

EPoSS Task Force Advanced Packaging

Introduction and status of preparation of first L2F accelerator projects

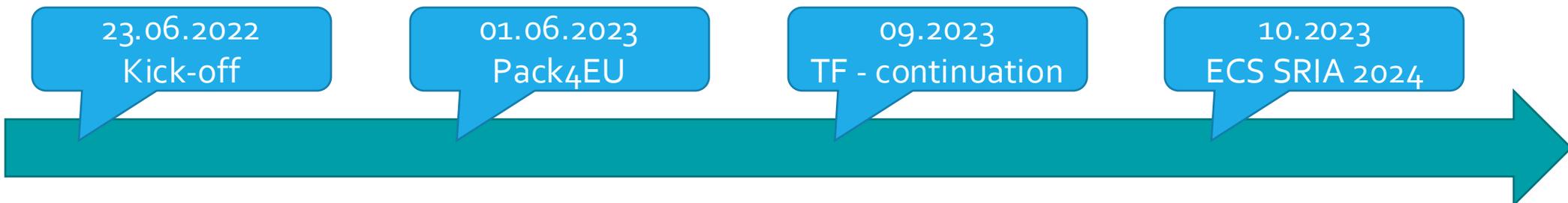
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TF: Advanced Packaging

- **The European Chips Act** - supported by accompanying focused R&D&I projects on “Advanced packaging technologies for highest performance and integration density” in the KDT JU / Chips JU - could mark a turning point and open up the chance **to bring advanced packaging and manufacturing back to Europe**.
- **Advanced packaging*** generally groups a variety of different techniques and technologies to realize electronic components including 2.5D, 3D-IC, wafer level packaging, SiPs, SoC, power modules
- **Heterogenous integration*** - refers to the integration of separately manufactured components into a higher-level assembly (System-in-Package, SiP) that, in the aggregate, provides enhanced functionality and improved operating characteristics



*IEEE EPS definition of advanced packaging
Final version expected in June 2024



Why should Europe invest in Advanced Packaging?

-  ■ **Innovation and Competitiveness:** Investing in advanced packaging can help European companies stay ahead in the global market.
-  ■ **Environmental Sustainability:** By investing in sustainable packaging solutions, Europe can meet the growing demand for eco-friendly products.
-  ■ **Economic Growth:** The advanced packaging presents significant economic potential such as job creation, revenue generation, & export opportunities.
-  ■ **Technological Leadership:** By investing in advanced packaging, Europe can establish itself as a leader in cutting-edge products.
-  ■ **Societal Challenges:** Through advanced packaging solutions, Europe can contribute to improving the quality of life and addressing societal needs.

Advanced Packaging can position Europe as a hub for sustainable, innovative, and competitive products, driving economic growth, and technological advancement.

Advanced Packaging – global perspective

- Exploring the Impact of Industry-Government Co-Investments for the Advanced Electronic Sector in North America, Asia and Europe
 - Representative from: Europe, India, Korea, USA, Canada
- CHIPS Roundtable Chat: Pilot Line Fireside Chat
 - Representative from India, Germany, Japan, USA
- **On every continent there are investments in packaging and advanced packaging**



In an era defined by technological advancement and digital transformation, the semiconductor and microelectronics packaging industry plays an important role in shaping the global economy and innovation landscape. The introduction of the CHIPS and Science Act (Creating Helpful Incentives to Produce Semiconductors for America) in the United States. Since then other key countries and regions have outlined similar programs to invest in the microelectronics industry growth. In Europe, the European Chips Act has generated significant interest and discussion. This special session aims to dive deeper into the multifaceted opportunities offered by the CHIPS Acts, as well as their potential impact on the semiconductor and microelectronics packaging industry in North America, Europe and Asia. The speakers will address the potential economic benefits of the government led programs and co-investments for the United States, Europe, India and Japan, including job creation, supply chain resilience, and enhanced technological innovation. We will examine the prospects of global collaborations and partnerships between national semiconductor and microelectronic packaging centers and industry leaders. The panel will also discuss mechanisms for knowledge exchange, joint research initiatives, and mutually beneficial outcomes.



Dr. Elisabeth Steimetz
Europe



Prof. Rao Tummala
India



Dr. Eric K. Lin
USA



David Lynch
Canada



Dr. Kwang-Seong Choi
Korea

[Link ECTC](#)

2024 IEEE 74th Electronic Components and Technology Conference | Denver, Colorado | May 28 – May 31, 2024

HIR Special Sessions at ECTC 2024

Session 1: Challenges and Innovations in Thermal Engineering from Fan-out to 2.5D and 3D stacking
Thermal challenges for stacked die systems

Session 2: Engineering Chiplets for the AI Era
Chiplet Trends, Choices, and Directions for the AI Data Center
Future of AI Hardware Enabled by Advanced Packaging
Engineering Chiplets for AI

Session 3: CHIPS Roundtable Chat: Pilot Line Fireside Chat
Design, Semiconductor, Packaging and Systems R&D in India
European Chips Act and the AHSI – FMD Pilot Line
Rapidus Packaging Pilot Line
ECTC Roundtable Pilot Line Discussion AIM Photonics

HIR Session 4: Packaging Challenges and Innovation for Future Communication Systems
Frontend Packaging and Integration Trends for mmWave and Sub-THz Phased Array

[Link IEEE EPS HIR at ECTC](#)



CSA Pack4EU

- Creation of a Pan-European network for Advanced packaging and a Roadmap to boost packaging in and for Europe
- 07.2023 – 06.2024
- June, 12 the project presented its final recommendations to the European commission.
- Ended with 9 recommendations to boost Advanced Packaging in Europe
- High-Level Committee on AP
- AP Expert Group to feed the L2F



RECOMMENDATIONS
for the Implementation of Advanced Packaging capabilities in Europe



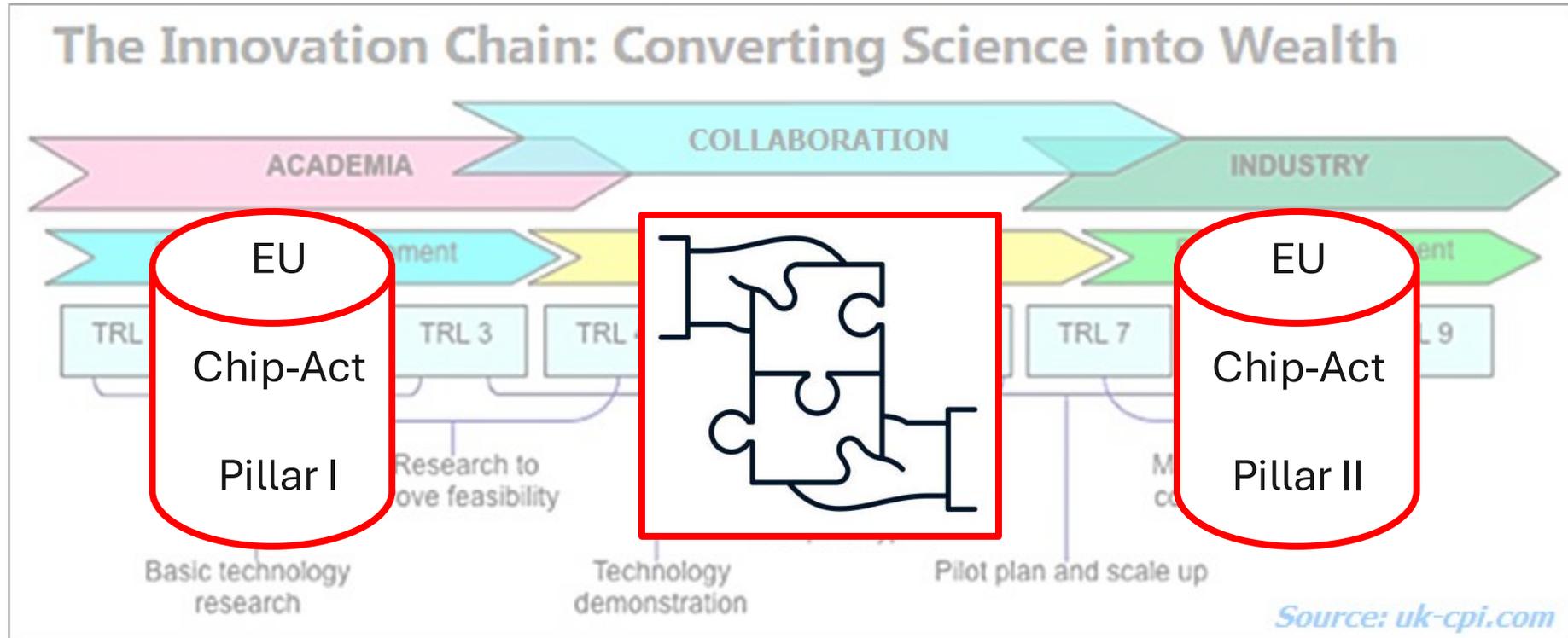
PACK4EU
www.pack4eu.eu

RECOMMENDATIONS

- 1
Implementation of an **Industrial Transfer Instrument** for semiconductor packaging bridging the gap between prototyping and production.
- 2
Establish a **High-Level Packaging Board** composed of industry leaders to guide strategic directions driven by market needs, ensuring innovation in packaging standards and practices.
- 3
Implementation of a technical expert group for developing and updating a **Roadmap for Advanced Packaging** in Europe.
- 4
Creation of **Open Piloting Facilities** for small and medium volume production as a seed for growing European Advanced Packaging capabilities.
- 5
Development of tools and methodologies for a **Design-to-X approach** & Standardisation for an OPEN European Co-Design Ecosystem.
- 6
Consolidate international relationships through open calls on **Sustainable Packaging Materials and Substrates**.
- 7
A strategy for training and skills development including: Bridging research and education and facilitating international exchange on training through an EU Education Hub and Building a framework for access to EU-funded research pilot lines for students.
- 8
Support for **Small and Medium Enterprises** through dedicated open calls applying cascade funding schemes.
- 9
Creation of a **Pan-European Network** for Advanced Packaging to federate and strengthen the European ecosystem.



EU Chips Act: the missing Pillar



Focusing on new technologies

„FAB-in-the-LAB“ | „LAB-in-the-FAB“

Focusing on new product needs



Create the seeds for future volume production & economic security

RTOS

Chips JU RTO Pilot Lines

Objective:

Prototyping up to small volume manufacturing for specific solutions



INDUSTRY LEAD
CONSORTIA
(LEs, SMEs,
Academia & RTOS)

Lab to Fab Accelerator – PL3: Advanced Packaging

Lab to Fab Accelerator – PL1: 2nm FinFet

Lab to Fab Accelerator – PL2: 7nm FD SOI

Lab to Fab Accelerator – PL: Power Electronics

2025 2026 2027

Acc. Synergies

Objective:

Projects accelerating the Lab to Fab technology transfer from RTO PLs to industry



EPOSS TF activities towards the first Lab-to-Fab Accelerator program

