



Making Europe attractive for semiconductor manufacturing investment

**7th SEMI Brussels Forum,
May 24th 2013**

Martin Schrems
ams AG

ams overview



At a glance

- Sensor & sensor interfaces, power management, and wireless integrated semiconductor solutions
- Ultra-low power, high accuracy and sensitivity
- Integrated Device Manufacturer (IDM): design + manufacturing

By the numbers

- 2012 revenues EUR 388m (USD 498m); +41% year-on-year
- Serving over 7,800 customers worldwide
- More than 1,300 employees worldwide
- 350+ R&D engineers

Manufacturing model

- Specialty processes: 0.18 μ m – 0.35 μ m – 0.8 μ m
- 200mm fab in Austria (> 110k wafers p.a., > 400 Mio EUR invested)
- Multi-sourcing partnerships , globally integrated supply chain

Light sensors



Consumer electronics applications

- Smartphones
- Tablets
- HDTVs
- PCs

Over 40% market share worldwide

Sensor characteristics

- **Ambient light sensing (ALS):** Measure ambient light to control display brightness
- **Proximity sensing (Prox):** Detect proximity of target, e.g. user's ear, to control display and touchscreen on-state
- **Color sensing:** Allow enhanced display picture quality under varying light environments

MEMS microphone ICs



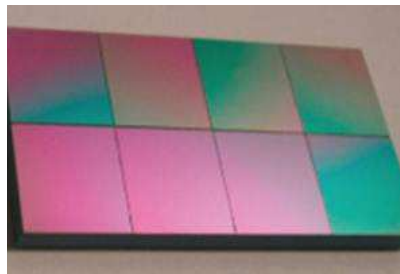
MEMS microphone interfaces for smartphones, handsets, tablet PCs, notebooks, and other mobile devices

- Over 1.2 billion MEMS microphone ICs shipped in 2012
- over 60% market share in 2012
- Low noise solutions for high quality voice-controlled applications
- Drivers of continuing market expansion:
 - increasing number of MEMS microphones per device
 - New applications and substitution of conventional microphones

Over 65% of mobile phones used MEMS mics in 2012

Computed tomography (CT) sensors

Low radiation dose, higher resolution



Medical innovation

- Direct combination of photo-detector and A/D converter into a highly integrated detector module
- Significant reduction in power usage, heat dissipation Form Factor
- Based on ams 3D/TSV 3D packaging technology
- Oxide isolated open TSV
- Production since 11/2010

Benefits

- Increases image resolution and allows earlier detection & diagnosis
- Significantly lower radiation dose for patient safety
- System power savings

A personal view on national and EU support

Making Europe attractive for semiconductor manufacturing investment

- **R&D programs at national and EU level are quite well designed**
 - Foster cooperation between academia, suppliers, semiconductor companies and OEMs
 - Cooperation along the value chain
 - Building on EU strengths enabling electronic systems integration
 - Support more risky and innovative approaches in corporate R&D
 - „Less is more“ – consolidation of the variety of programs with common set of national and EU eligibility criteria and reporting standards would be desirable
- **Introduction of KETs and Pilot Lines is a good step in the right direction**
 - Reduces the „valley of death“ gap from R&D to manufacturing
 - Manufacturing investment gap remains !
- **Industrial policy at national and EU level has so far proven at least inadequate to stop the decline in the EU semiconductor industry**
- **EU competition law – unintentionally - almost forces companies to look for better investment conditions outside the EU**

People, Companies and Capital

Making Europe attractive for semiconductor manufacturing investment

- **People have nationalities, but companies do not**
 - This **relates not only to Large Enterprises but even to SMEs** – no size limit in globalization
 - In a globalised business Companies have to look for the most attractive business conditions on a global basis to stay competitive
- **Capital can move outside the EU easily, but people can not**

→ **The main lever to stop the decline in EU (semiconductor) manufacturing ...**

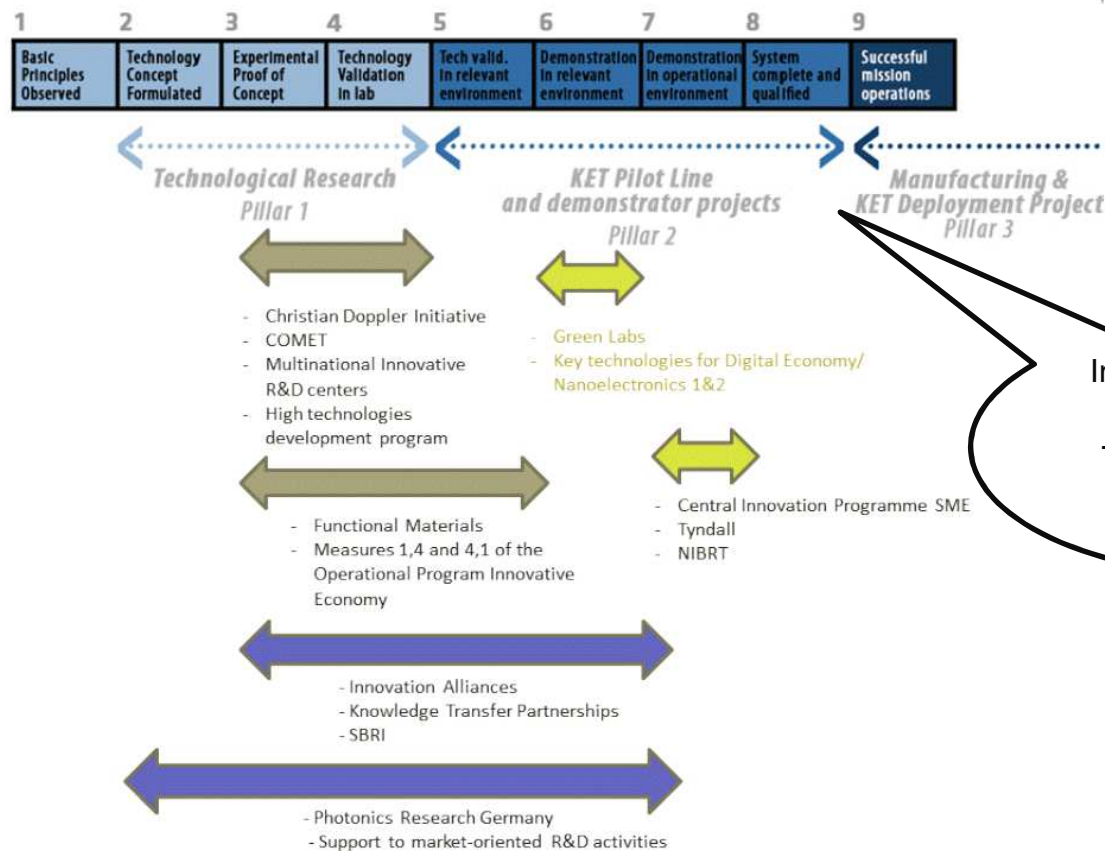
... is setting the right policy framework !

Single European Semiconductor Strategy for Europe

Making Europe attractive for semiconductor manufacturing investment

- Capitalize and focus on Strengths along the value chain
- Benefit from a single explicit European Semiconductor industry Policy
- Increase public authorities' focus on manufacturing
- Maintain a high level of R&D effort, in a balanced way between the 150/200/300/450mm fields, between “More Moore” and “More than Moore”
- Strengthen all elements of the value chain, from design to application
- Develop cooperating programs and synergy initiatives between all semiconductor Actors operating in Europe

Key Enabling Technologies (KET) Best Practices



Investments needed !
 → Industrial policy to bridge the gap to manufacturing ?

Source: http://ec.europa.eu/enterprise/sectors/ict/key_technologies/



We need a European Semiconductor Industry Policy

Making Europe attractive for semiconductor manufacturing investment

1. **Based upon European industry's needs and priorities**
2. **With a funding process for cross-border cooperation, offering simplified procedures and enlarged eligibility criteria**
3. **Creating a level global playing field by better balancing fair competition within the EU and the need to promote global competitiveness**

Regional State Aid Rules

Making Europe attractive for semiconductor manufacturing investment

COMMISSION REGULATION (EC) No **1628/2006** of 24 October 2006 on the application of Articles 87 and 88 of the Treaty to national regional investment aid

Article 87(3)(c)

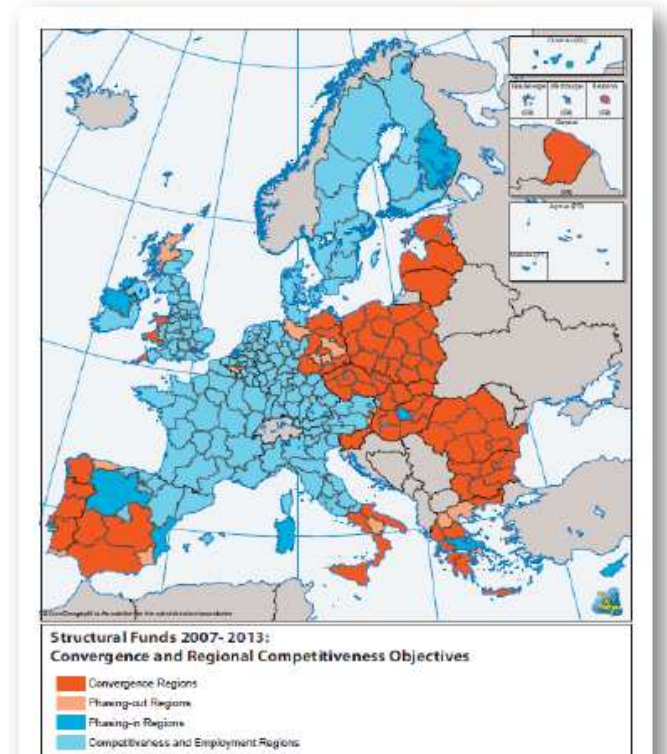
The aid ceilings for large companies in regions falling within the scope of Article 87(3)(c) must not exceed:

- 15 % as a rule;
- 20 % or 30 % for statistical effect regions as of 1 January 2011;
- **10 % for regions with a GDP per capita that is more than 100 % of the EU-25 average** and an unemployment rate lower than the EU-25 average measured at NUTS III level;

Source: http://europa.eu/legislation_summaries/competition/state_aid/g24242_en.htm

3. EU-LANDKARTE: REGIONALE FÖRDERZIELGEBIETE

Die genauen österreichischen Regionalfördergebiete gemäß EU-Behilfenrecht sowie die betreffenden Bezirke und Gemeinden sind auf der Website der Österreichischen Raumordnungskonferenz abzurufen:
<http://www.orsk.gv.at/eu-regionalpolitik>





Investment funding in New York State: 25%+

Making Europe attractive for semiconductor manufacturing investment

“Globalfoundries broke ground on the **\$4.2 billion Fab 8 plant** in Saratoga County in July 2009.

- **New York State committed up to \$1.2 billion worth of financial incentives** towards the project — the largest private public investment in the history of the state.
- The fabrication plant will create approximately 1,400 new, direct semiconductor manufacturing jobs and approximately 5,000 new, indirect jobs in the region. “

Source: <http://esd.ny.gov/CorporateInformation/Data/RequiredPostings/2010/FY09-10OpsandAccomps.pdf>

Proposal for Modernization of Regional State Aid

Making Europe attractive for semiconductor manufacturing investment

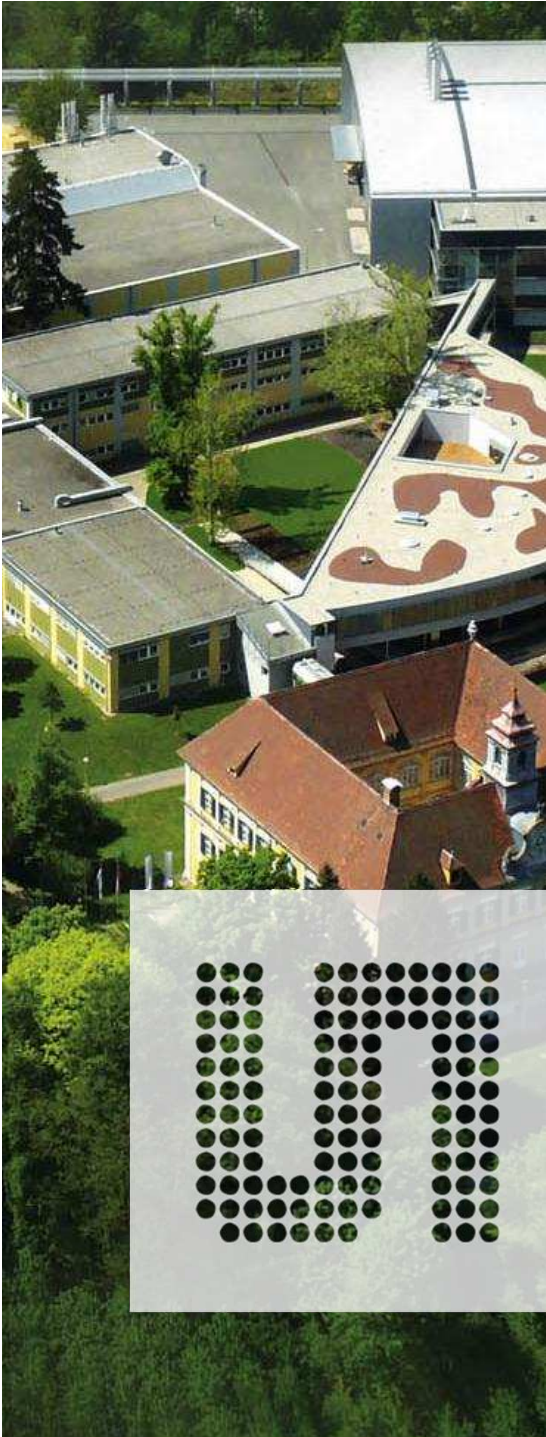
- 1. Implement the „Matching Clause“ in legislation**
- 2. Exempt Key Enabling Technologies from the Regional State Aid Rules**

Comment:

Competition for best investment conditions obviously happens outside the EU
Therefore such a legislative change would strongly contribute to at least allowing for
globally competitive investment conditions in the EU

Conclusions

1. **R&D conditions in Europe are favorable and globally competitive**
2. **Investment conditions for manufacturing are not !**
3. **Change in EU regulations on regional aid – at least for KETs – should be strongly and asap considered to make investment more attractive and stop the decline of EU semiconductor manufacturing !**

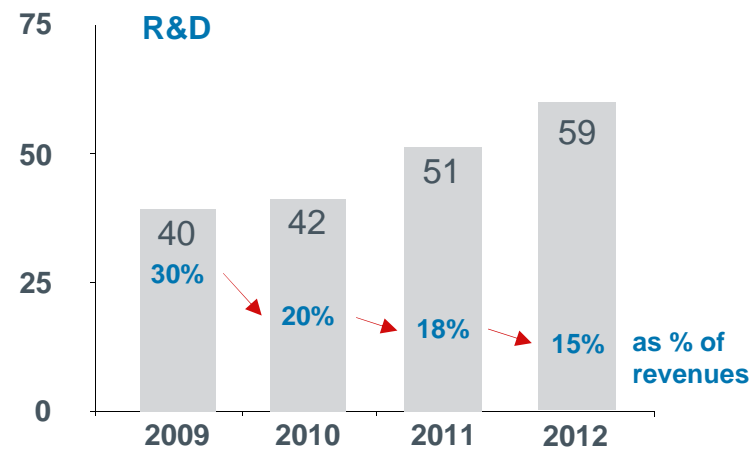
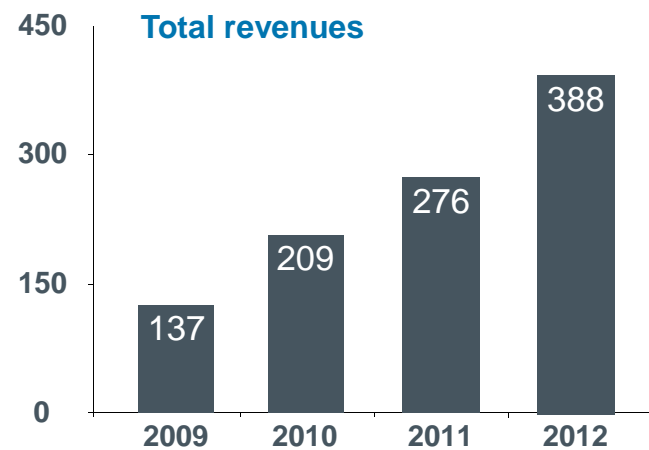


Thank you

Please visit our website www.ams.com

Financial overview

EUR millions



Total revenues in 2012 by market and region

