BDI

European Chips Act – The way towards Technological Sovereignty?

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Semiconductor Process

From concept to chip - Semiconductor production is one of the world's most complex branches of production: a high degree of division of labour, cooperation and dependencies

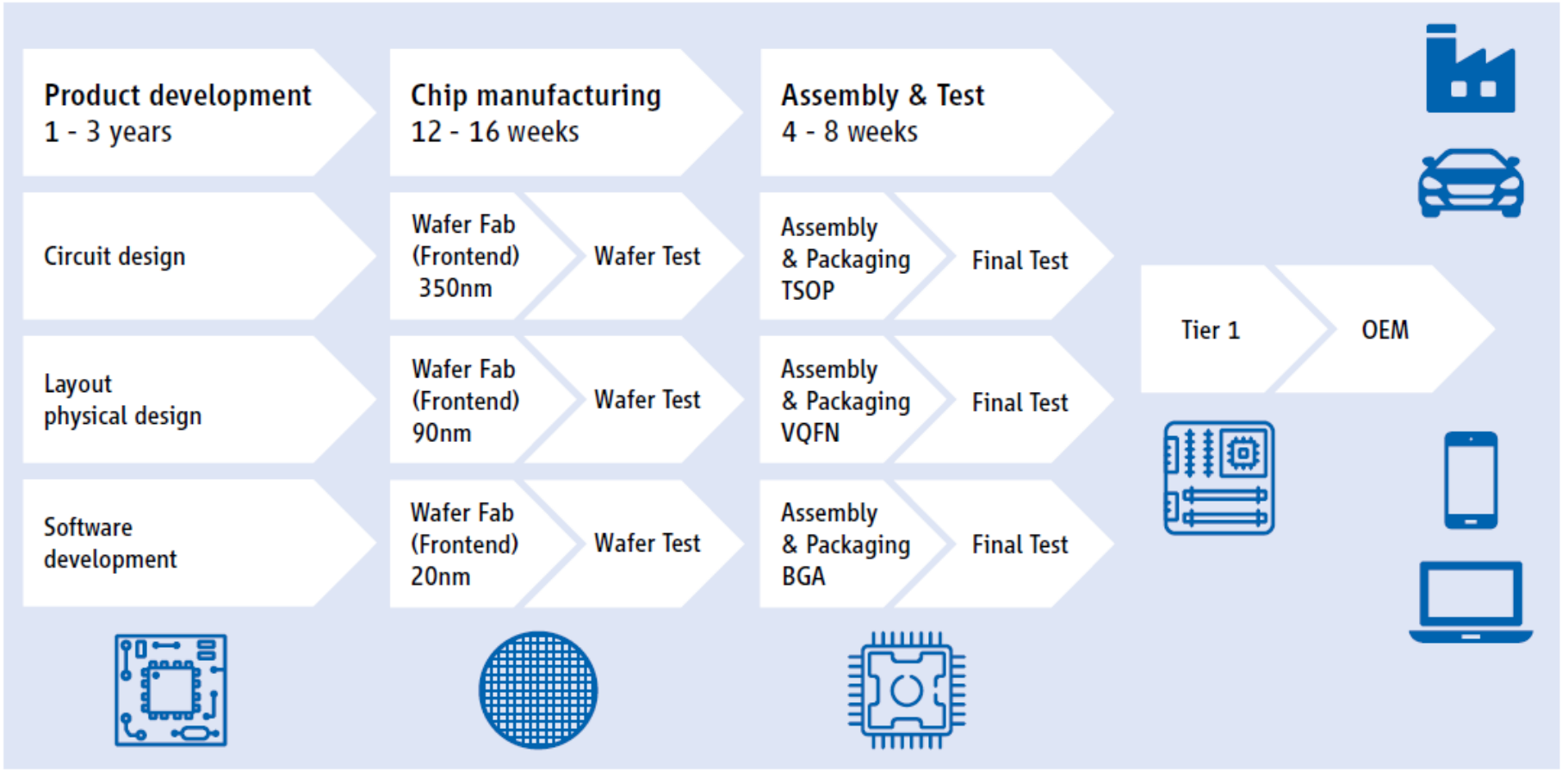
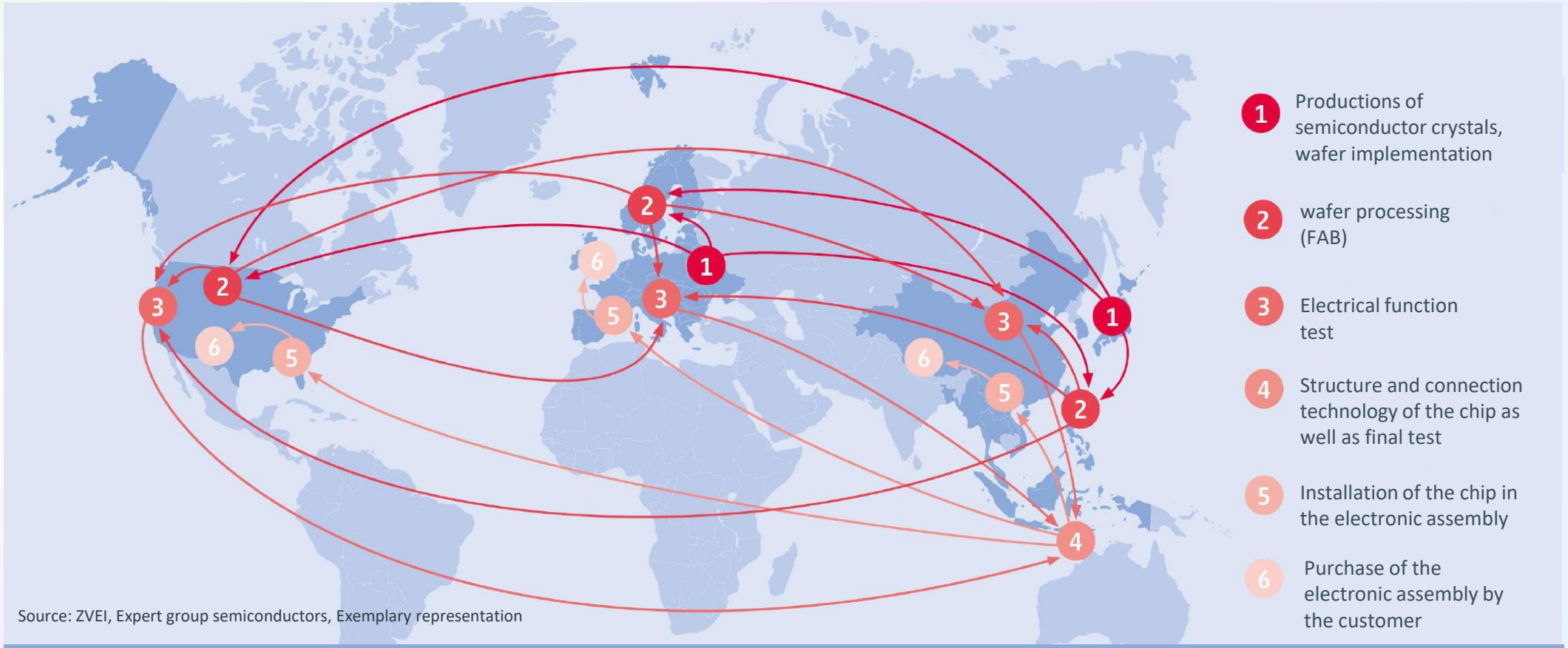


Figure 1: "Process from chip design to original equipment manufacturer" (source: ZVEI)

Semiconductor Process

Global value chain



Source: ZVEI, Expert group semiconductors, Exemplary representation

The development of a closed value chain in a region would require investments of around 1 trillion euros
-> No single state can interact alone

We are in a crisis

1 Serve shortage

- Accelerated due to digital and green transition
- Semiconductors are among the most important building blocks of the modern world -> competition of users e.g. for Consumer electronics, cars, IoT, industrial systems, "smart" technologies, infrastructure, etc.
- In the coming years, German industry will have a constantly growing need for medium-sized and increasingly also small node sizes

2 Risks in supply chain

- 75% of global semiconductor manufacturing capacity is in Southeast Asia.
- The USA dominates in the key chip design area and has over 14% of the world's production capacities due to the local settlement of global chip manufacturers.
- In comparison, nine percent of chips are designed and eight percent manufactured in the EU.

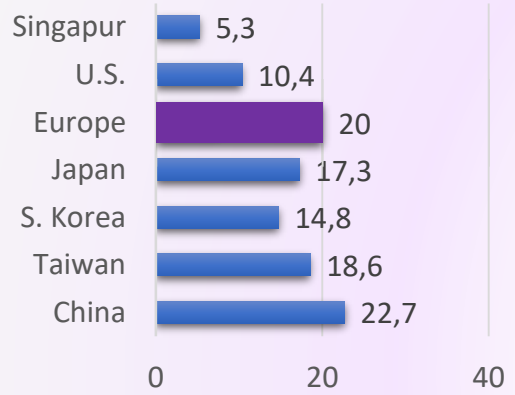
3 Tense world situation

- War in Ukraine: logistics disruptions and exceptional production losses; Problems with the provision of raw and production material
- Corona pandemic: changing consumer behavior and Tension in global logistics processes
- Blockade of the Suez Canal, lack of containers, blizzard in USA, fire in Japanese factory,…

Need for international and EU partnership and national subsidies

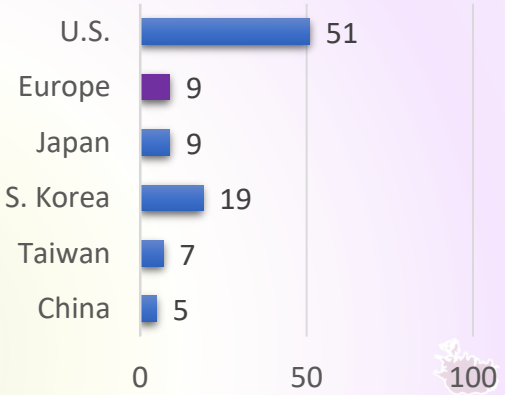
Europe in global comparison

World production share by FAB location

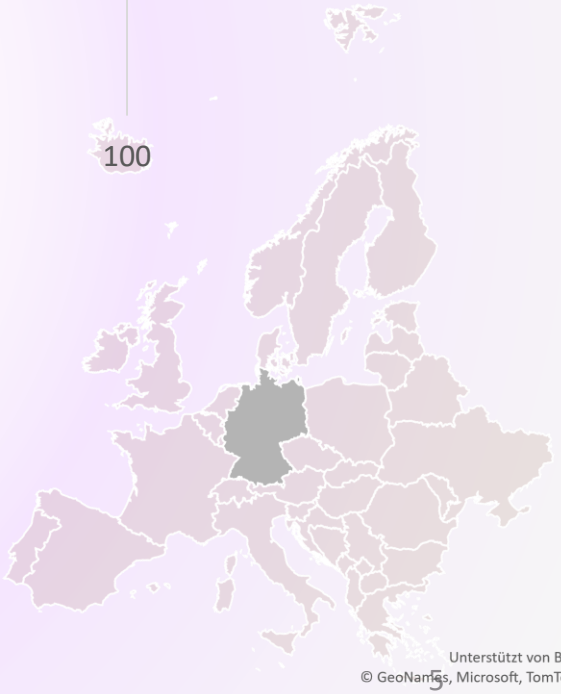


EU TARGET: increase in production of state-of-the-art semiconductors to 20% world market share by the end of the decade -> 20% share in Europe means: production capacity from today Increase factor >5
-> EU CHIPS ACT

Share of production per region by headquarters (IP ownership)



- +50% of global SC production done on behalf of US company driven by Fabless semiconductor companies like Qualcomm, Broadcomm
- China's share is still small, however growing , Almost every fourth chip is produced in China, but only 5 percent of the production capacity belongs to Chinese companies



Quelle: Semiconductor Industry Alliance 2021 and ZVEI

Context of the EU Chips Act

The EU Chips Act in response to the US and VRC

The US administration considers the topic of semiconductors to be of overriding strategic importance, particularly for US security:

CHIPS for America Act

- June 2021
- Eliminate critical dependencies
- Investments of **$52 billion** (2021-2026)
- Executive Order on America’s Supply Chains

According to the 14th Chinese five-year plan, China wants to focus on R&D in the field of semiconductor technology, among other things. Background: trade disputes with the USA, which continue to cut off China from the delivery of complex semiconductor technology.

China's support measures

- Increased government funding since 2014
- Investments of $150 billion (by 2025)
- Semiconductor sector as a key sector for China's strategic planning
- Goal: 70% SC self-sufficiency by 2025

Sources:
Senate Passage of USICA Marks Major Step Toward Enacting Needed Semiconductor Investments - Semiconductor Industry Association (semiconductors.org)
Taking Stock of China’s Semiconductor Industry - Semiconductor Industry Association (semiconductors.org)
A new world under construction: China and semiconductors | McKinsey

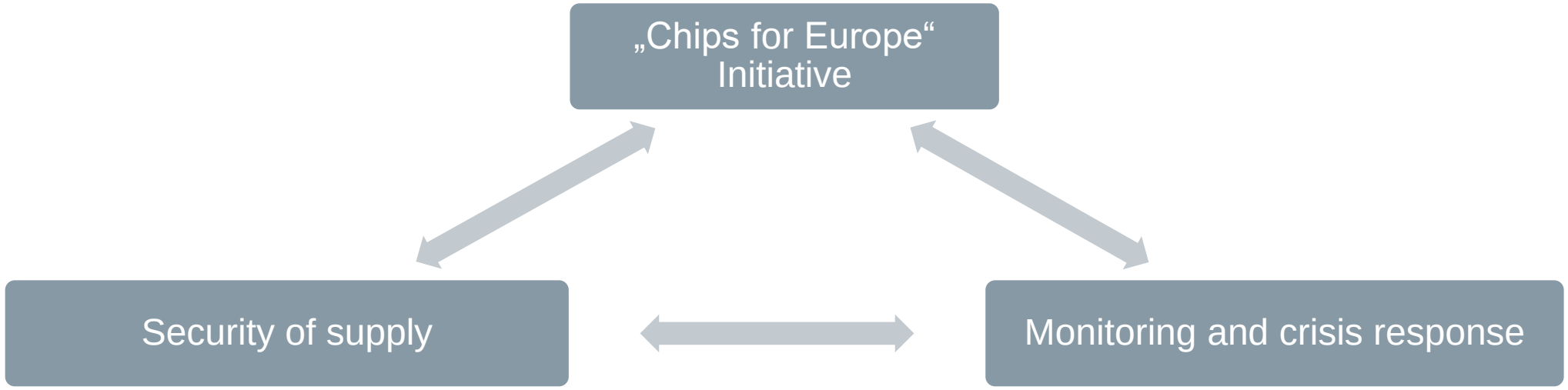
Objectives of the EU Chips Act

EU as a global player in the semiconductor market

20% market share by 2030

More resilience

Reduction of critical dependencies and management of supply bottlenecks



Summary of the EU Chips Act

The 1st pillar: "Chips for Europe"

BDI-Position

To build capacity for **cutting edge** (< 2 nm) and next-generation semiconductors and quantum chips with public funding of **11 billion euros** by 2027. This includes:

- building a design platform for design houses, IP and tool suppliers, designers and RTOs;
- the creation of pilot lines for testing and validation;
- building capacity for quantum chips;
- the establishment of competence centers, e.g. for the utilization of the design platform and pilot lines for SMEs, end users and start-ups as well as for talent recruiting;
- the establishment of a chips fund (€2 billion) to support SMEs and start-ups, including an accelerator program and an investment facility within the framework of InvestEU.
- Implementation: European Chips Infrastructure Consortium (ECIC) as a public-private consortium

Summary of the EU Chips Act

The 2nd pillar: Security of Supply

BDI-Position

Creation of the framework for increasing production **capacity to 20% world market share by 2030**. This is to be tackled through state aid for projects that cannot otherwise be realized in Europe (first-of-a-kind). First-of-a-kind projects are defined as industrial facilities that are capable of producing semiconductors and are innovative. This can be, for example, either in production, performance, process innovation, energy efficiency or environmental compatibility.

„Open EU Foundries“

First-of-a-kind facilities with significant manufacturing capacity for other industry players. Contribute indirectly to the security of supply of the internal market.

Integrated Production Facilities

Integrated Production Facilities are first-of-a-kind semiconductor design and manufacturing facilities, including front-end or back-end, or both, in the Union that contribute to the security of supply for the internal market.

Summary of the EU Chips Act

The 3rd pillar. Monitoring and crisis response

BDI-Position

Monitoring

- Monitoring by representatives of the COM & member states report to the EU Semiconductor Board
- „Early warning indicators“
  - Functionality monitoring
  - Recognizing future trends
  - Anticipation of disruptions
  - Development of international partnerships
- Identification of Key market actors

„Crisis stage“

- Semiconductor crisis can be declared by the EU Semiconductor Board
- Emergency toolbox such as export controls for crisis-related products
- Information obligations about production capacities and disruptions
- Prioritization of orders
- Central procurement of crisis-relevant products

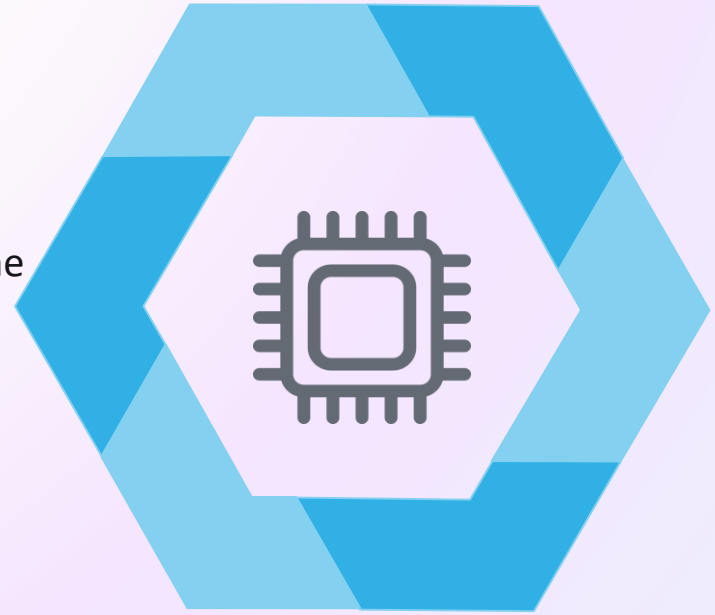
What´s needed?

No planned economy but internationality

Creation of a more attractive investment climate (incl. competitive energy prices)

Investment in the entire life cycle of semiconductors

Revision of the IPCEI instrument



Attracting and training the right talent

Protect European intellectual property

Reduce bureaucracy to strengthen Europe's semiconductor capabilities

Strengthen standardization as a market factor

Opportunities of increased transatlantic use cooperation within the framework of TTC

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BDI-Position

Thank you

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