



# The European Chips Act, a challenge and an opportunity for the Italian semiconductor ecosystem

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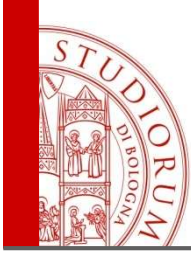
Genova, June 26, 2024



# Outline

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- A Chips Act for Europe: the three pillars
- A Chips Act for Italy: the Renaissance of the semiconductor ecosystem?



# A Chips Act for Europe

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*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***

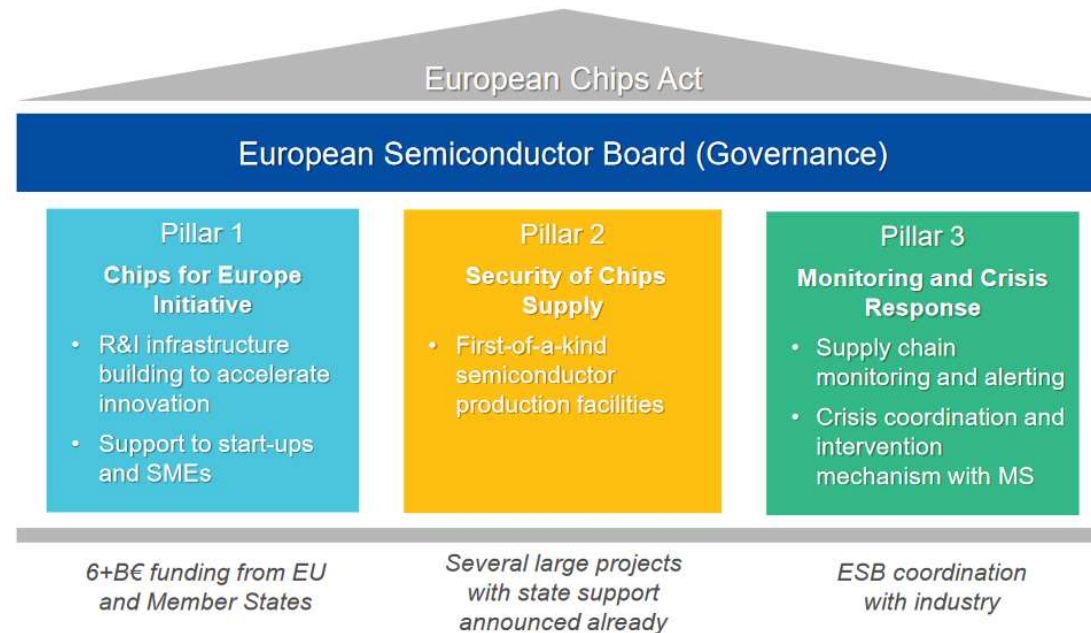
*The approved regulation has been published on **September 21, 2023***



# The EU Chips Act - 3 pillars

EU Chips Act entered into force in September 2023

**Objective:** mobilize by 2030 over €43 billion in public investments aiming to double EU's global market share





# The Three Pillars of the Chips Act

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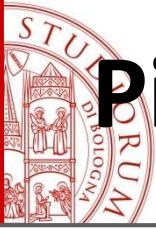
- Pillar 1: **The Chips for Europe Initiative: R&I and Capacity Building (Pilot Lines, Design Platform,...)**
- Pillar 2: **Security of supply** by attracting investments and increasing production capacities (concept of “**first of a kind**”)
- *Pillar 3: coordinated actions for Monitoring and Crisis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



## Pillar 2: Security of Supply

### *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



# Pillar 1: The Chips for Europe Initiative

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- Following the entry into force of the **Chips Act** on 21 September 2023, the **Chips JU** has been launched on December 1<sup>o</sup>, 2023
- The Chips JU implements the following components of the Chips Act (also called «**The initiative**»):
  - Setting up a **Design Platform**
  - Setting up **Pilot Lines**
  - Establishing a network of **Competence Centres**
  - Development of Quantum chips and technologies

# Initiative Activities

## Pilot Lines



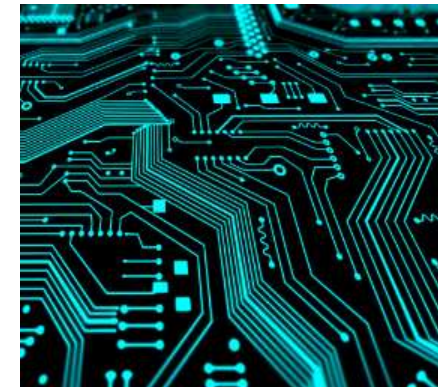
**Public** leading-edge facilities to support industry in developing, testing and validating new technologies and systems, and implementing prototypes.

## Competence Centres



A network of competence centres, across Europe, to provide access to technical expertise and experimentation, to approach and improve design capabilities and developing skills

## Design Platform



A virtual environment, based on the cloud, available across the Union, integrating a wide range of design facilities from IP libraries to EDA tools and support services, for SME's and RTO's.





## Four Pilot Lines (from labs to fabs , 3.4 B€)

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- Advanced sub 2nm leading-edge system on chip technology. Funding 1,400 M€ (EU+MS)
- Advanced Fully Depleted Silicon On Insulator technologies targeting 10 to 7nm. Funding 840 M€
- Advanced Packaging and Heterogenous Integration. Funding 720 M€
- **Advanced semiconductor devices based on Wide Bandgap materials. Funding 360 M**
- Four projects retained for funding and will start end 2024 (5 years projects)

# Pilot Lines

CEA-LETI



Fully Depleted Silicon  
on Insulator, towards 7  
nm

Grenoble

IMEC/ASML



The Leading-edge  
nodes below 2 nm

Leuven/Eindhoven

 **Fraunhofer**  
MIKROELEKTRONIK

 **Forschungsfabrik  
Mikroelektronik**  
Deutschland

Heterogeneous system  
integration and  
assembly

CNR



Wide Bandgap  
semiconductors

Catania

**JU Funds** 420M€

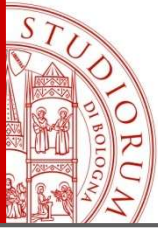
700M€

370M€

180M€

More to come...
























































# Pilot Line on Advanced semiconductor devices based on Wide Bandgap materials.

- European Consortium led by Italian partners
  - Italy. CNR, IUNET, FBK, Chips-IT
  - Sweden. KTH, Chalmers, Lund, Linkoping
  - Finland. Tampere
  - Poland. Unipress and Lukaszewicz
  - France. Leti
  - Germany. Fraunhofer
  - Austria. SAL
- Budget of the Italian Consortium: approx. 220 M€ (60% of total budget)
- Main site: Catania.

# Competenze e attività scientifiche/tecnologiche

	Material Growth & EPI	Device Processing	MEMS and detectors Processing	Advance char. and Reliability	M&S - PDK	Packaging & Integration
SiC		  	 	  	 	 
GaN	  	   		   	 	 
Ga <sub>2</sub> O <sub>3</sub>		  		 		 
AlN	  		 			 
Diamond						



# Timeline of the Pilot Line on WBG Semiconductors

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- Five Years Project
- Negotiations started with the JU
- Documents under discussion; Hosting Agreement, Joint Procurement Agreement
- New legal entity, replacing the four Italian Partners, devoted to the Pilot Line
- Timeline:
  - July 2024: new legal entity in place
  - October 2024: signature of the Grant Agreement
  - December 2024: KO of the Project



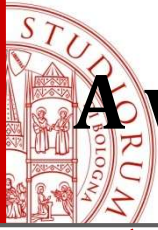
# The Chips Act and the Italian Semiconductor ecosystem



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

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- ✓ 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.



# 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 suggests a long-term strategy in the Semiconductor sector and to help the policy makers in their choices on the allocation of resources.
- ✓ In October 2022 the report has been presented to the Government.





# Chips-IT: the Italian Center for chips design

- ✓ As outlined in the Chips Act documents, the design of IC's represents 30 to 50% 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 suggested 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

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- ✓ 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 were established by the end of 2023..

# Kick-off event on Pavia, November 2023

LA FONDAZIONE NAZIONALE

## Ora è ufficiale: avrà sede a Pavia il Centro italiano per i microchip

Il ministro Urso: «Decisione presa con i colleghi Giorgetti e Bernini. Qui il polo strategico sul digitale»

Luca Simeone / PAVIA

«Abbiamo deciso con i ministri Giorgetti e Bernini di realizzare proprio a Pavia la Fondazione nazionale sui chip, cosa che sarà attuata nei prossimi mesi. Un progetto per fare di Pavia e della Lombardia un polo strategico per l'industria digitale». Le parole del ministro delle Imprese e del made in Italy, Adolfo Urso, ufficializzano l'assegnazione a Pavia della sede del "Centro italiano per il design dei circuiti integrati a semiconduttore". Un riconoscimento del fatto che proprio nella nostra provincia si è sviluppato un rilevante distretto della microelettronica, frutto anche della collaborazione tra le imprese e l'Università.

### LA CANDIDATURA

Nella legge di bilancio si prevedeva la nascita di una fondazione con l'obiettivo di «promuovere la progettazione e lo sviluppo di circuiti in-

### I NUMERI

#### Nel distretto nato con l'ateneo dodici imprese

Lo nascita di un distretto della microelettronica a Pavia è frutto dell'accordo di partenariato tra le imprese presenti sul territorio e l'Università, con il sostegno di Assolombarda. Sono in tutto dodici le imprese che ne fanno parte: Allegro Microsystems, Ams Italy, Analog Devices, ASR Microelectronics, Marvel, Huawei, Technologies Italia, Infineon Technologies Italia, Inventvm Semiconductor, Photon Technologies, Synopsys, STMicroelectronics.



Il ministro Alfredo Urso a Pavia tra il rettore Francesco Svelto (a destra) e Alessandro Spada (Assolombarda)

tegrati, rafforzare il sistema della formazione professionale nel campo della microelettronica e assicurare la costituzione di una rete di università, centri di ricerca e imprese che favorisca l'innovazione e il trasferimento tecnologico nel settore». La candidatura forte di Pavia e della sua Università era emersa

già alcuni mesi fa, ma ieri il ministro Urso ieri ha confermato che la fondazione nascerà proprio qui.

Già ad aprile, in occasione dell'incontro "Microelettronica, industria delle industrie. Il distretto pavese" organizzato nell'ambito della manifestazione "Pavia capitale della cultura d'impre-

sa", il ministro aveva indicato il distretto della microelettronica di Pavia come «modello che vogliamo portare in Italia e nel mondo», aggiungendo alla presenza del rettore dell'Università, Francesco Svelto, e del presidente di Assolombarda, Alessandro Spada, che si tratta di «un modello di partecipazio-

ne e collaborazione tra università e impresa da replicare in altri territori. È vitale che, accanto alle eccellenze di sempre, si debbano mettere a valore anche quei saperi innovativi legati al digitale. Stiamo preparando un piano nazionale sulla microelettronica l'applicazione del chips act europeo affrontando e declinando gli obiettivi europei nel nostro Paese e il centro nazionale sul digitale sarà l'atto esecutivo della nostra strategia».

### LE RISORSE

La legge di bilancio, prevede anche le risorse «per la costituzione della Fondazione e il suo funzionamento»: viene infatti «autorizzata la spesa in conto di capitale di 10 milioni di euro per l'anno 2023 e 25 milioni per ciascuno degli anni dal 2024 al 2030».

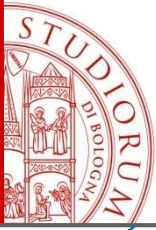
A spingere sugli investimenti e la ricerca nel settore della microelettronica ci aveva già pensato il governo Draghi istituendo il "Fondo per la microelettronica", con una dotazione iniziale di 530 milioni di euro. Una decisione che rientrava in una strategia più ampia, inquadrata dal Chips Act presentato dalla Commissione europea a febbraio 2022, con l'obiettivo di sottrarre il continente alla dipendenza rispetto a Cina e Asia in generale sui semiconduttori e implementare la quota di mercato. Strategia che in Italia assegna ora a Pavia un ruolo da protagonista.—



# ChipsIT Foundation at glance – June 2024 (I)

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- ✓ The call for Director has been completed and the appointment decree has been signed
- ✓ The Chips-IT Director appointment will be effective August 1<sup>st</sup> 2024.



# ChipsIT Foundation at glance – June 2024 (II)

- ✓ Chips-IT is partner of the WBG Pilot Line Project in charge of developing the PDK's
  - ✓ Premises established in June '24 (Via Taramelli, Pavia)
  - ✓ Research lines
  - ✓ 10 Grants for Ph.D. Program in Microelectronics
  - ✓ Regulation for participants (Industries, RTO's, Funding Agencies)
  - ✓ Chips-IT and the WBG Pilot Line invited at the G7 Semiconductors PoC Group – Stakeholder Forum (Agrate, June 20-21)
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- Recruitment of Senior staff
  - Calls for Design Platform and Competence Centres

Four policy streams



I. **Chips Fund:** a multi-billion fund to support companies via grants be them local or foreign. *Active.*

II. **Chips.IT Foundation** focusing on **IC design** where Italy has a comparative advantage (**RISC-V, SoC, Analog, Power**). Focal point of Italy's research on semiconductors that will strengthen Italy's **fabless ecosystem**. **Private companies can become members to steer the direction of research/education.** *Formally established. Operations starting in 4Q23.*

III.A **WBG Pilot Line.** Italy will promote a Pilot Line dedicated to **WBG and silicon compounds** within the EU Chips Act framework. This is where Italy has a **competitive advantage** that is want to further boost. *Pre funded in August 2023.*

IV. **Italy's Chips Act** that aims at solving the sector's bottlenecks. *Parts approved in August, part with the 2024 budget law*



*Thank you*