Semiconductor Ecosystem USA

Main Stakeholders

POLICYMAKING
1. **Office of Science and Technology Policy** (OSTP)
2. **National Science and Technology Council** (NSTC)
3. **Defense Advanced Research Projects Agency** (DARPA)
4. **U.S. National Science Foundation** (NSF)
5. **U.S. Department of Energy** (DOE)
6. **U.S. Department of Commerce** (DOC)
7. **U.S. Department of Defense** (DoD)
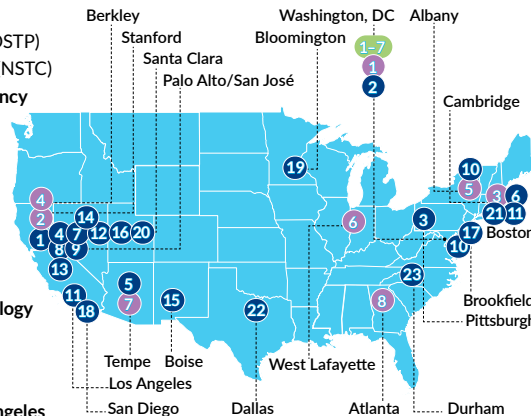
RESEARCH ORGANISATIONS
1. **National Institute of Standards and Technology** (NIST)
2. **Stanford University**
3. **Massachusetts Institute of Technology**
4. **University of California, Berkley and Los Angeles**
5. **University at Albany, The State University of New York**
6. **Purdue University**
7. **Arizona State University**
8. **Georgia Institute of Technology**

INDUSTRY ASSOCIATIONS
1. **SEMI**
2. **JEDEC Solid State Technology Association**
3. **International Microelectronics Assembly and Packaging Society** (IMAPS)

INDUSTRY (NON-EXHAUSTIVE)
4. **Advanced Micro Devices AMD** (Fabless semiconductor company with focus on Microprocessor Units (MPUs) and System-on-a-Chip solutions (SoC))
5. **Amkor Technology** (Outsourced Semiconductor Assembly And Test (OSAT) post processing provider)
6. **Analog Devices** (Front-end chip manufacturer with focus on integrated circuits (ICs))
7. **Applied Materials** (Front-end semiconductor manufacturing equipment)
8. **Broadcom** (Fabless semiconductor company for Radio Frequency (RF) components)
9. **Cadence Design Systems** (Electronic design automation company)
10. **DuPont de Nemours** (Front-end semiconductor manufacturing equipment)
11. **Entegris** (Front-end semiconductor manufacturing equipment)
12. **GlobalFoundries** (Pure-play semiconductor manufacturer, spin-off AMD)
13. **Integra Technologies** (Outsourced Semiconductor Assembly And Test (OSAT) post processing provider)
14. **Intel** (Chip designer and manufacturer for Microprocessor Units (MPUs))
15. **KLA** (Manufacturer of process control and yield management systems for the semiconductor industry)
16. **Lam Research** (Supplier of wafer-fabrication equipment)
17. **Micron Technology** (Chip manufacturer with focus on memory components)
18. **Nvidia** (Fabless semiconductor company for Graphics Processing Units (GPUs))
19. **Photronics** (Semiconductor photomask manufacturer)
20. **Qualcomm** (Fabless semiconductor company for Radio Frequency (RF) components)
21. **SkyWater Technology** (Pure-play semiconductor manufacturer)
22. **Synopsys** (Electronic design automation company)
23. **Teradyne** (Automatic test equipment designer and manufacturer for electronic components)
24. **Texas Instruments** (Front-end chip manufacturer with focus on analog chips and embedded processors)
25. **Wolfspeed** (Front-end developer and manufacturer of wide-bandgap semiconductors)

Map locations: Berkley, Stanford, Santa Clara, Palo Alto/San José, Bloomington, Washington DC, Albany, Cambridge, Boston, Brookfield, Pittsburgh, Durham, Atlanta, West Lafayette, Dallas, San Diego, Los Angeles, Boise, Tempe

Market and Production Share

Materials (in %)
- Raw wafers: 1,5 / 10,4
- Photomask: 23,0 / 7,8

Equipment (in %)
- Front-end equipment: 51,0 / 26,6
- Back-end equipment: 51,5 / 26,0

Semiconductor (in %)
- IP: 40,4 / 28,6
- EDA: 72,1 / 43,5
- Fabless: 73,0 / 31,4
- IDM: 47,0 / 18,1
- Pure Play Foundries: 4,6 / 5,5
- OSAT: 18,7 / 4,0

Legend: Market share of the US companies (green) / Production share located in the US (purple)

Raw wafers	Photomask	Front-end equipment	Back-end equipment	IP	EDA	Fabless	IDM	Pure Play Foundries	OSAT	Global market size
16 B€	2.5 B€	96 B€	12 B€	6 B€	8 B€	168 B€	377 B€	127 B€	44 B€	

Source: DECISION Etudes & Conseil

Chip Strategy

CHIPS and Science Act 2022 [1]
A substantial > $400 bln. in spending over the next decade
- Tax credits amounting to 25% of expenses for facilities and construction
- $52,7 bln. in direct grants until 2030
- $75 bln. for low-interest loans

National Strategy on Microelectronics Research 2024 [2]
- Accelerate the domestic development and production of microelectronics and strengthen the domestic microelectronics workforce
- Ensure that the United States remains a global leader in the field of microelectronics R&D

R&D Emerging Priorities
- Electronic Design Automation (EDA) and Intellectual Property (IP); Advanced Node Semiconductor
- Extreme Ultraviolet (EUV) Lithography [3], 3D Chip Stacking (Advanced Packaging), Silicon Photonics [4]

Funding Instruments

- The CHIPS and Science Act provides approximately $280 bln. in total funding to enhance domestic semiconductor research and manufacturing. [5], [6], [7]
- The CHIPS for America Program manages $50 bln. to strengthen U.S. semiconductor research, development, and manufacturing. [8], [9]
- The CHIPS Program Office (CPO) Awards has allocated $32.5 bln. in grants and up to $5.85 bln. in loans to 32 companies across 48 projects in 23 states. [10]
- Industry Collaborations (Public-Private Partnerships). [11], [12]
- Semiconductors are excepted products of reciprocal tariffs. [13]

Relations with the EU

The U.S.-EU Trade and Technology Council (TTC), established in 2021, aims to foster joint development in technology and innovation while promoting democratic and market-oriented approaches
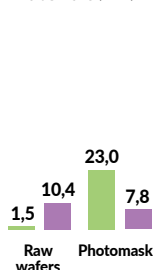
The trade balance between the U.S. and the EU for semiconductors from 1999 to 2022 shows that the EU has consistently imported more semiconductors than it has exported, resulting in a trade deficit of €1 bln. in both 1999 and 2022.

Joint Research & Development (R&D) [14] The U.S. and EU are collaborating on next-generation semiconductor technologies, including:
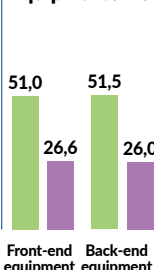- Sub-2nm nodes for AI and high-performance computing
- Advanced packaging techniques, such as chiplets and 3D stacking
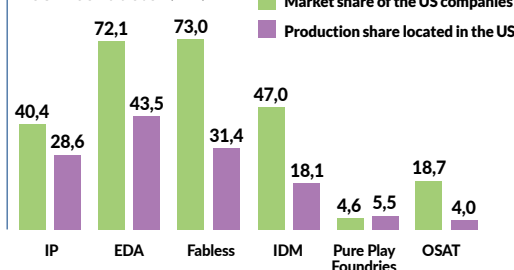- Energy-efficient and specialized chips for automotive, quantum computing, and telecommunications

Demand by Application

The USA (121 B€ 2022) 22% World
- Consumer electronics 5%
- Phones 2%
- Servers 35%
- Industrial electronics 28%
- Automotive 14%
- Consumer PC 9%
- Telecommunications infrastructures 7%

ICOS International Cooperation On Semiconductors

VDI | VDE | IT

Effective: June, 2025