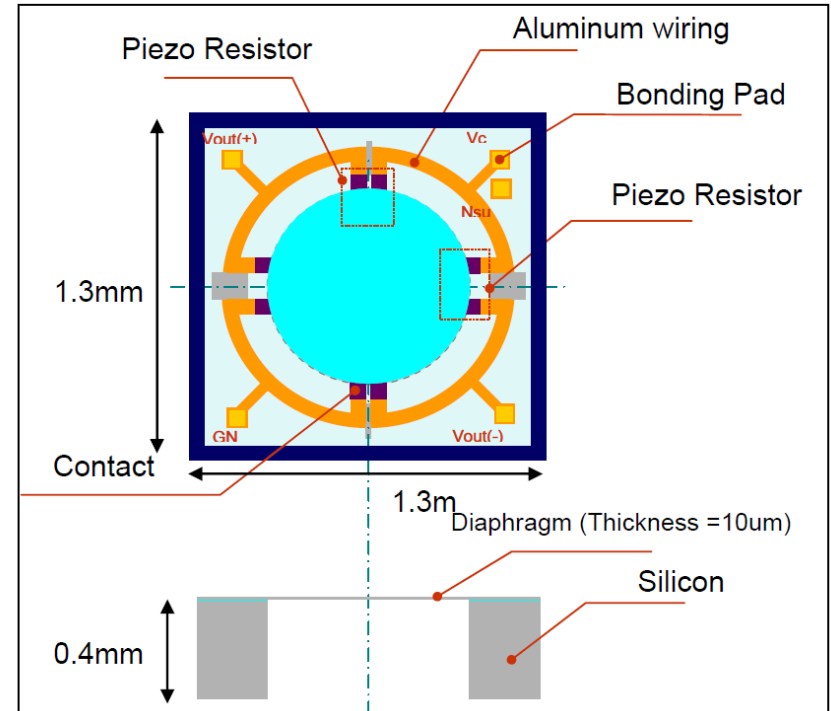
Typical MEMS examples

Implantable blood pressure sensors

Omron Blood Pressure Sensor Utilizes 8" MEMS Wafer Technology

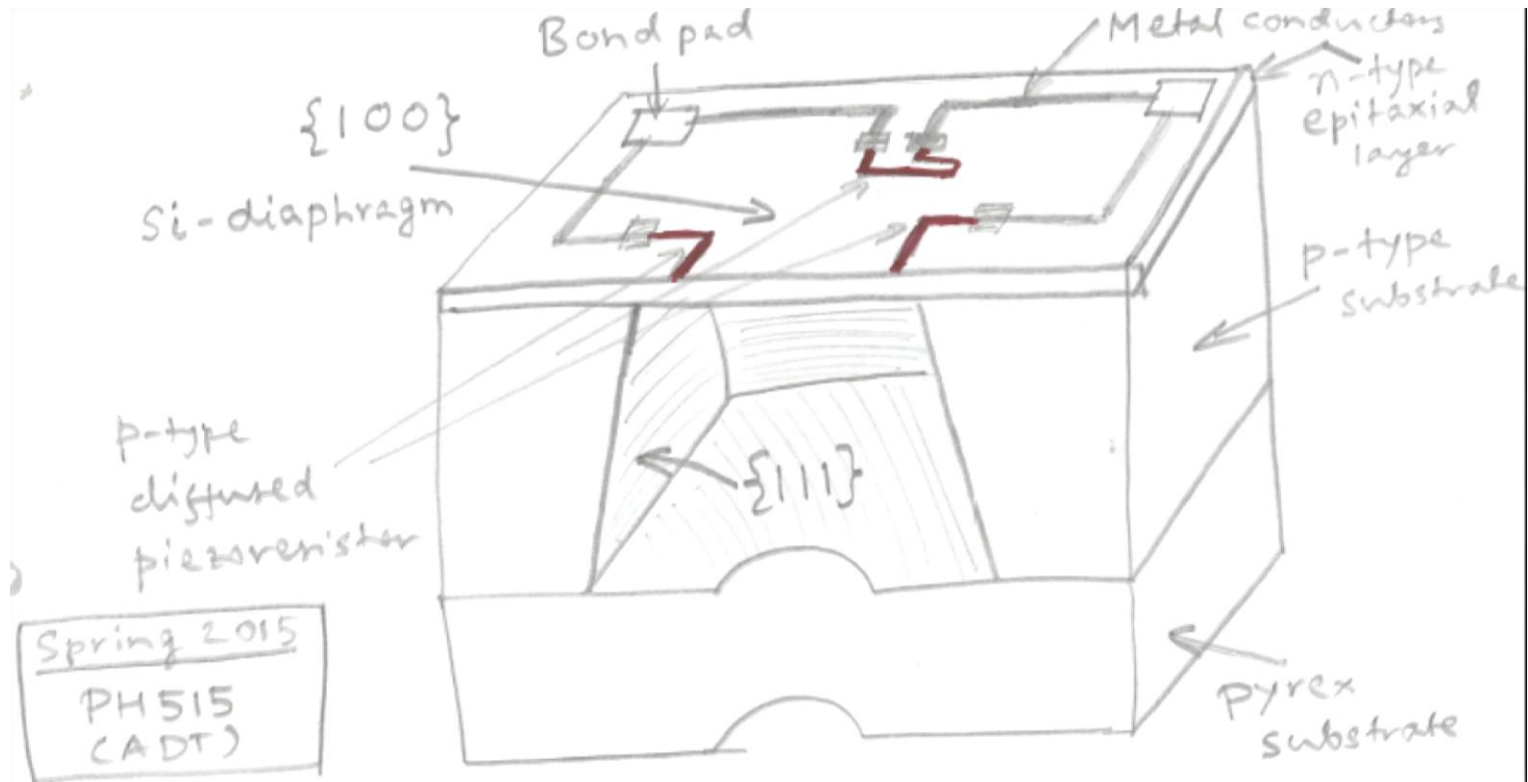


Omron™ 2SMPP-01 piezoresistive pressure sensor and internal MEMS device (see inset)

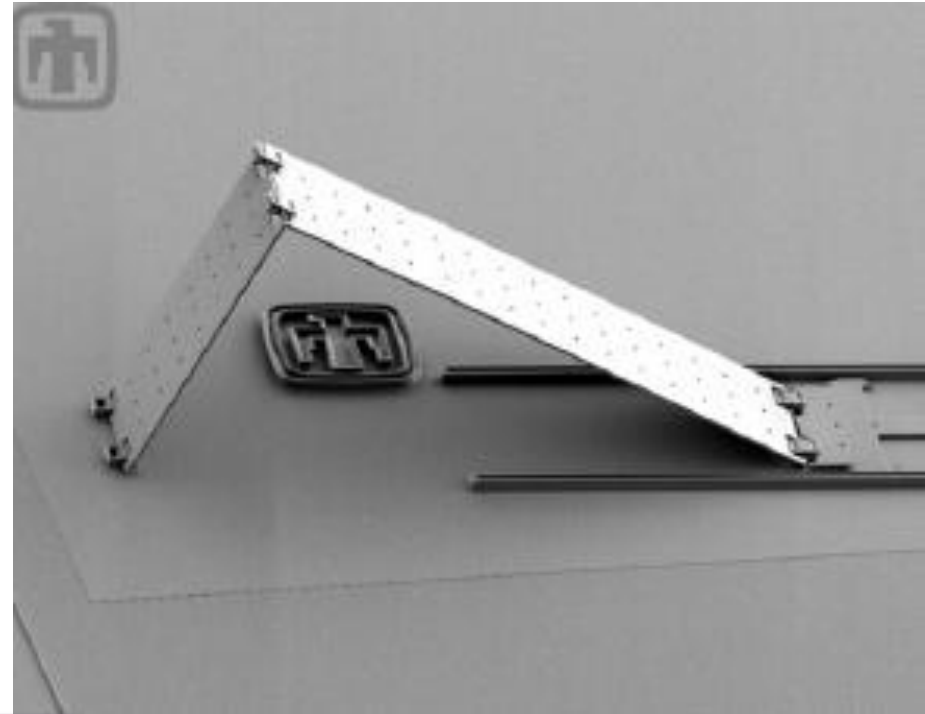
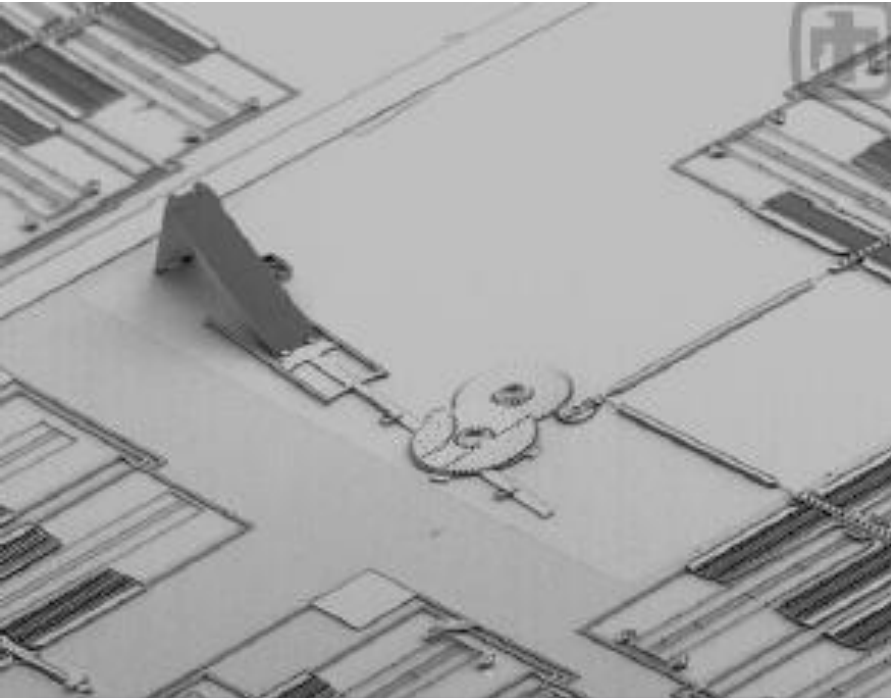


Source: Donna Sandfox, MEMS Product Manager, Omron Electronic Components LLC

Typical MEMS pressure sensors



Tele-immersive modeling for MEMS visualization

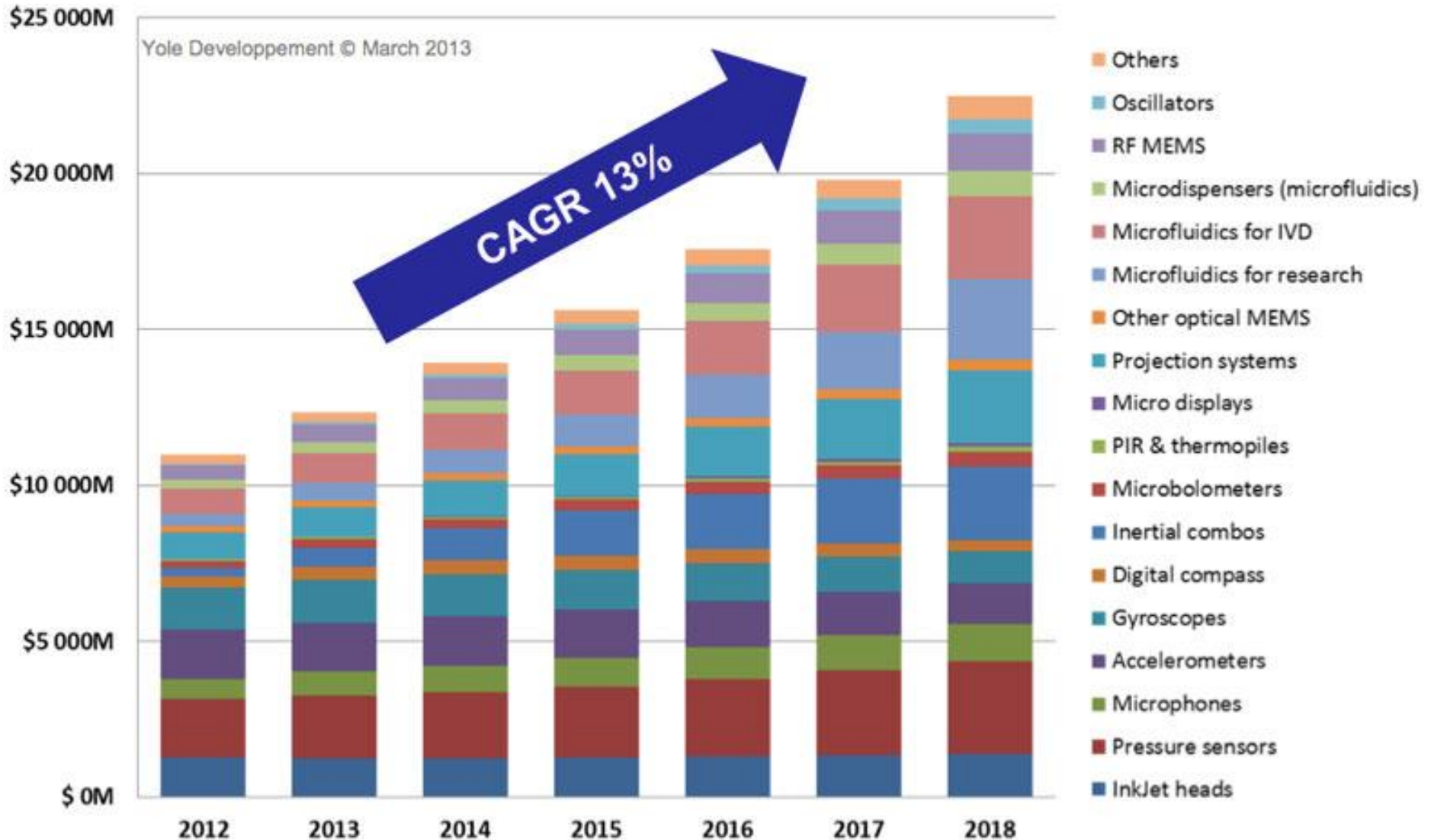


**Chris Scharver, Electronic Visualization Laboratory
Vincent DeSapio, Sandia National Laboratory**

Source: <http://evlweb.eecs.uic.edu/scharver/asci/mems.html>

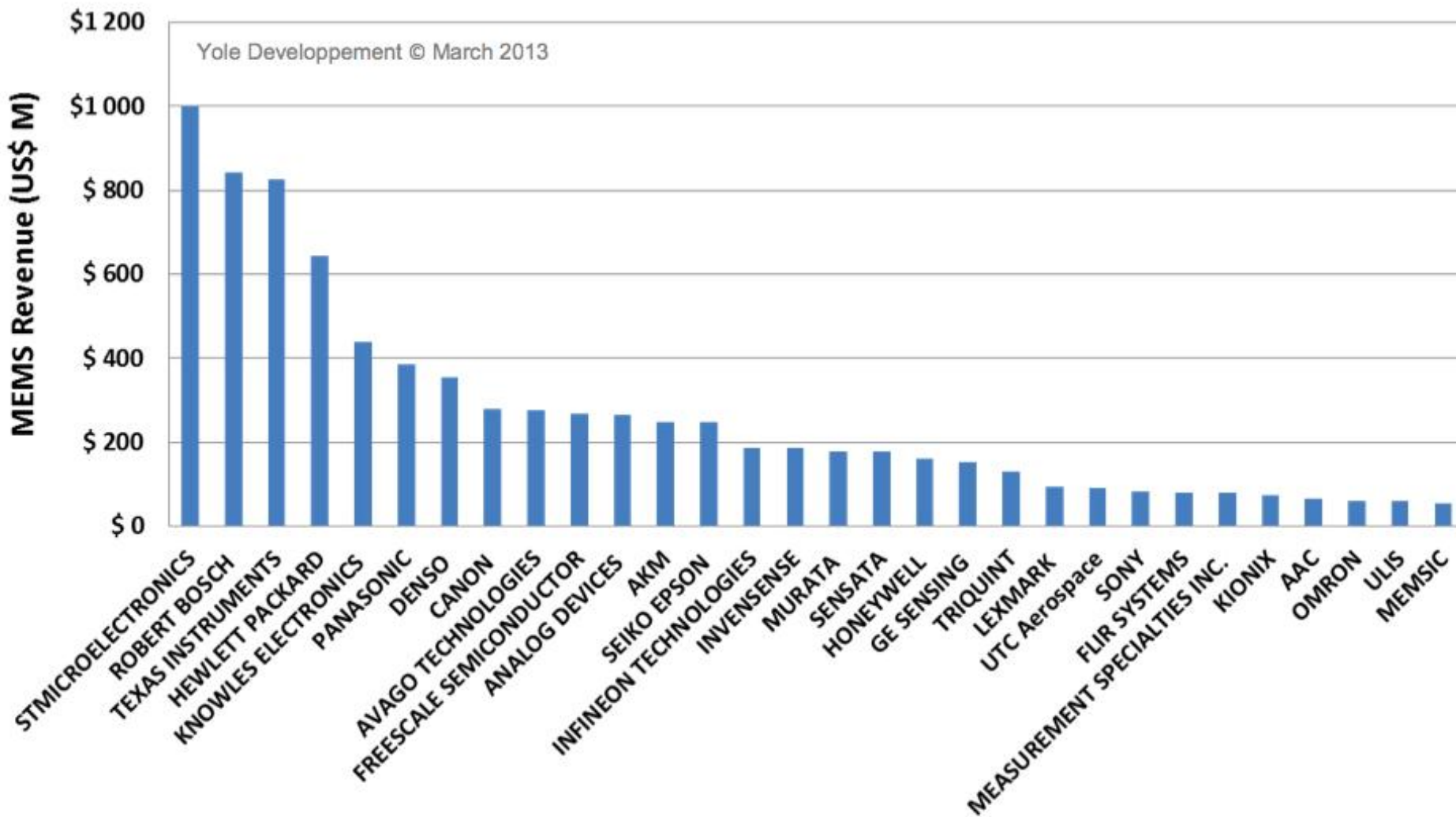
A mirror system moved by a small rotating gear. The gear is moved by the pistons to its right.

MEMS market forecast 2012-2018 value (in M\$)



TOP 30 MEMS Players Ranking 2012

Yole Developpement © March 2013



Homework 1_2

How does an electronic compass in a smartphone work?

Suggested links/books (for further studies):

1. <https://www.mems-exchange.org/MEMS/what-is.html>
2. memscyclopedia.org/Document/introMEMS.pdf
3. <https://www.youtube.com/watch?v=qWARLkZgNel> [electronic compass]
4. Eight Amazing Engineering Stories by B. Hammack, Patrick Ryan and Nick Ziech