

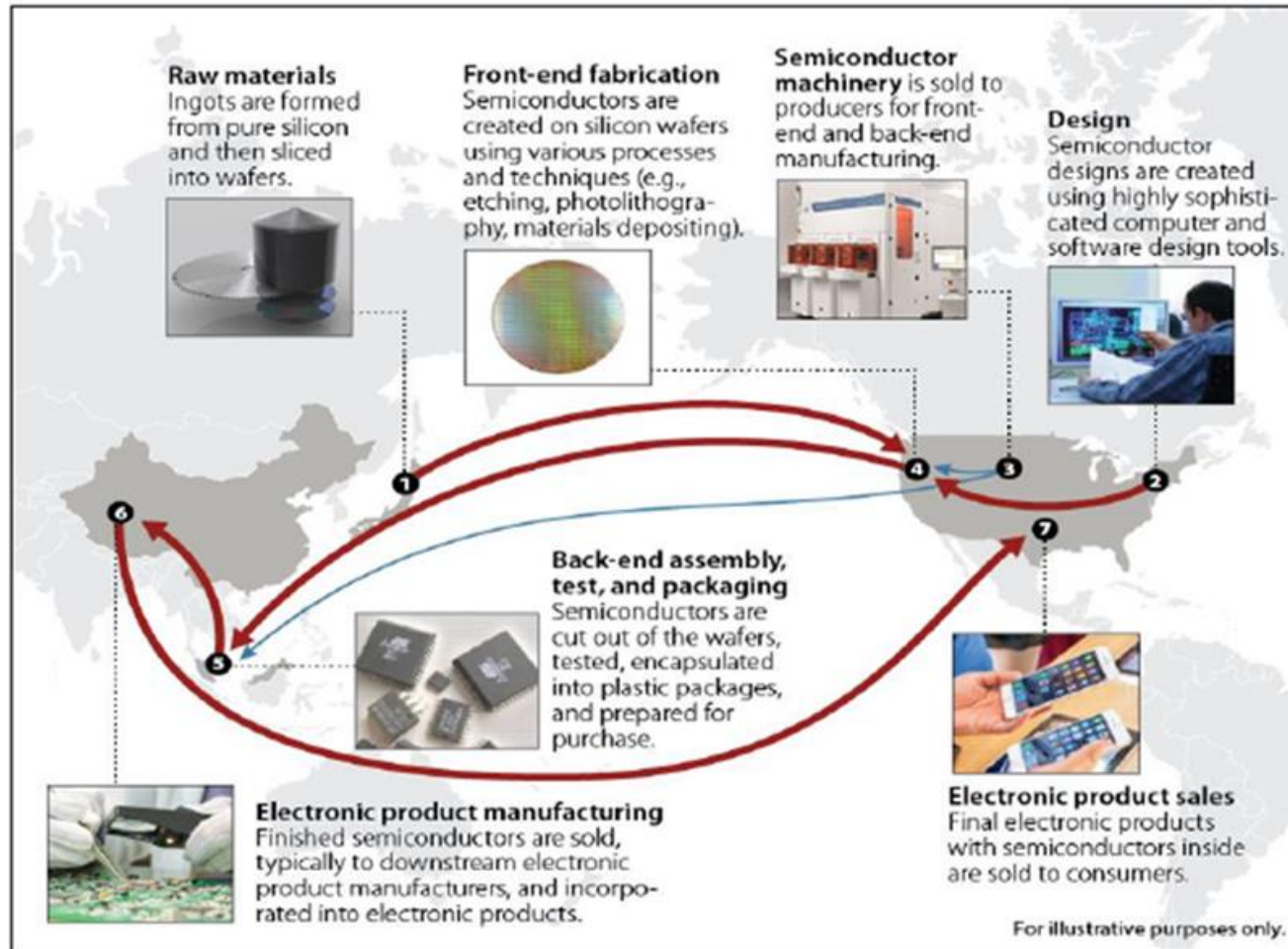


ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

The European Chips Act in the Italian and ARCES perspective

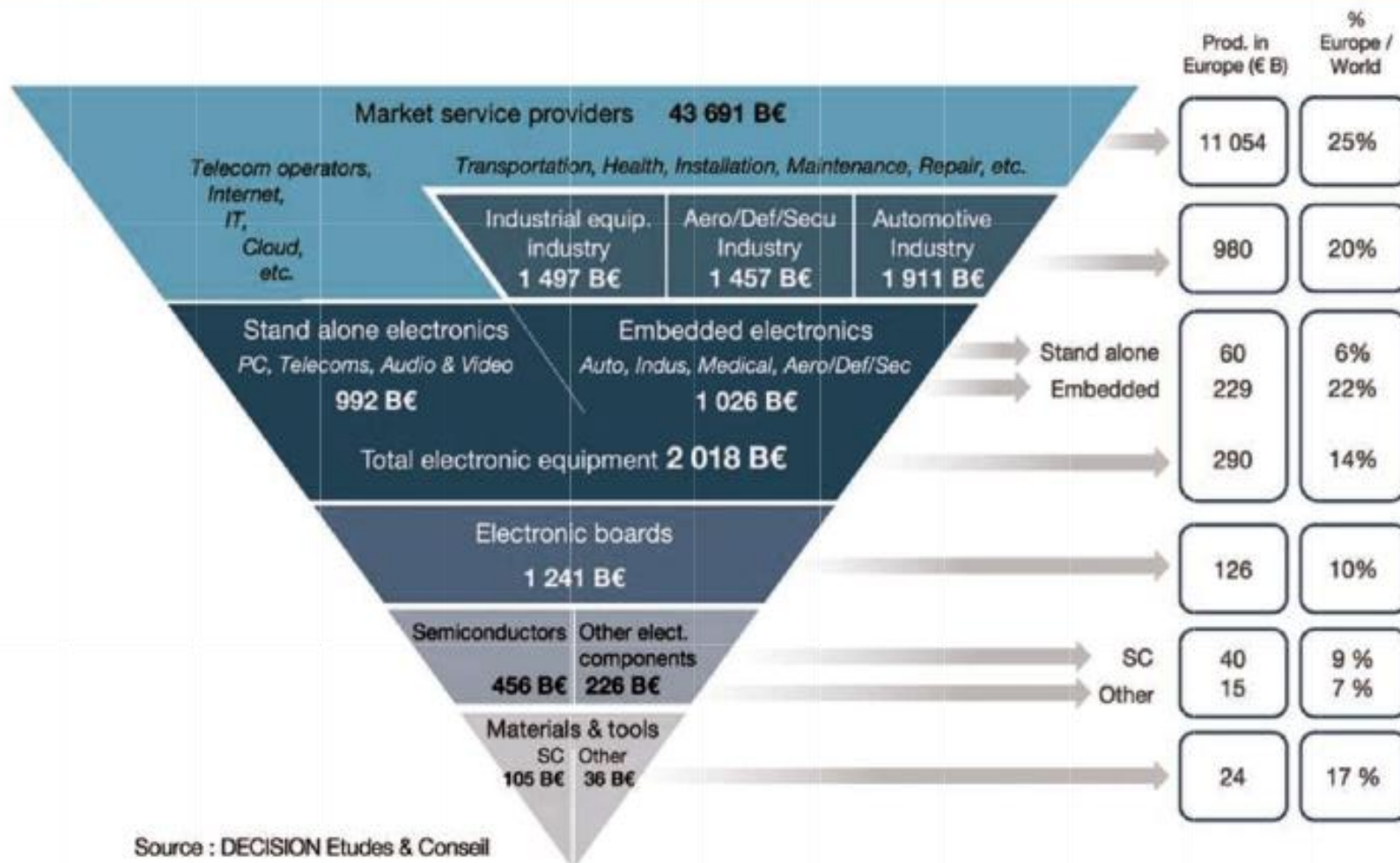
Enrico Sangiorgi

The global model of the semiconductor industry is coming to an end ?



Source: CRS, adapted from information provided by SIA.

The digital supply chain: Where does EU stand?

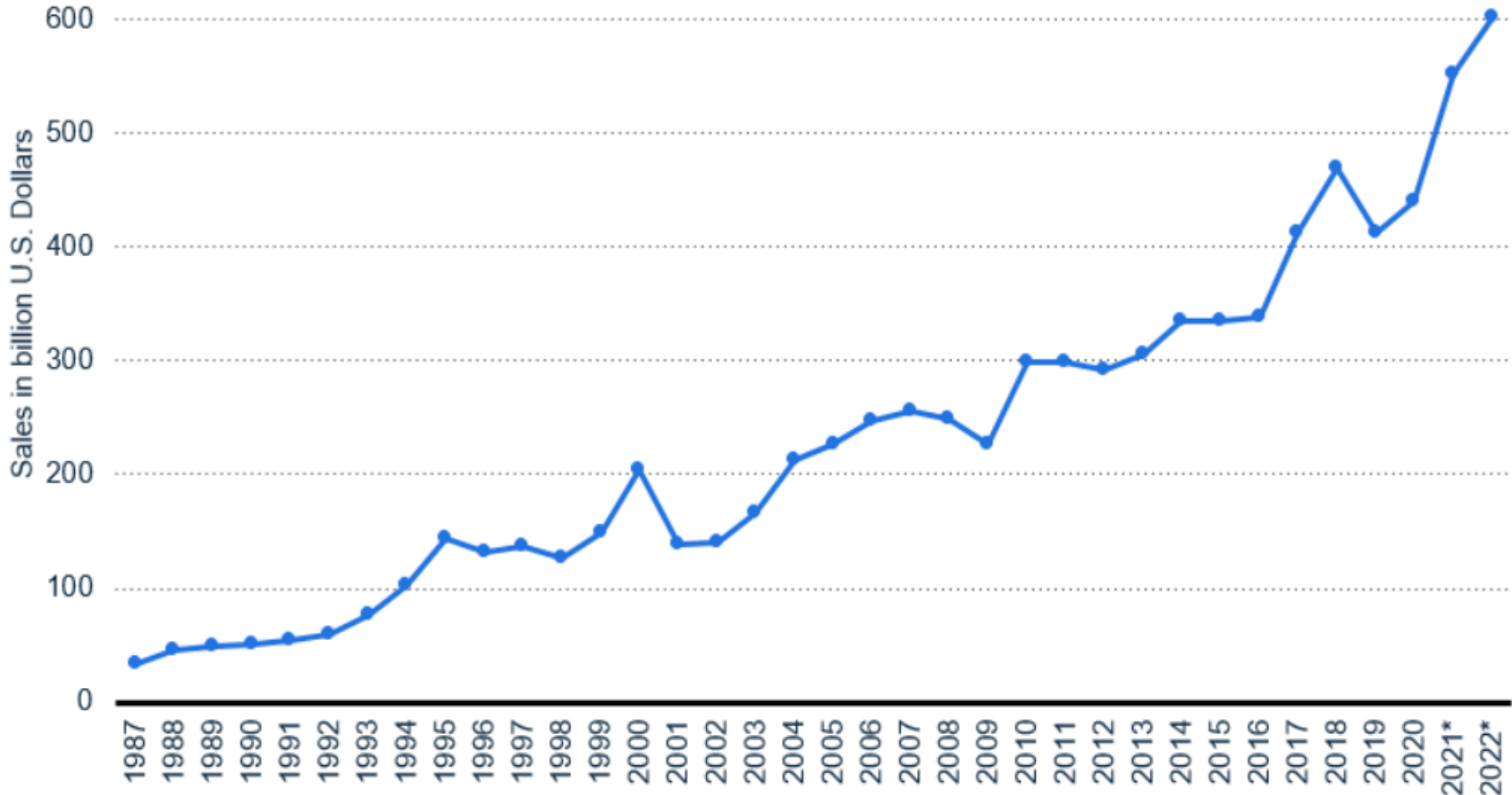


Source : DECISION Etudes & Conseil

Data of 2018

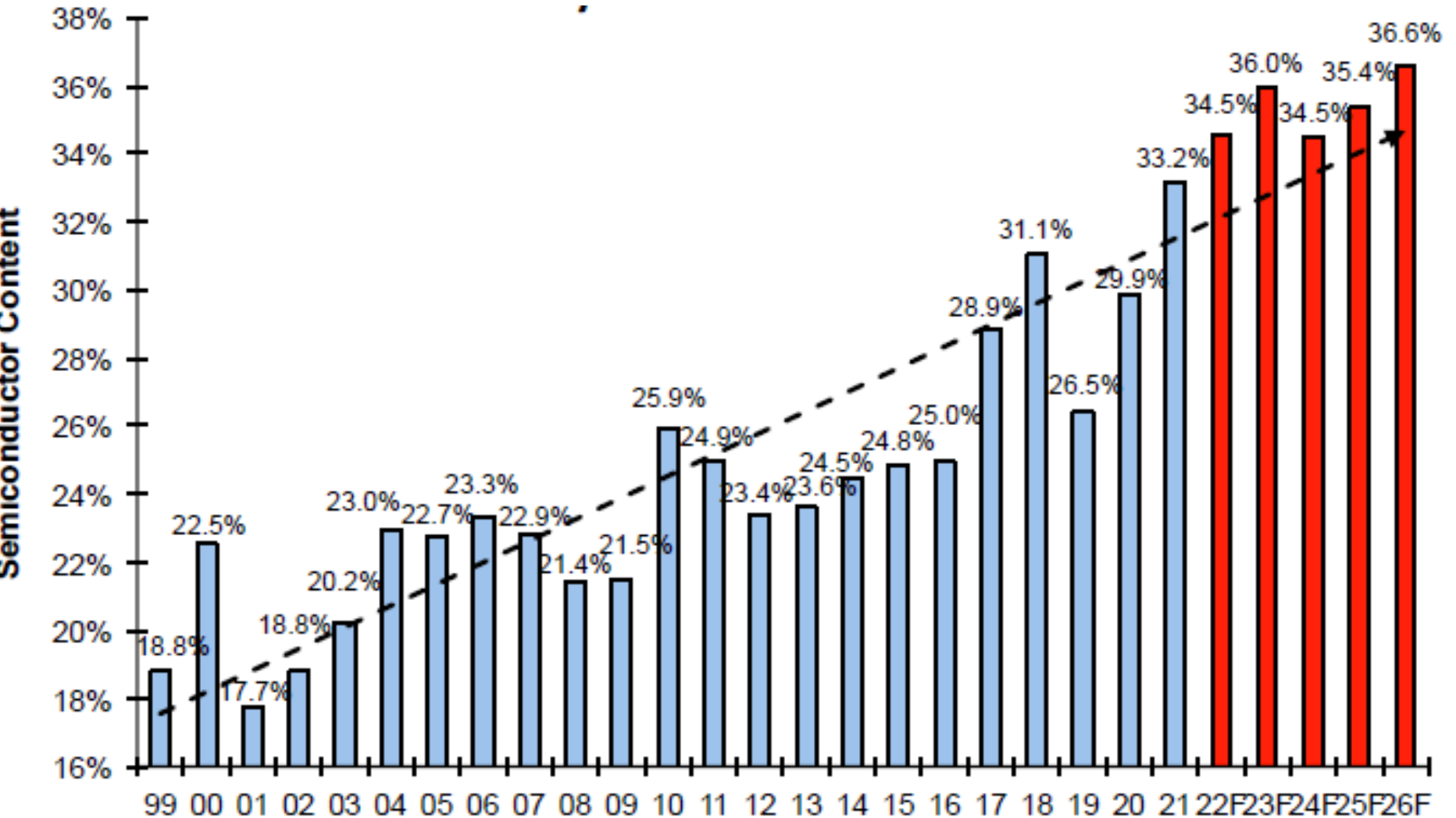
Semiconductor Industry Sales Worldwide 1987-2022 (Source: WSTS)

USD 600 B in 2022



Semiconductor content in electronic systems

(Source: IC Insights, ST, TI)



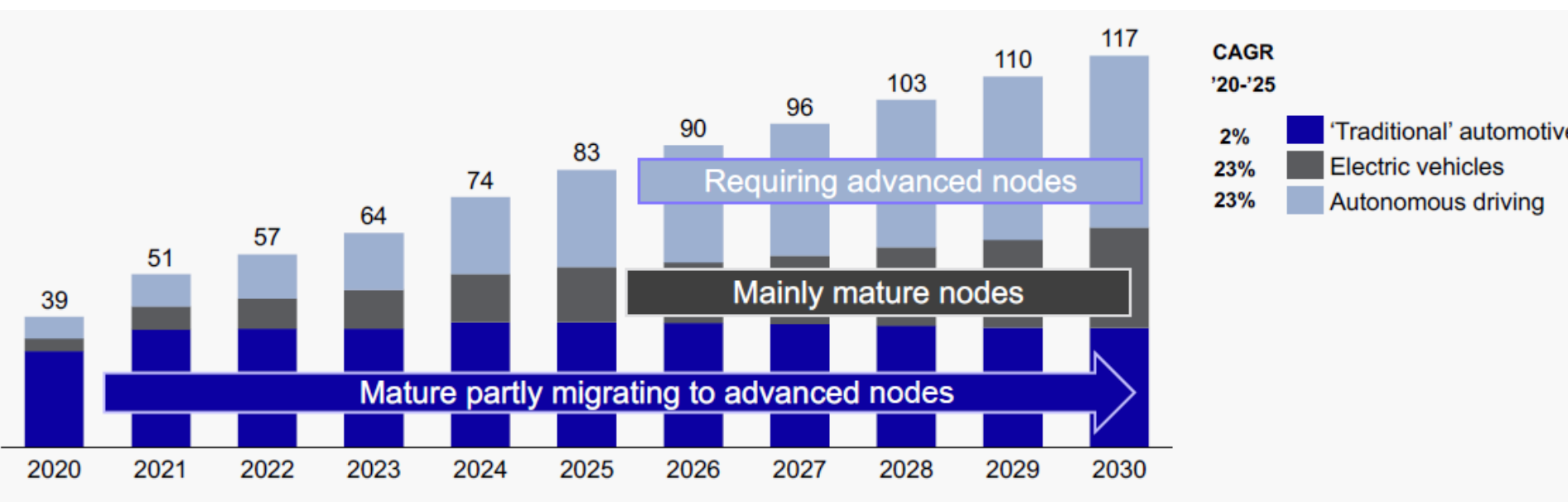
EU Strengths: the Automotive Sector

The increasing demand of semiconductors components in the automotive sector is driven by three factors:

- connectivity for safety and infotainment systems
- increased automation levels
- the move towards electric vehicles.



Semiconductor market evolution for automotive chips, in USD billion (Source: ASML, Gartner 2022)



A Chips Act for Europe

On 8 February 2022, the European Commission proposed the **Chips Act**, a comprehensive set of measures to confront **semiconductor shortages** and **strengthen Europe's technological leadership**

COM(2022) 45. Communication from the Commission: A Chips Act for Europe.
08/02/2022

COM(2022) 46. Proposal for a Regulation establishing a framework of measures for strengthening Europe's semiconductor ecosystem (Chips Act).
08/02/2022

On 11 May 2022 the European Commission published a Staff Working Document named **"A Chips Act for Europe"**

The European Parliament's vote on January 24 opened the way to the trilogue negotiations



The Three Pillars of the Chips Act

- Pillar 1: **The Chips for Europe Initiative: R&I and Capacity Building (Pilot Lines)**
- Pillar 2: **Security of supply** by attracting investments and increasing production capacities (concept of “**first of a kind**”)
- Pillar 3: coordinated actions for **Monitoring and Crisis Response**



Pillar 1: the Chips for Europe Initiative

- Closing the gap from Lab to Fab (investing in **Pilot Lines**)
- Investing in a virtual **design platform** that leverages on the Pilot Lines.
- Access via **National Competence Centers** that will also provide the necessary skills, not only in the use of the design tools and infrastructures but also in those required to address the **severe skills shortages** faced by the EU microelectronics sector



Implementing the Chips for Europe Initiative: the Chips Joint Undertaking

- The present **KDT Joint Undertaking** will enlarge its scope and be renamed **Chips JU**.
- The Chips JU will implement the following components of the Chips for Europe Initiative:
 - design capacities
 - new and existing pilot lines
 - national competence centers and skills development
 - technology and engineering for quantum chips



Pillar 2: First-of-a-kind facility

- definition of a ***First-of-a-kind*** facility in the Union as an industrial facility (front-end, back-end), that is not already present in the Union. **Applicable to any technological node, leading edge or not.**
- *the Commission will consider the First-of-a-kind label among others into account in the possible State aid procedure.*
- *First-of-a-kind* facilities can be Integrated Production Facilities (IPF) or Open EU Foundries (OEF).
- the recent green light to the Italian Government support for a new ST-Microelectronics plant in Catania goes along this line



Some numbers (M€)

Overall level of policy-driven investment in excess of 43 B€, including 11 B€ for the Chips Europe Initiative from EU and Member States

EU funds accompanying the proposed Chips Act

	Chips for Europe initiative	Non-initiative	Total
Research and Innovation (Horizon Europe)	1.350	1.300	2.650
Capacity building (Digital Europe Program)	1.525	-	1.525
Total	2.875	1.300	4.175



The position of the Italian Government w.r.t. the semiconductor crisis and the Chips Act



Decree law 1 March 2022, n. 17, Article 23

- ✓ To promote R&I in microelectronics..... a fund is set up in the Ministry's of economic development's budget with a budget of 150 million euros for the year 2022 and 500 million euros for each of the years from 2023 to 2030.



Decree Law 13 May 2022, n.455

The establishment of a Semiconductor Expert Group by the Ministry of Research

Scope:

"for the study and formulation of contents on semiconductor technologies,as outlined in the measures proposed by the Commission of the European Union "



A working document on semiconductor policies

- ✓ A group of experts from different Ministries (Prime Minister Staff, Ministries of Economic Affairs, Industry and Research) have carried out a detailed analysis and produced a report on the Semiconductor value chain in Italy, including Research, Semiconductor Manufacturing and Strategic Industry sectors which depends critically on Semiconductors (Automotive, Automation, etc.).
- ✓ The document aims to suggest a long-term strategy in the Semiconductor sector and thus help the policy makers in their choices on the allocation of resources.
- ✓ The report has been presented to policy makers during a seminar, “L’Italia e il ruolo strategico della supply chain dei semiconduttori”, on October 4th, 2022, in Palazzo Chigi .



ChipsIT: the Italian Center for chips design

- ✓ As outlined in the Chips Act documents, the design of IC's represents over 30% of the total added value of the semiconductor industry but it is not sufficiently developed in Europe and in Italy.
- ✓ The demand for design of advanced IC's has been increasing by the semiconductor industry and by the application sectors (automotive, automation, etc.)
- ✓ The working document prepared for the Italian Government suggests the establishment of an Italian Center for the design of semiconductor integrated circuits with a three-fold mission: prepare new talents, support the semiconductor industry and help the application sectors that are more and more depending on advanced IC's, to approach this know-how.

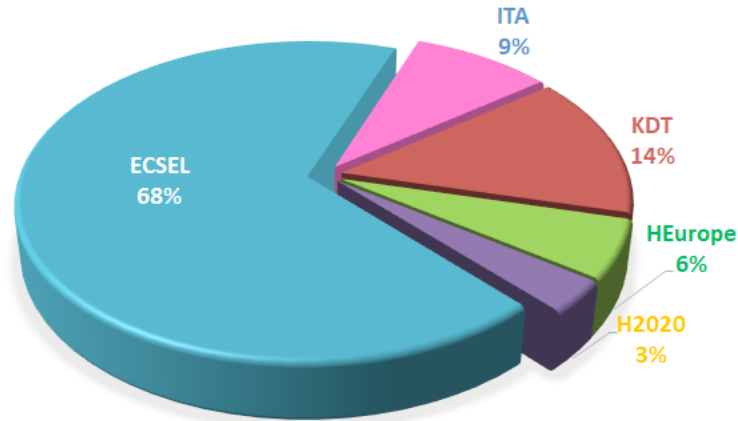


The 2023 Budget Law

- ✓ The budget law for 2023 has established the *Italian center for the design of semiconductor integrated circuits*, in order to promote the design and development of integrated circuits, strengthen the system of professional training in the field of microelectronics and ensure the establishment of a network of universities, research centers and enterprises which favors innovation and technological transfer in the sector.
- ✓ The Center has been endowed by initial budget of 30M/year for 8 years
- ✓ Statute and Governance of the Center are being presently discussed.



Opportunities for ARCES



- Pillar one of the Chips Act will be driven by the new Chips JU which is a further development of ENIAC, ECSEL and KDT. At today, 82% of the ARCES research funding comes from the same JU
- The establishment of the Italian Center for IC design with consistent public funding will exploit and boost the wide and interdisciplinary spectrum of competence existing in ARCES that helps to bring IC design towards applications





ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA