



# Study on the electronics ecosystem Overview, Developments and Europe's Position in the World

Key findings and recommendations

#### SMART 2016/0007

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# Objectives of the study







- Provide an overview of the industrial situation of the Micro and Nano Electronics (MNE) value chain in Europe and in the world
  - This overview will provide a mapping at the level of value chain segments, firms, end-user markets, and countries, matching them with NACE groups and classes
- Collection of statistics and construction of data on the European industrial base in MNE in order to
  - Measure value added generated by the semiconductor industry
  - Measure the level of industrial activity for all end-user electronic equipments
- Evaluate the European industry's performance compared with the rest of the world
- Make recommendations based on the findings of the study, and on interviews of key executives of the industry.
- Provide an assessment of future prospects for Europe's industry in market and technology terms
  - Evaluate the impact on MNE value chain organization



SUMMARY



# Results

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## 1. Results – Worldwide Electronic industry Value Chain

## 2. Results – Semiconductors

## 3. Results – Electronic equipments







<sup>1</sup> The semiconductor industry is very internationalized and the different production steps of a semiconductor systematically occurs in different countries. As a consequence, the production in Europe in this diagram corresponds to the share of the world production made by companies whose nationality of principal shareholder is European.





#### The share of the European production in the global electronic value chain (EU%World)

**Electronic value chain** 



Macro figures





Source : DECISION Etudes & Conseil







### The share of the European production in the global electronic value chain (EU%World)







## 1. Results – Worldwide Electronic industry Value Chain

## 2. Results – Semiconductors

## 3. Results – Electronic equipments



### Results – Semiconductors (1/2)



#### Wafer capacity rise 2011-2017

(Monthly installed capacity in 200mm equivalent)



#### Wafer capacity at Dec 2017

#### (Monthly installed capacity in 200mm equivalent)



Source: DECISION Etudes & Conseil, IC Insights

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• The EU is falling behind in wafer capacity

• Europe do not produce advanced technologies nor memories anymore

- World SC producers TOP 15 :
  - TOP 10 : Mainly South Korean, US and Taiwanese players;
  - TOP 10-15 : Where EU players are.





## 1. Results – Worldwide Electronic industry Value Chain

## 2. Results – Semiconductors

## **3. Results – Electronic equipments**





Electronic equipments production Compound Annual Growth Rate 2010-2017



#### World Production Share 2017

#### **Electronic equipments**





### Results – Electronic equipments (2/4)



World









### **Compound Annual Growth Rate of electronic equipments 2010-2017**



Source : DECISION Etudes & Conseil

- The main cause of the EU's low growth is the fall of stand alone electronics production
- Embedded electronics generates high growth in the EU







- The EU is still in very good position in embedded
  electronics production
  - Automotive electronics;
  - o Industrial electronics;
  - Aerospace/Defence/Security electronics;
  - Health & Care electronics.
- Embedded electronics equipments are the most promising markets in terms of growth
  - Embedded Equip. CAGR 2010-2017 = 7.2%
  - $\circ$  Stand alone Equip CAGR 2010-2017 = 2.7%







# Recommendations of the study





**Recommendations - Summary** 



## 1.MNE (Micro & Nano Electronics) Industry

## 2.End-user Electronic equipments

3.General recommendations



#### Recommendations – MNE Industry



### Key Findings

- The EU is falling behind in terms of wafer capacity
  - o Sovereignty issue;
  - o Employment issue.
  - The EU is strong in embedded electronic components production.
    - o Automotive, Industrial, Aero/Def/Secu, Health & Care;
    - The most promising equipments in terms of growth.

#### Recommendations

 Focus public aids on competitive steps (design, manufacturing)

Build a SC factory of advanced technologies in the EU

- 2. Focus public aids on More than Moore technologies
  - Where Europe is strong;
  - o MEMS, NEMS, sensors, Analog.

### Set up an Airbus of Chips

- Collaboration between the main EU producers
- Supported by strong public aids
- With concrete objectives in terms of More than Moore tech. world production shares, factories and employment in the EU

EFECS- November 2018



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## 1.MNE (Micro & Nano Electronics) Industry

## **2.End-user Electronic equipments**

3.General recommendations





### Europe must adopt the same rules as China and the USA

- Make good use of its large internal market
- Adopt a global public support of the industry
  - Pre-competitive steps (R&D)...
  - o ... but also industrialization, design, manufacturing...
  - o ... and capital ownership
- Unify the European market through implementing common standards and regulations favourable to European interests





#### **Recommendations – MNE Industry**



#### **Key Findings Recommendations** Focus public aids on competitive steps (design, The EU is falling behind in terms of elect. production ٠ 1. manufacturing) Sovereignty issue & employment issue. Ο Focus public aids on embedded electronics The EU is strong in embedded electronic equipments 2. production. Automotive, Industrial, Aero/Def/Secu, Health & Care; Ο The most promising equipments in terms of growth;

#### Set up public-private EU projects

- Airbus of smart automotive; 0
- Airbus of Industry 4.0; 0

Ο

Airbus of Defence/Security... 0



#### **Recommendations – MNE Industry**









## **Example: Automotive**

- The EU is the first region of the World on almost every criteria
  - o Automotive capital ownership / Electronic equipment production, R&D and capital ownership...
- But
  - A Compound Annual Growth Rate (CAGR) of almost 10% over the 2017-2022 period;
  - A growth driven by disruptive technologies :
    - ADAS (Autonomous vehicle) => New software, new sensors => New players
    - Electrification of powertrains (Electric vehicle) => New powertrain => New players

#### • So

- Necessity to make the appropriate technologic and strategic choices;
- Or the production share of the EU players will shrink by 2030.





## 1.MNE (Micro & Nano Electronics) Industry

## 2.End-user Electronic equipments

## **3.General recommendations**



#### **Recommendations – General**



### Key Findings

- The EU lacks skilled manpower in Electronics
  - o Equipments, components, technicians, engineers...
- Lack of relevant hard data on electronic production

Lack of public statistics for :

- o Automotive electronics
- o Industrial electronics
- Aerospace/Defence/Security electronics
- o Health & Care electronics

### Recommendations

1. Develop education in science

- 2. Create an Observatory of the European MNE and

**Electronics Ecosystem** 

# Thank you for your attention

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