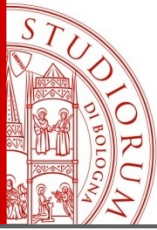


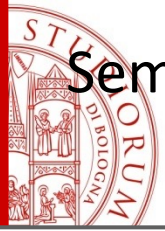
The EU Chips Act: vision and remarks

Enrico Sangiorgi
Università di Bologna



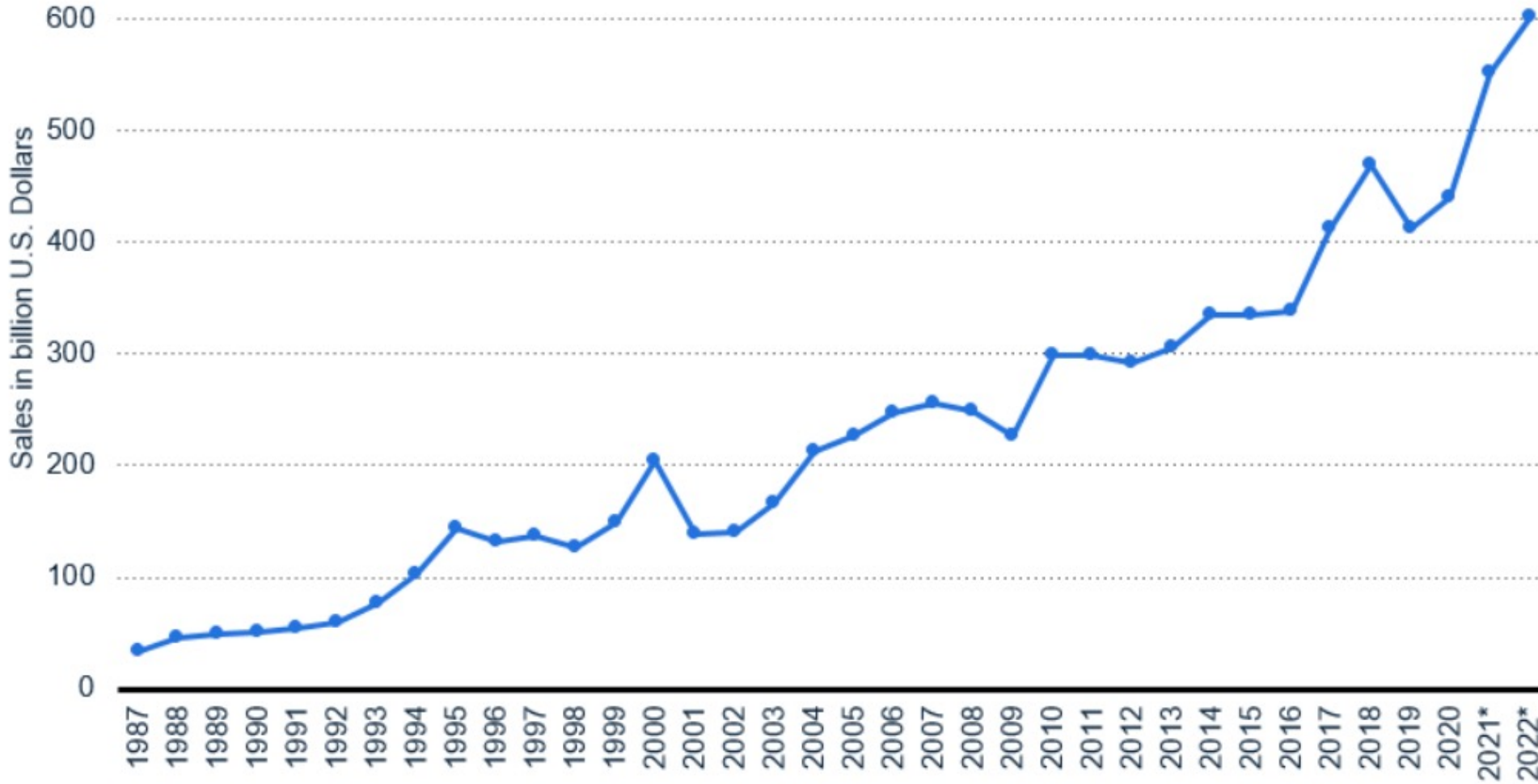
Outline

- Facts: the global landscape and the position of Europe
- A Chips Act for Europe: the three pillars
- Governance
- Budget
- The establishment of a Technical Board by the Italian Ministry
- Conclusions and remarks



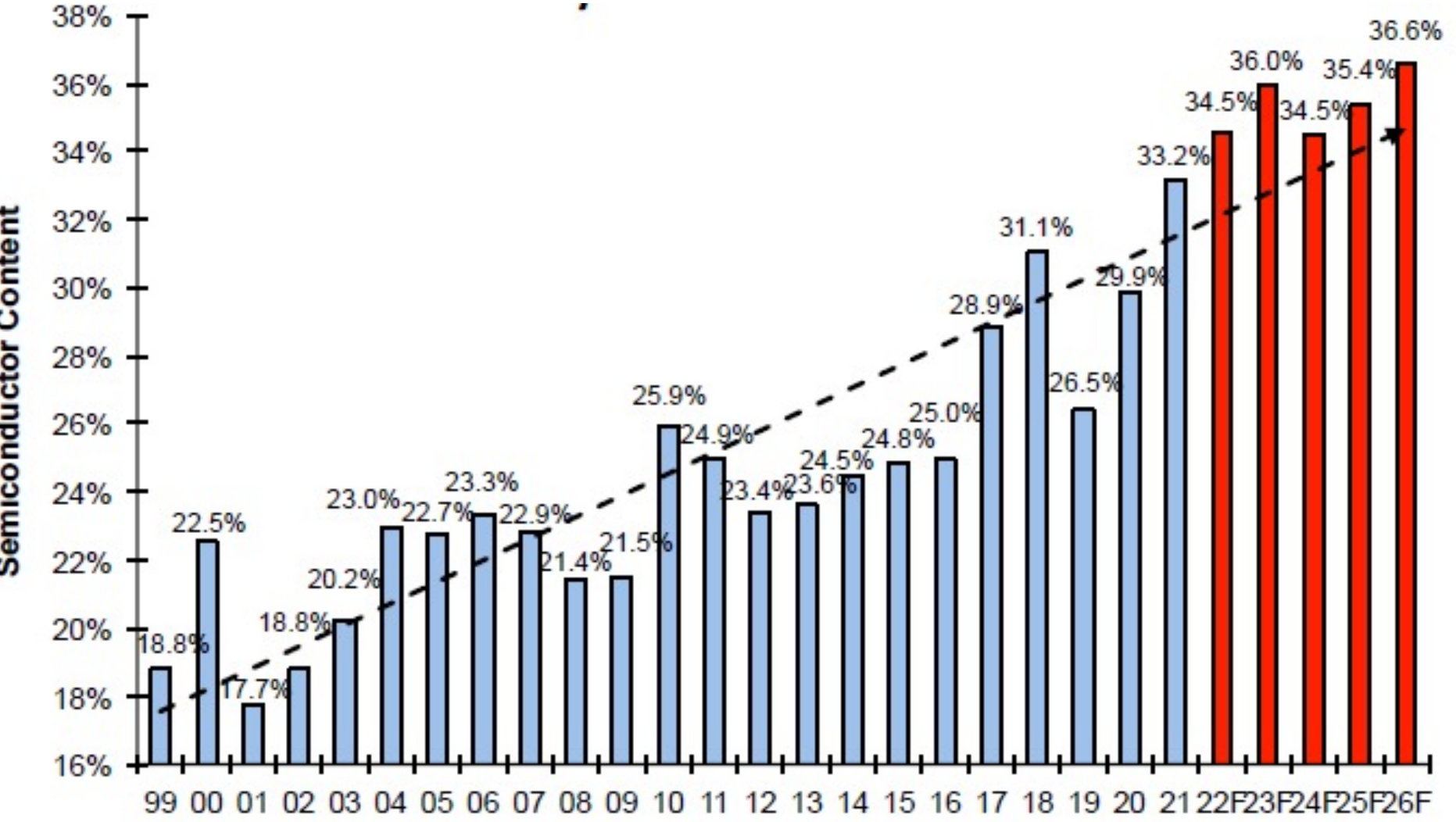
Semiconductor Industry Sales Worldwide 1987-2022 (Source: WSTS)

USD 556 B in 2021

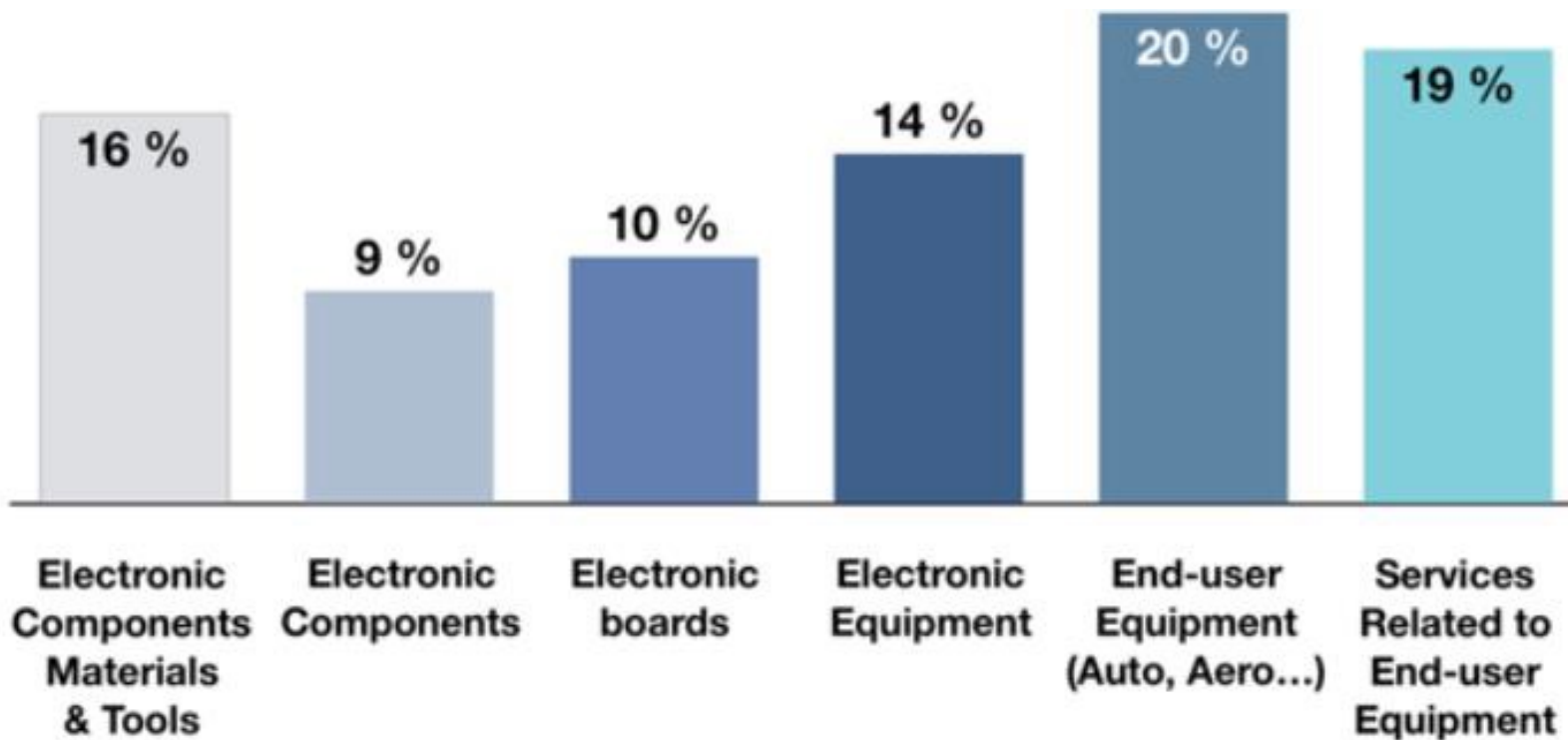


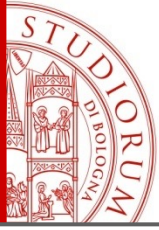


Semiconductor content in electronic systems (Source: IC Insights, ST, TI)



European share of global sales (DECISION, 2019)





Strengths and weaknesses of the European ecosystem

Investments in production facilities in Europe in the past two decades was rather limited, as a consequence EU's share of worldwide capacity decreased from **11.7% in 2005** down to **7.2% in 2020** , with little presence in the more advanced digital nodes.

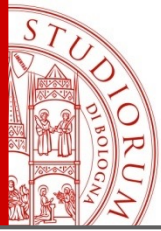
In 2021, the EU's trade deficit for semiconductors was almost EUR 20 billion with exports amounting to **EUR 31.5** billion while imports amounted to **EUR 51** billion, and this with fabs working at full capacity.



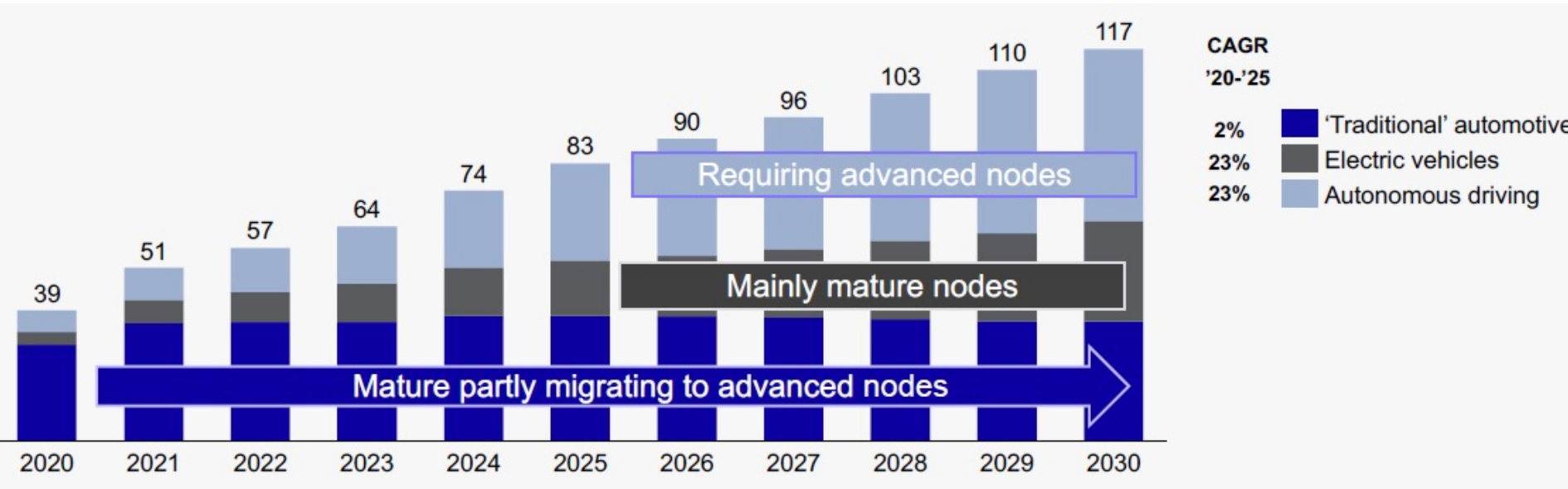
EU Strengths: the Automotive Sector

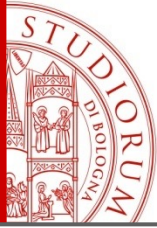
The increasing demand of semiconductors components in the automotive sector is driven by three factors:

- 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)





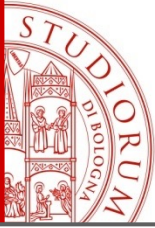
A Chips Act for Europe

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

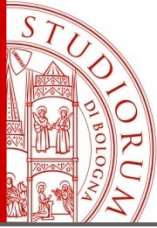
COM(2022) 46. Proposal for a Regulation establishing a framework of measures for strengthening Europe's semiconductor ecosystem (Chips Act). 08/02/2022

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



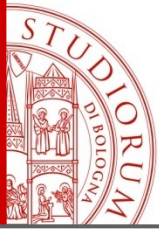
The Three Pillars of the Chips Act

- 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

- Close 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



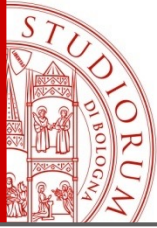
Implementing the Chips for Europe Initiative: the Chips Joint Undertaking

- The present KDT JU 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
 - competence centers and skills development
 - technology and engineering for quantum chips



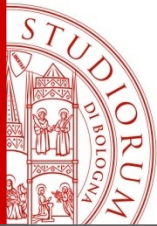
The European Chips Infrastructure Consortium (ECIC)

- Legal entity between RTO's and, at least, three Member States
- Possibility to establish one or more ECIC
- A single counterpart for the EU (the EU would prefer to have only one ECIC), able to own infrastructures, manage IP, etc.



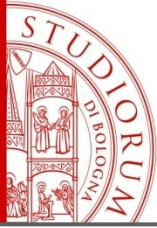
Pillar 2: A Framework to Ensure Security of Supply

- the EU needs to reinforce its capacity in the production of **mature nodes**, essential for the functioning of its economy, while at the same time preparing for investing in production of nodes **smaller than 10 nm**.
- In terms of induced employment, according to SIA and Oxford Economics, for each worker employed by the semiconductor industry, an **additional 5.7 jobs** are supported in other sectors of the economy.



First-of-a-kind facility

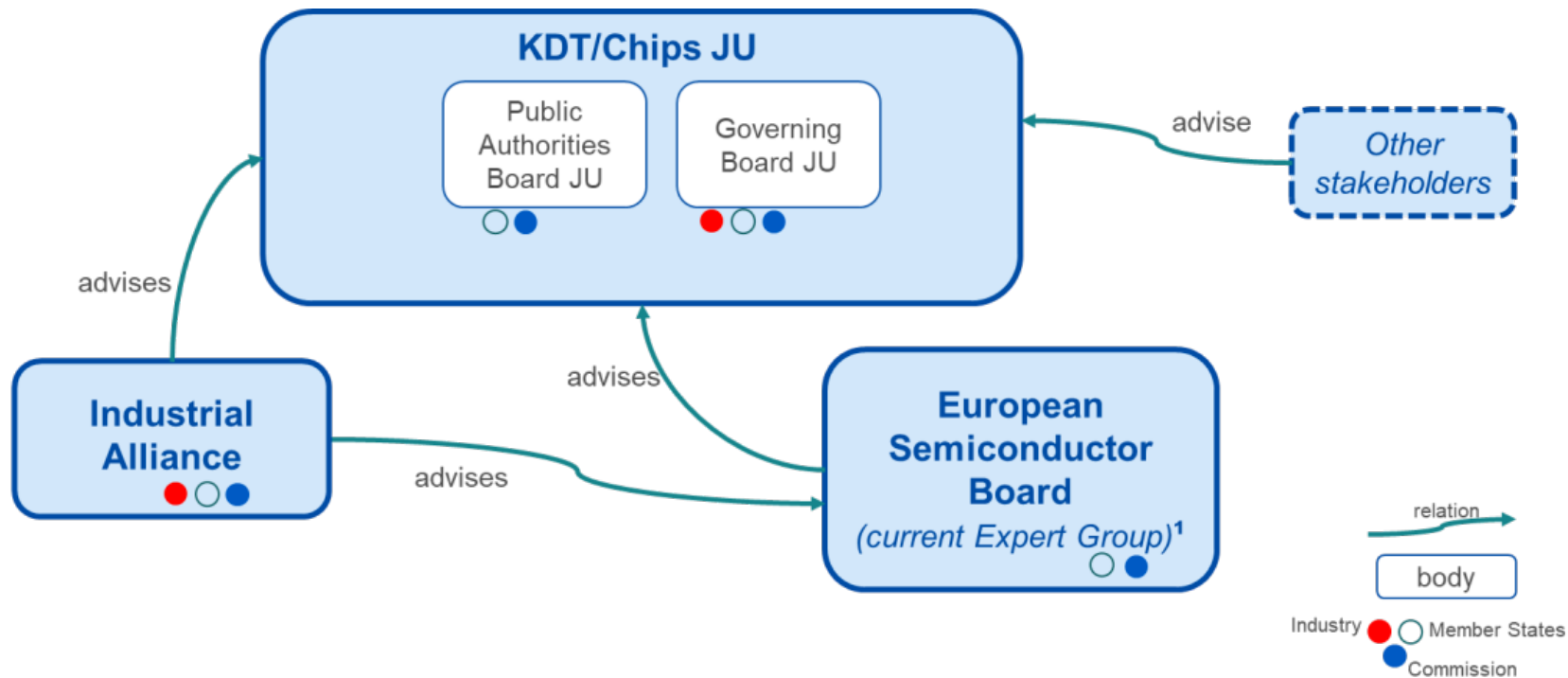
- definition of a *First-of-a-kind* facility in the Union as an industrial facility (front-end, back-end), that is not already present in the Union. Applicable to any technological node, leading edge or not.
- the Commission will consider the *First-of-a-kind* label among others into account in the possible State aid procedure.
- *First-of-a-kind* facilities can be Integrated Production Facilities (IPF) or Open EU Foundries (OEF).
- some obligations are foreseen to make sure the facility contributes to the security of supply in the Union.



Pillar 3: Monitoring and Crisis response

- The current **shortage** has demonstrated the need for improved tools to address emergency situations.
- the Chips Act proposes a mechanism for monitoring of the semiconductor value chain.
- Example: Priority rated orders, already present in other jurisdictions, such as USA.
- To ensure this measure remains proportional, the scope of priority rated orders would be focused on companies that have likely benefitted from significant public support.

Coordination and Governance



1) In addition to the Board, there will be a Committee with a more technical function required by comitology regulation which is needed for implementing acts

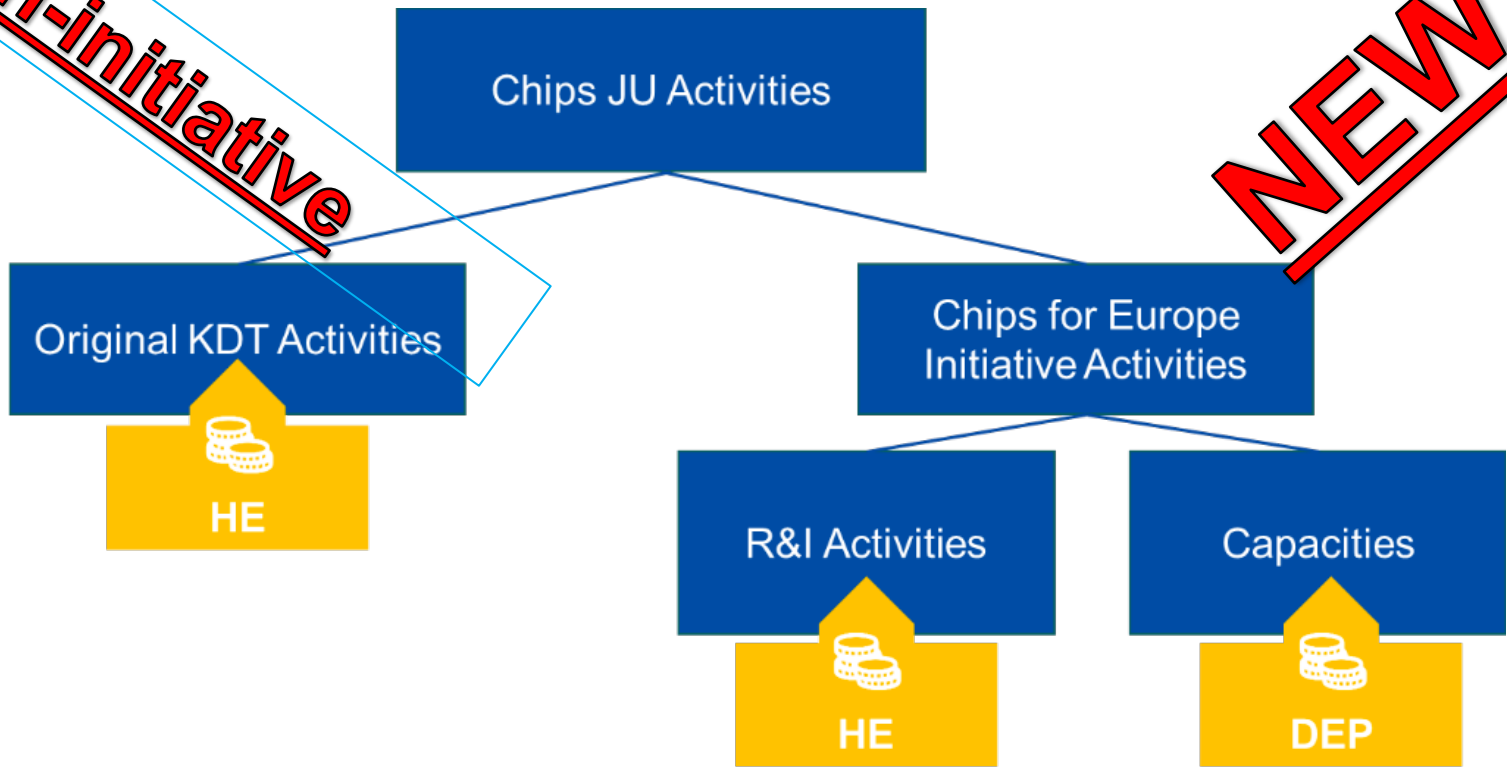
Ongoing discussion with stakeholders



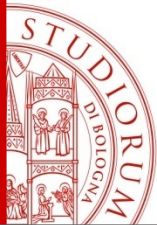
Budget

non-initiative

NEW



Two sources: Horizon Europe and the Digital Europe Program

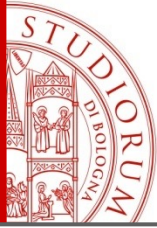


Some numbers (M€)

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

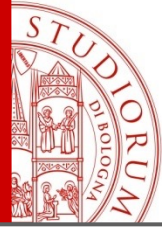
	Chips for Europe initiative	Non-initiative	Total
Research and Innovation (Horizon Europe)	1.350	1.300	2.650
Capacity building (Digital Europe Program)	1.525	-	1.525
Total	2.875	1.300	4.175



K.P.I.

The EU Chips Act will be considered successful if a gradual and tangible progress towards the following objectives can be assessed:

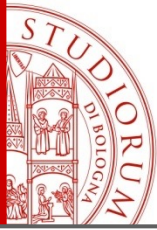
- Strengthen EU **research and technology leadership**
- Address the **skills shortage**, attract new talent and support the emergence of a skilled workforce
- Reinforce the **capacity** of Europe for innovation in **design, wafer manufacturing and packaging**
- Establish a framework to **increase substantially production capacity** by 2030
- Develop an in-depth understanding of global semiconductor supply chains and enable the EU to take appropriate measures when necessary



The establishment of a Technical Board by the Italian Ministry of Research

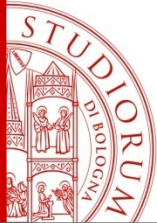
- Commitment of the Italian Government to the high-level of national resources implied by the Chips Act
- Decreto Ministeriale 455 del 13-05-2022
- Scope:

"per lo studio e la formulazione di contenuti in materia di tecnologie dei semiconduttori, avente la finalità di supportare questo Dicastero nel dialogo interistituzionale sulla tematica, e di permettere la definizione di una strategia per lo sviluppo di tecnologie innovative e sostenibili per microprocessori, in coerenza con quanto delineato nelle misure proposte dalla Commissione dell'Unione Europea.»



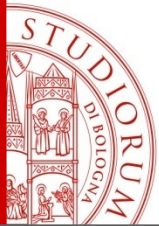
Members

- Luca Benini University of Bologna
- Paolo Ravazzani CNR IEIIT
- Enrico Sangiorgi University of Bologna (Coordinator)
- Sergio Saponara University of Pisa
- Cristina Silvano Politecnico di Milano
- Corrado Spinella CNR DSFTM
- Francesco Svelto University of Pavia
- Giovanni Verzellesi University of Modena e Reggio Emilia
- Massimo Violante Politecnico di Torino



Conclusions – Remarks

- Commitment from the highest levels of the EU
- Amount of resources made available so far (< 6 B€) still negligible compare with the KPI's
- About 90% of claimed 43 B€ coming from Member States and private sector.
- Mismatch between the EU Gantt Chart (at least 12 months for approval in the European Council and European Parliament) and the needs of the semiconductor ecosystem
- Need to harmonize Stakeholders legitimate interests: EU, Private Members, Member States



Thank you