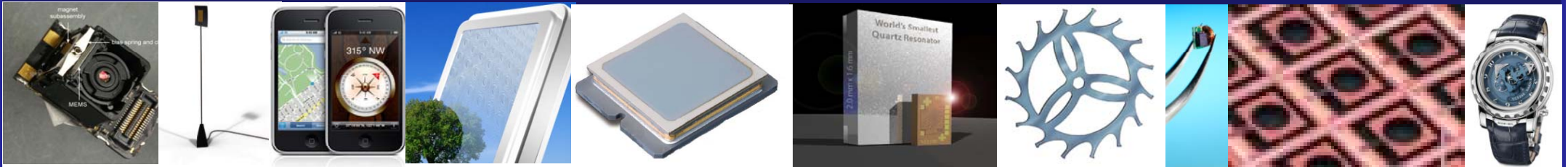


Emerging MEMS 2010

March 2010



Sample



YOLE DÉVELOPPEMENT

Content

• Objectives of the report		3
• Executive Summary		4
– Definitions used in this report	5	
– Companies quoted in the report	12	
– MEMS market forecasts 2009-2015	13	
– Emerging MEMS 2009-2015 forecast (\$M value)	14	
– Emerging MEMS market shares 2009	15	
– Emerging MEMS market shares 2015	16	
– Emerging MEMS 2009-2015 forecast (Munits)	17	
– 2015 Emerging MEMS Market Value vs. CAGR	18	
– Emerging MEMS 2009 maturity vs. CAGR	19	
• Emerging MEMS description		28
– Auto Focus	36	
– Electronic Compass	56	
– Energy Harvesting	75	
– Micro-bolometers	90	
– Micro displays	117	
– Micro fuel cells	131	
– Micro speakers	141	
– Micro structures	155	
– Microtips	165	
– Oscilators	186	
– RFID	213	
• Conclusions		227
• Appendices		230
– MEMS markets	231	
– Yole Développement presentation	236	

Objectives of the report (1/2)

- MEMS technologies have and will always be driven by innovation. It means that, every year, new MEMS developments are coming out. These developments will not necessarily turn into commercial success. But it shows there will always be applications where MEMS devices could be used.
- For a long time, the MEMS market has mostly been composed of “mature” MEMS devices: *IJ heads, pressure sensors, accelerometers and DMD*. Then came *microfluidics, gyroscopes, micro phones, RF MEMS (the later still struggling to shift to large volume, despite what has been said a few years ago)*.
- Besides these devices, there are a lot of new MEMS that have cross the gap between R&D and commercialization and/or are close doing so. This report presents these new “Emerging” MEMS devices that could be the next killer application of tomorrow.

- This report presents new MEMS devices:

- Auto Focus
- Electronic Compass
- Energy Harvesting
- Micro-bolometers
- Micro displays
- Micro fuel cells
- Micro speakers
- Micro structures
- Microtips
- Oscillators
- RFID

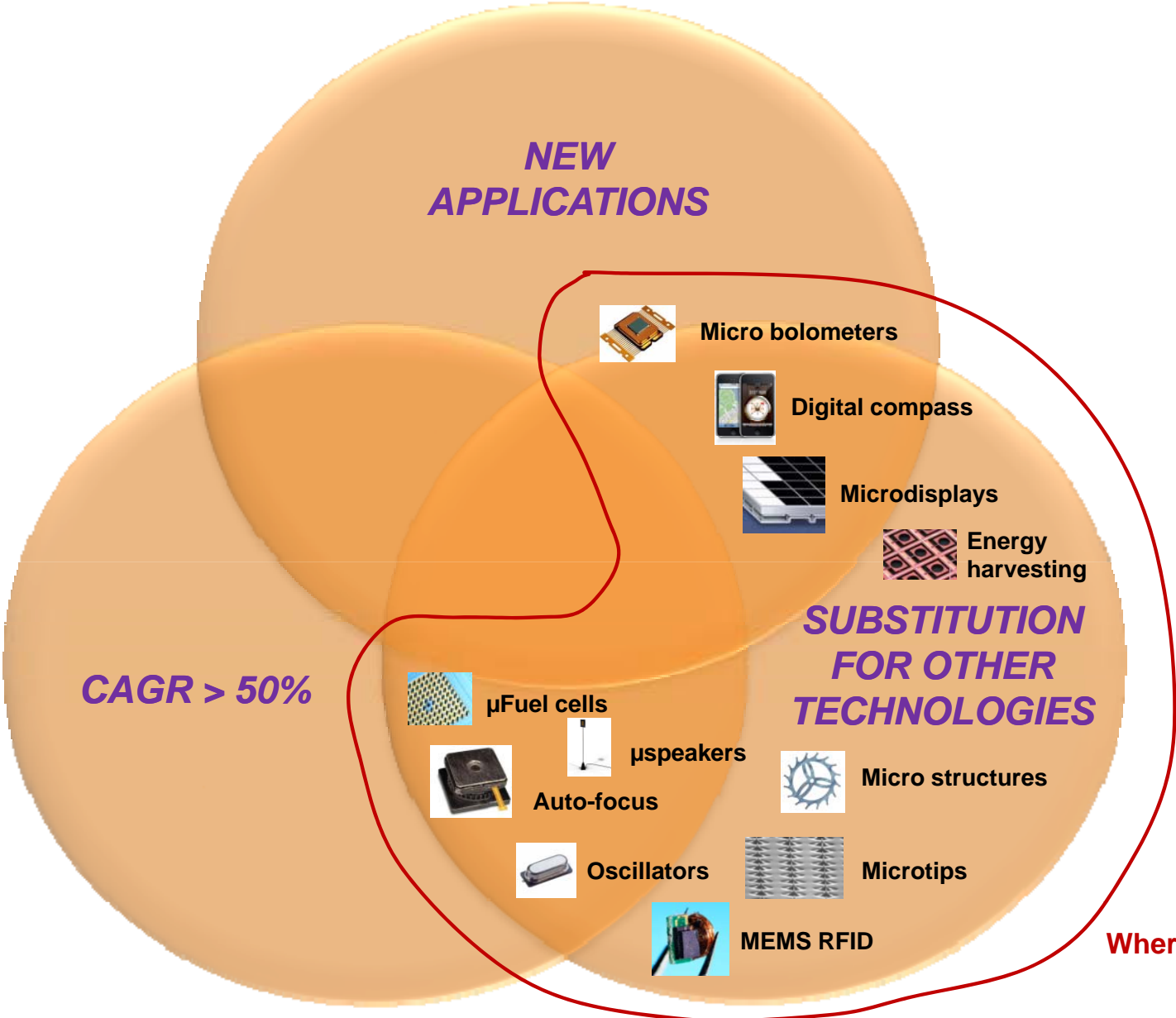
- For every device, the report shows:

- Description of the application/Overview
- Players & technologies
- Market dynamics
- Technical trends / roadmap
- Market forecasts 2009-2015 in units & value (M\$)

Objectives of the report (2/2)

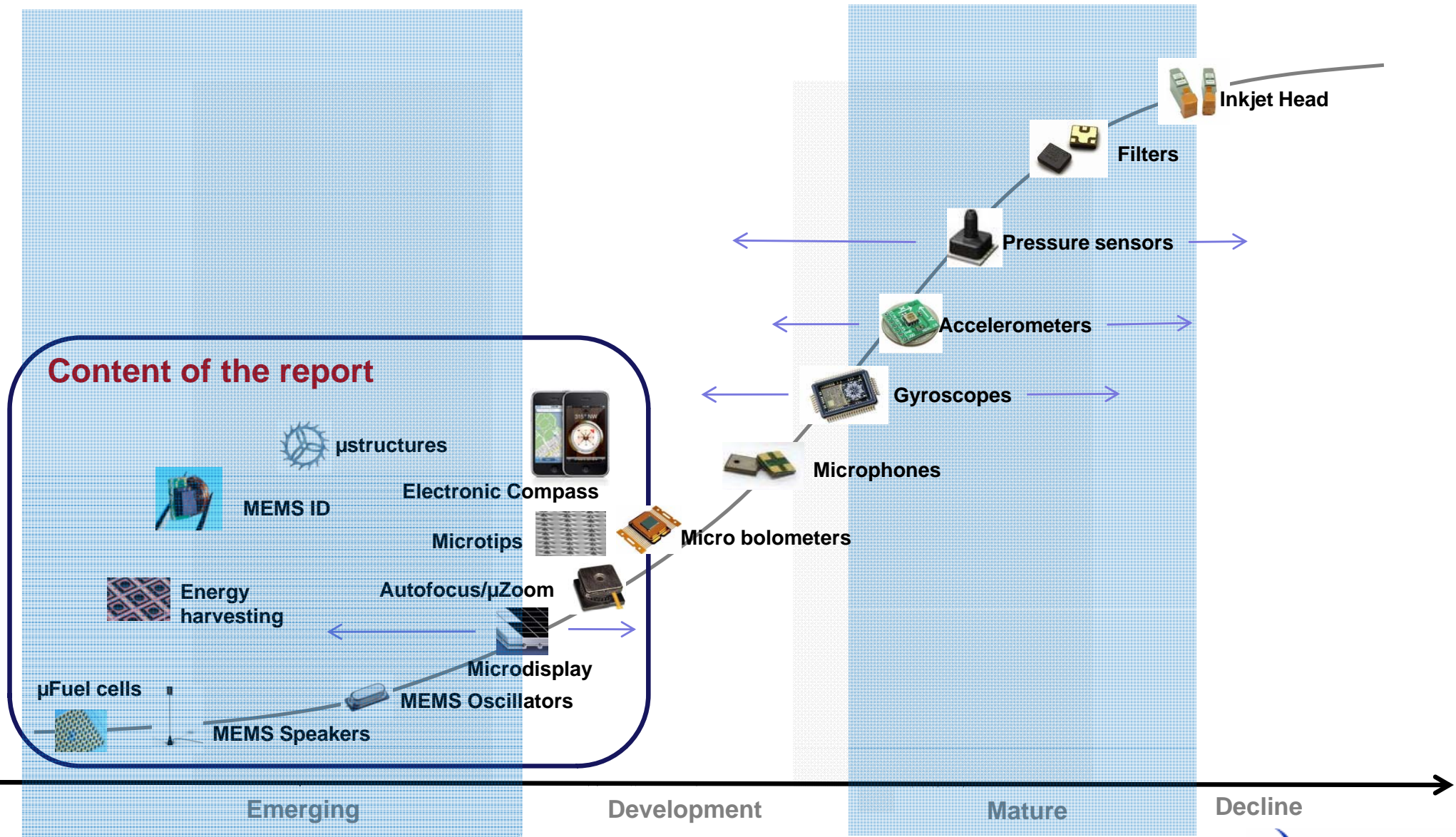
- **The objectives of this report are the following:**
 - 1. To provide understanding of new MEMS devices under developments and players. For each Emerging MEMS, overview, market dynamics, technologies, players, technical trends and market shares are described.**
 - 2. To provide market data on new MEMS developments. Each Emerging MEMS has been quantified in market value and units for 2009 and 2015.**
 - 3. To provide an identification of new MEMS companies that could contribute to the MEMS market growth in the future.**

Emerging MEMS



Where Emerging MEMS are.

MEMS products are in the development phase having successfully crossed the “Chasm”



New MEMS devices

A few examples ...



MEMS-based speakers



MEMS-based ID trackers



MEMS-based oscillators



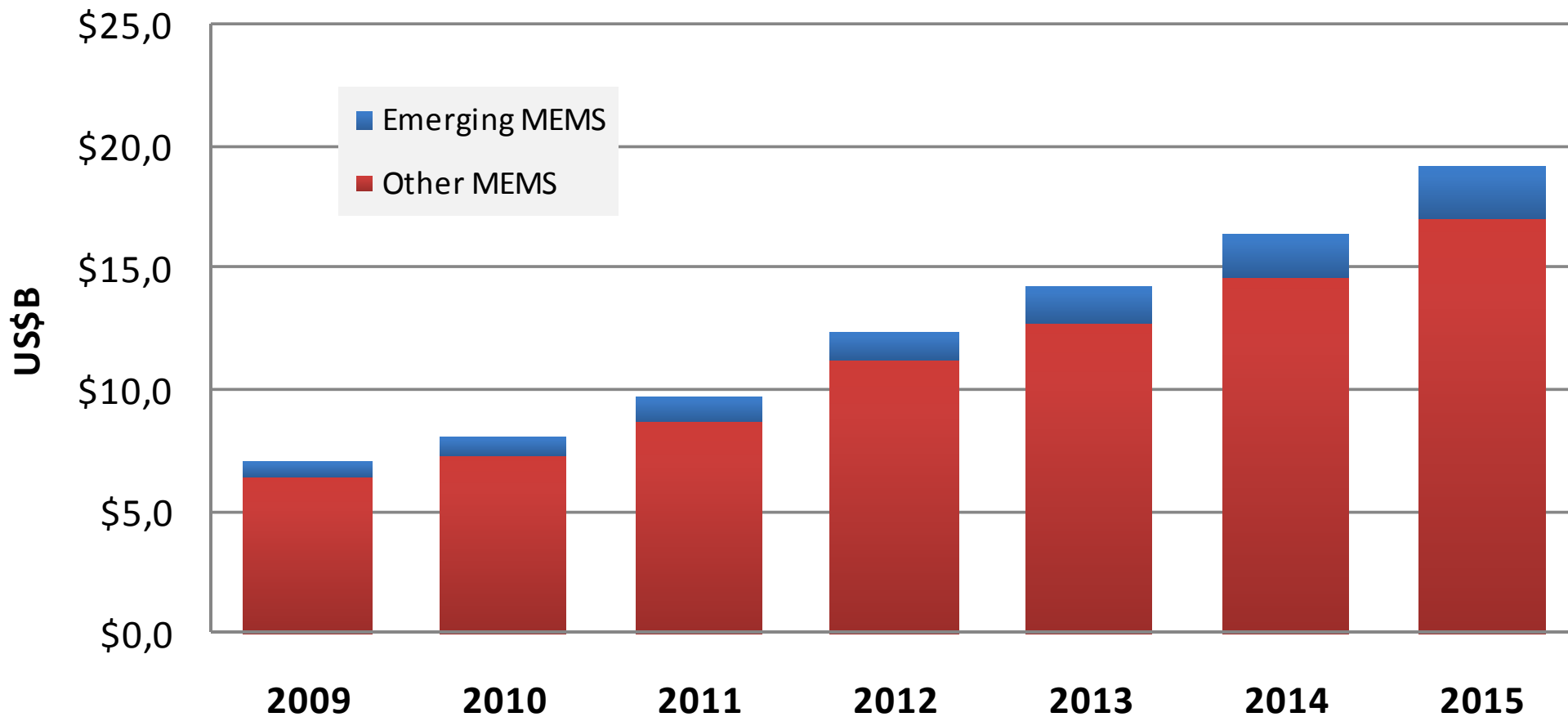
MEMS-based autofocus



Digital compass

Emerging MEMS Forecast

Emerging MEMS Forecast (in US\$ value)



2015 Emerging MEMS maturity vs. CAGR

2009 Maturity

Production



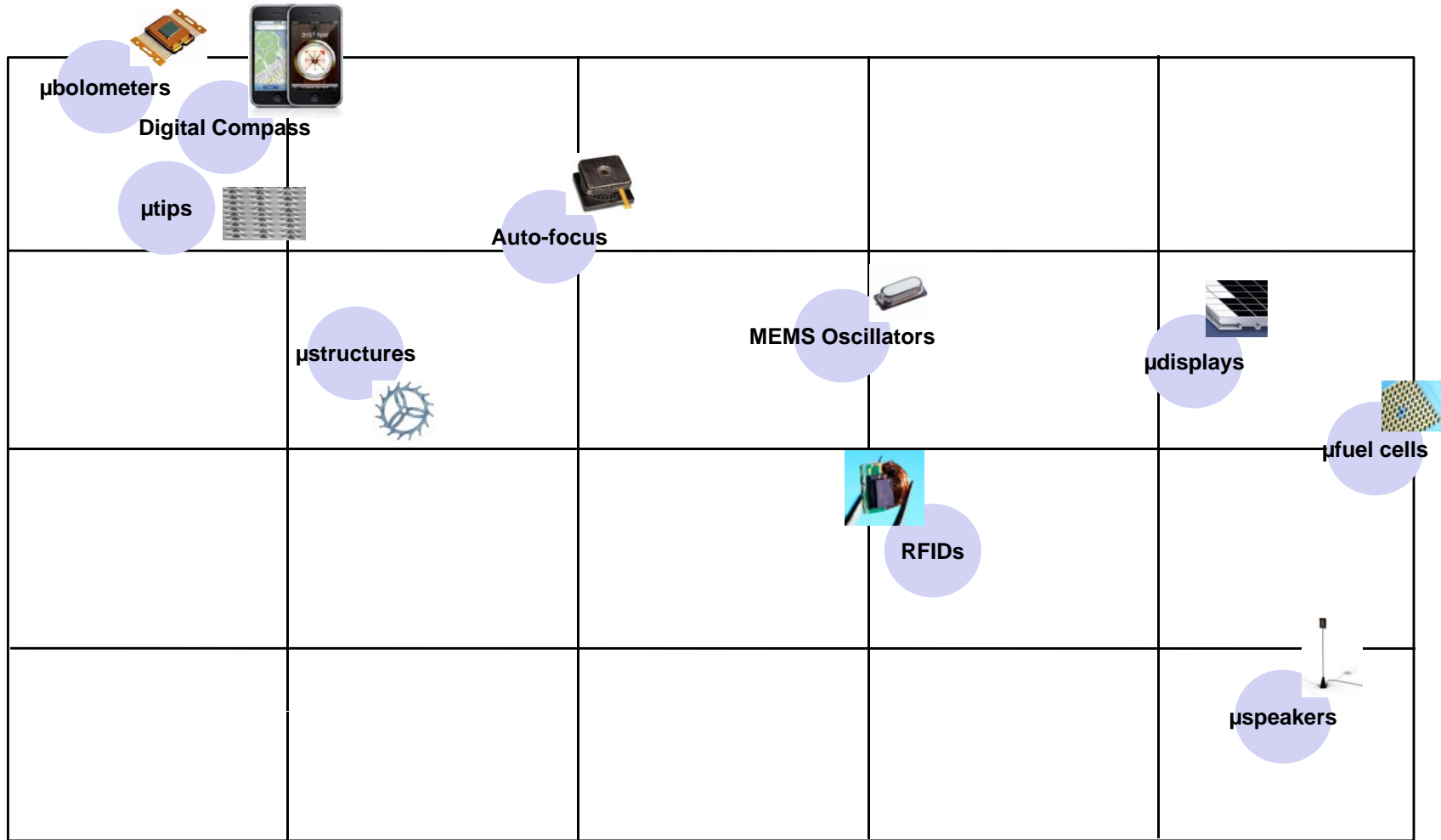
First series / pre-production



Prototypes



R&D



2009-2015 CAGR