

Status of the Advanced Packaging Business

European Packaging, Assembly,
and Test – Workshop 2023

6th September 2023

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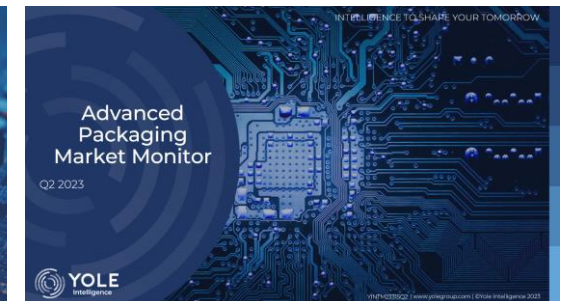


Status of the Advanced Packaging Business

- Semiconductor Device and Packaging Market
- Advanced Packaging: Market Trends & Market Forecast
- Advanced Packaging: Players and Investments
- Advanced Packaging Market by Location
 - Focus on Europe
- Q&A

Data extracted from Yole's:

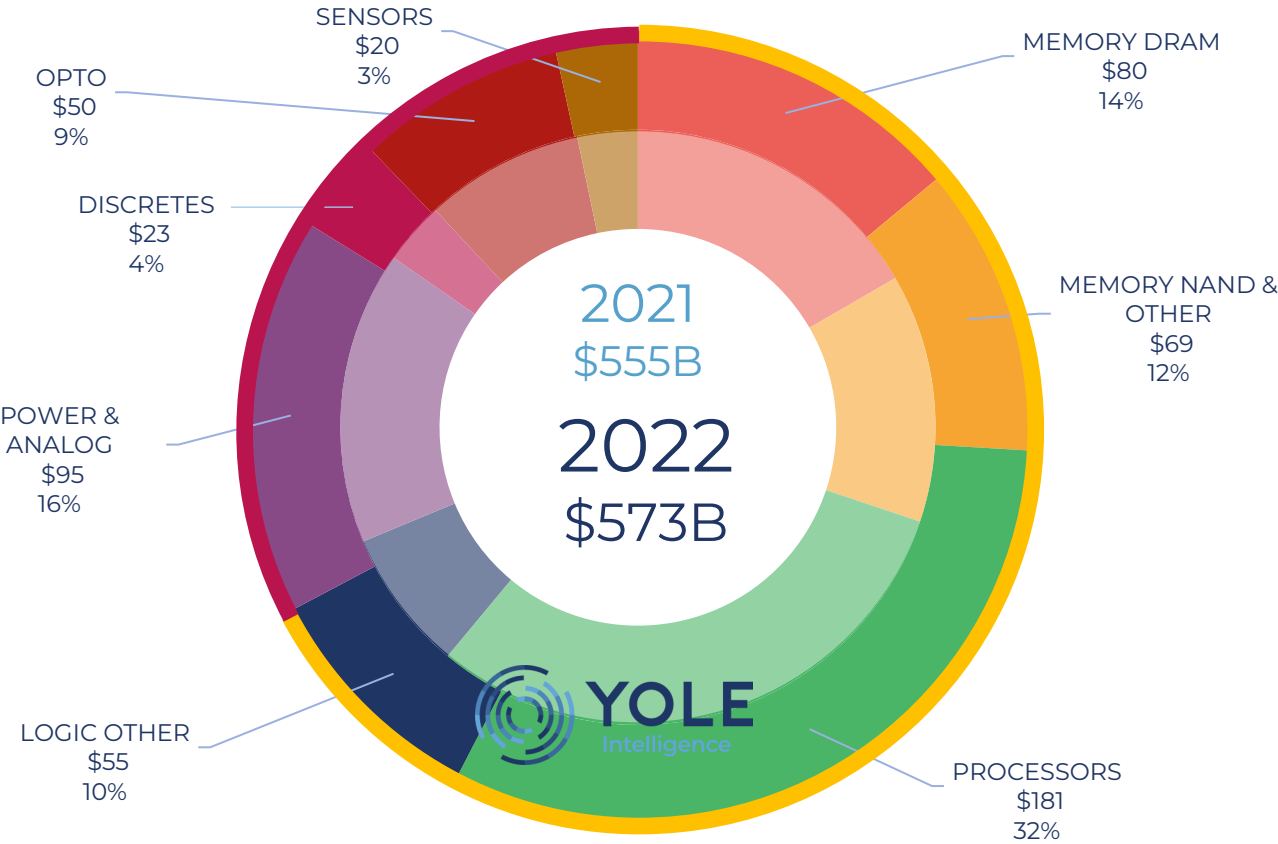
- *Status of the Advanced Packaging Industry 2023*
- *Advanced Packaging Market Monitor – Q2 2023*



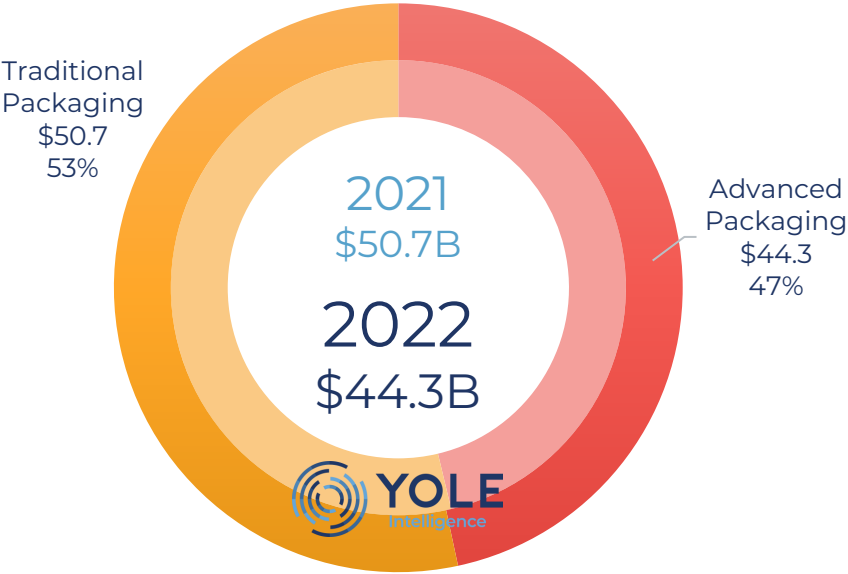
SEMICONDUCTOR DEVICE AND PACKAGING REVENUE (\$B)



2021-2022 Semiconductor device revenue breakdown (in %)



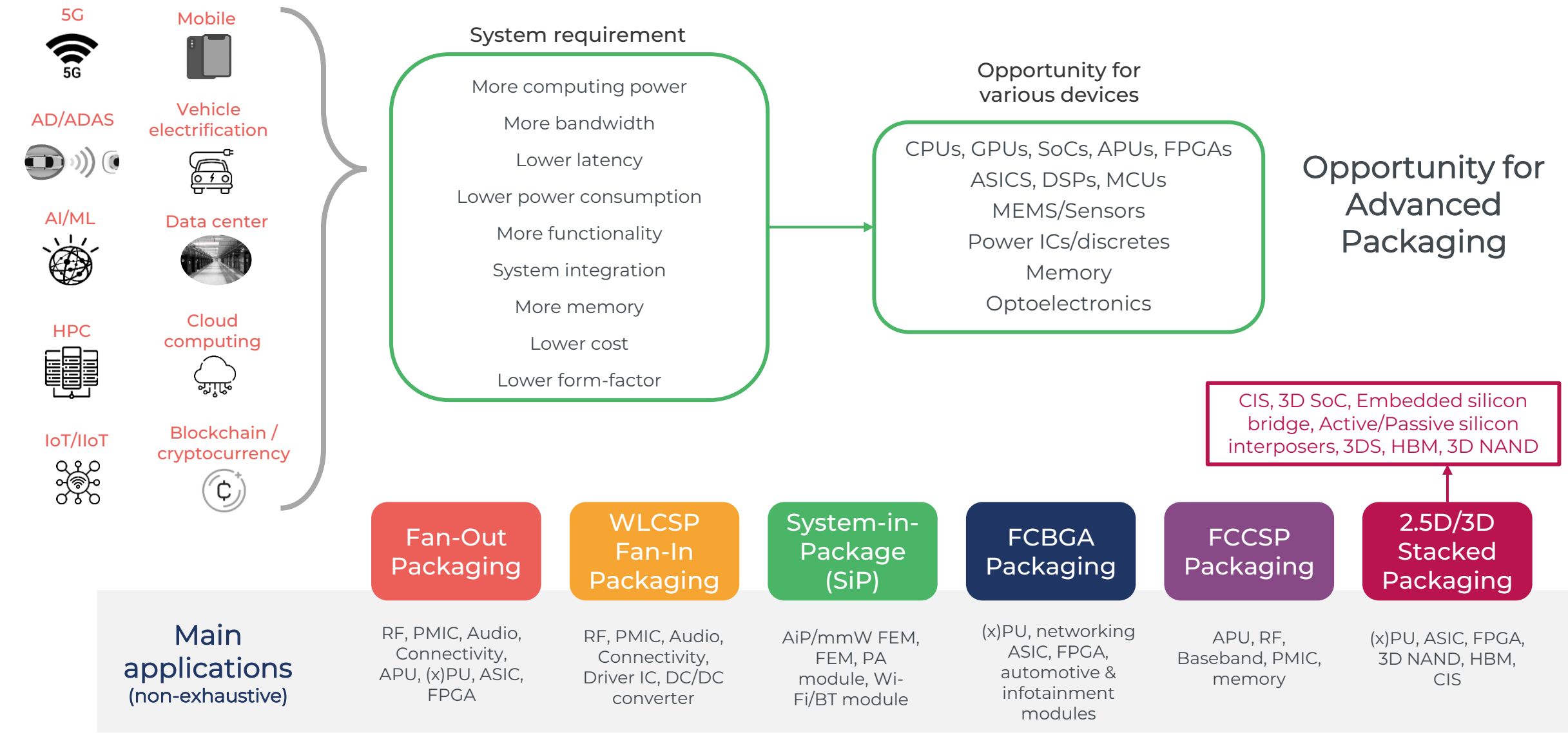
2021-2022 Packaging revenue breakdown (in %)



More than Moore (MtM)
32%

More Moore (MM)
68%

NEW TRENDS & DRIVERS: OPPORTUNITY FOR ADVANCED PACKAGING

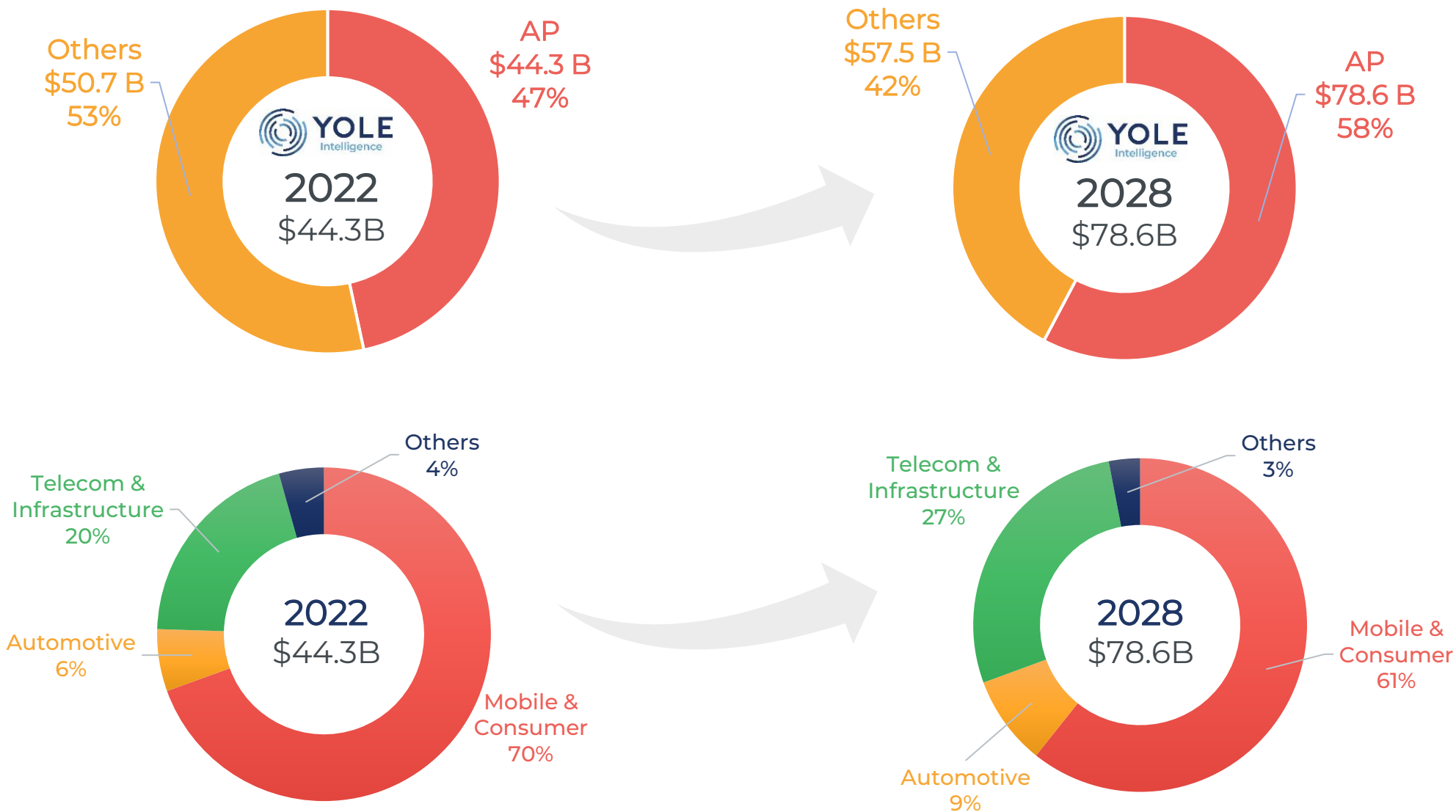


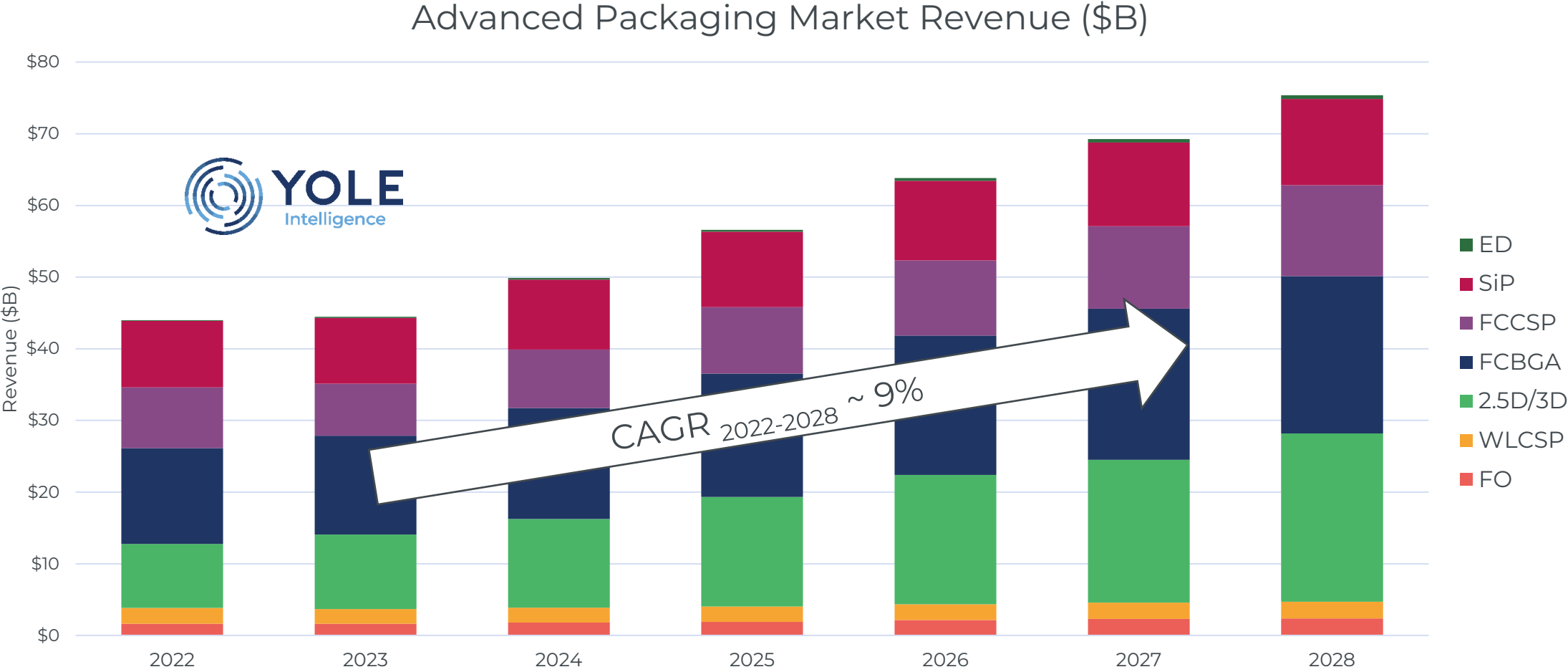
ADVANCED PACKAGING TECHNOLOGIES OVERVIEW 2022 to 2028

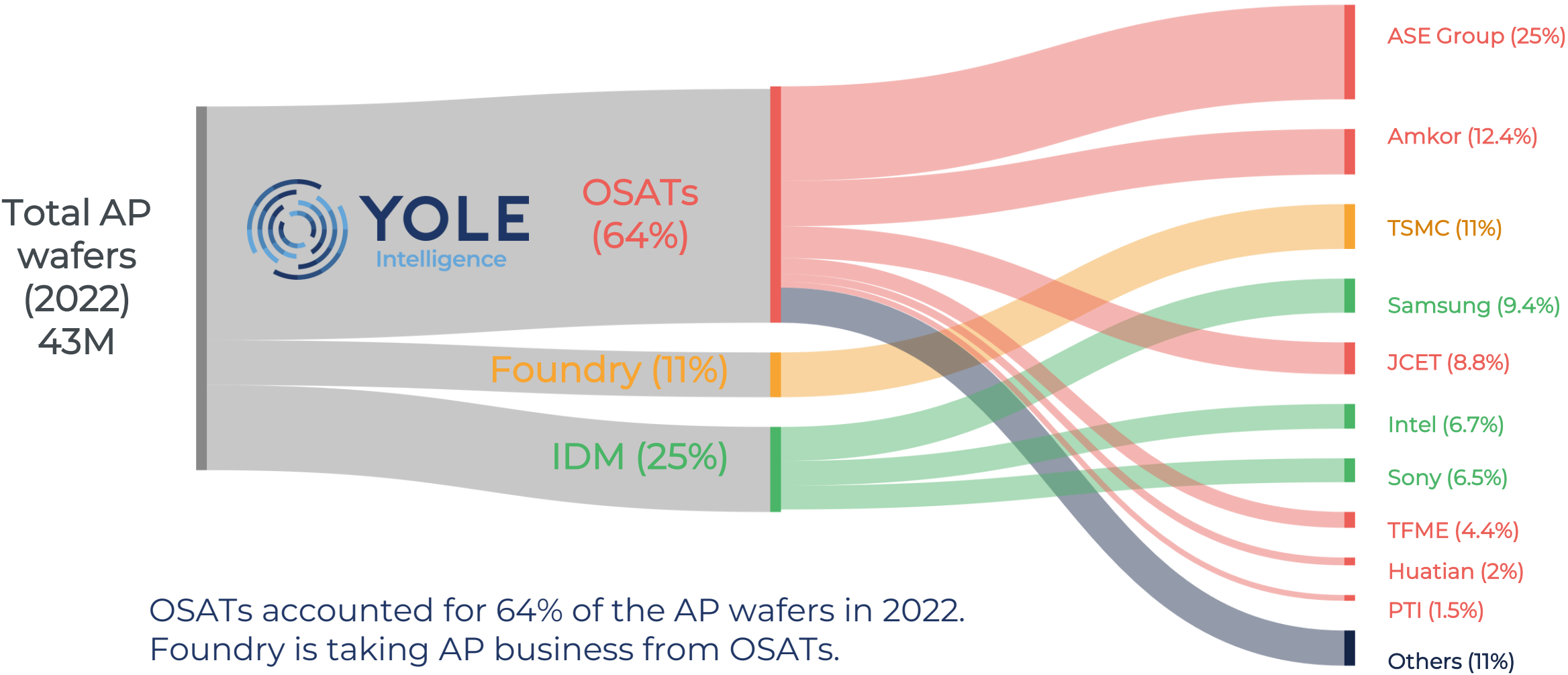


Revenue Split (\$B)

Advanced Packaging revenue is swiftly catching up to that of the traditional packaging market



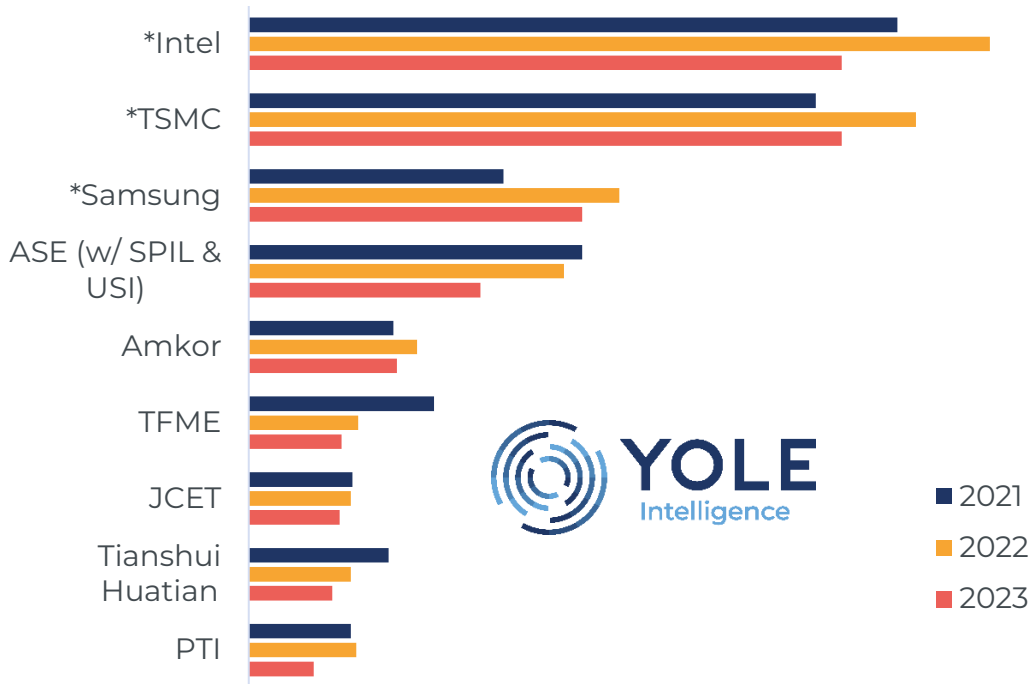




2022-2023 CAPEX HIGHLIGHTS FOR TOP 9 PACKAGING PLAYERS

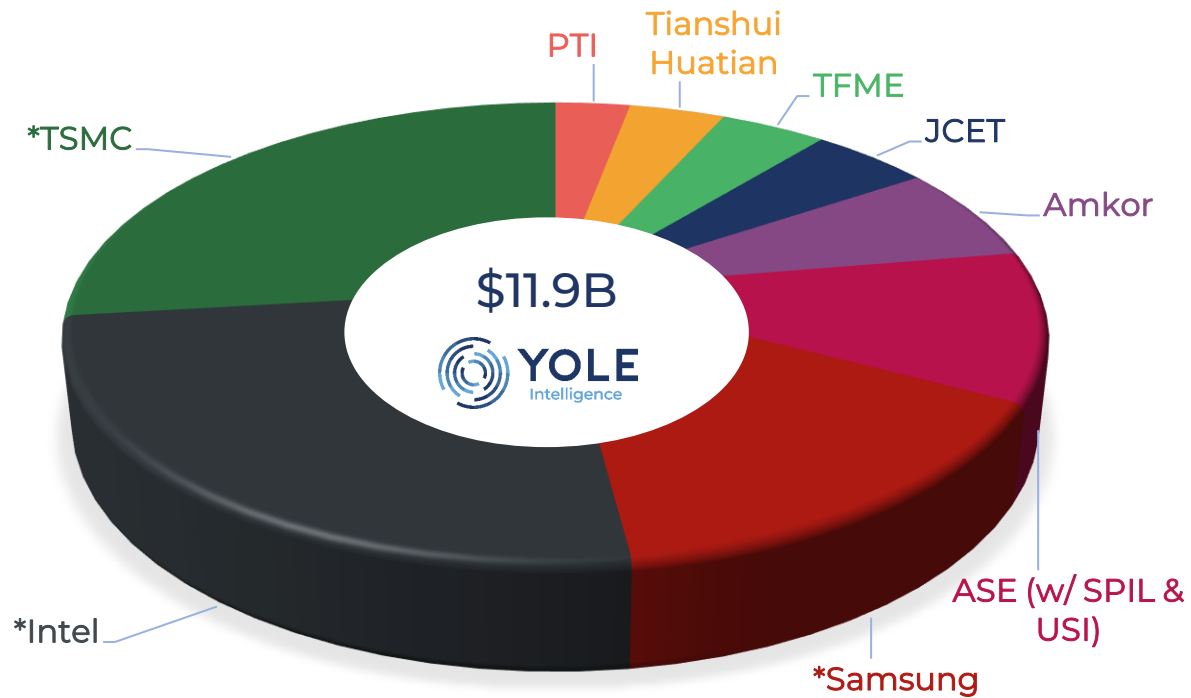


Estimated 2021-2023 Packaging CapEx by top players [\$M]



■ 2021
■ 2022
■ 2023

Estimated 2023 Packaging CapEx Split



CHIP INVESTMENTS ACCELERATE AS GOVERNMENTS STEP UP EFFORTS

Semiconductor support-plans to face geopolitical tensions



Science and chips Act

- Signed in August 2022.
- A total budget of \$278B in spending over a decade.
- The biggest share is for scientific R&D and commercialization (>\$200B)
- A tax credit of \$24B for chip production
- \$3B for leading-edge technology and wireless supply chain.
- \$2.5B for Advanced Packaging programs.
- Out of the total \$278B, \$52B is for production, R&D, and workforce development.



EU CHIP ACT

- Signed in April 2023.
- Double the EU's share of global chip production by 2030 (up to 20%).
- Reduce its vulnerability to geopolitical shocks.
- \$3.5B was allocated to support large-scale technological capacity building and innovation across the EU in the semiconductor sector
- R&D tax credits.
- \$43B support plan for the European semiconductor industry.



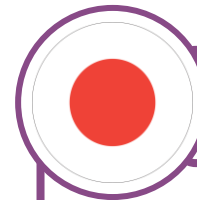
China plan

- To be implemented in 2024 Q1.
- Target self-sufficiency in chip production.
- \$143B support package for the local semiconductor ecosystem, allocated over 5 years (by 2028).
- Corporate revenue tax exemptions of around \$20B.
- Preferential tax policies for the local semiconductor industry.



K-CHIP ACT

- Passed in March 2023.
- Secure the chip production leadership.
- Safeguard economic priorities and foster a vibrant semiconductor industry for the country.
- Increase tax credit to 15% from the current 8% for major companies investing in manufacturing facilities.
- For smaller and medium size companies, the tax break goes to 25%, up from 16%.



Japan strategy for semiconductors

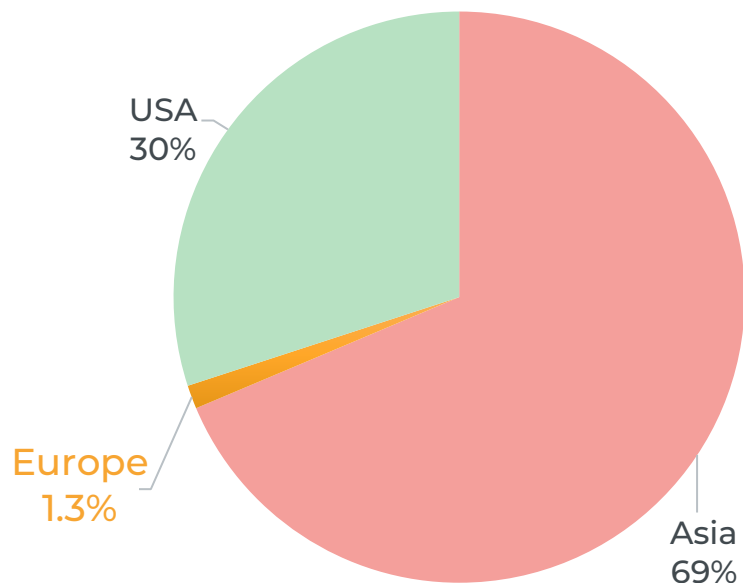
- Aiming to maintain 10% of the market by 2030.
- The Japanese government is providing a subsidy of up to 476B yen (\$3.68 B) to support and develop chip technologies.
- The government will cover 1/3 of the semiconductor equipment investment of any company in exchange of 10 years guarantee of domestic shipments during any possible shortages.

ADVANCED PACKAGING REVENUES BY LOCATION

HQ vs. Fab location & main European revenue contributors



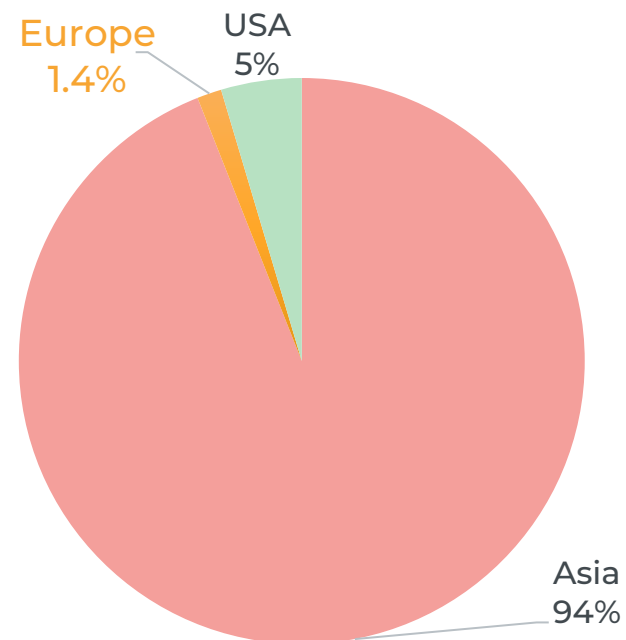
Advanced Packaging revenue market share by HQ - 2022



Main advanced packaging revenue contributors in Europe



Advanced Packaging revenue market share by fab location - 2022



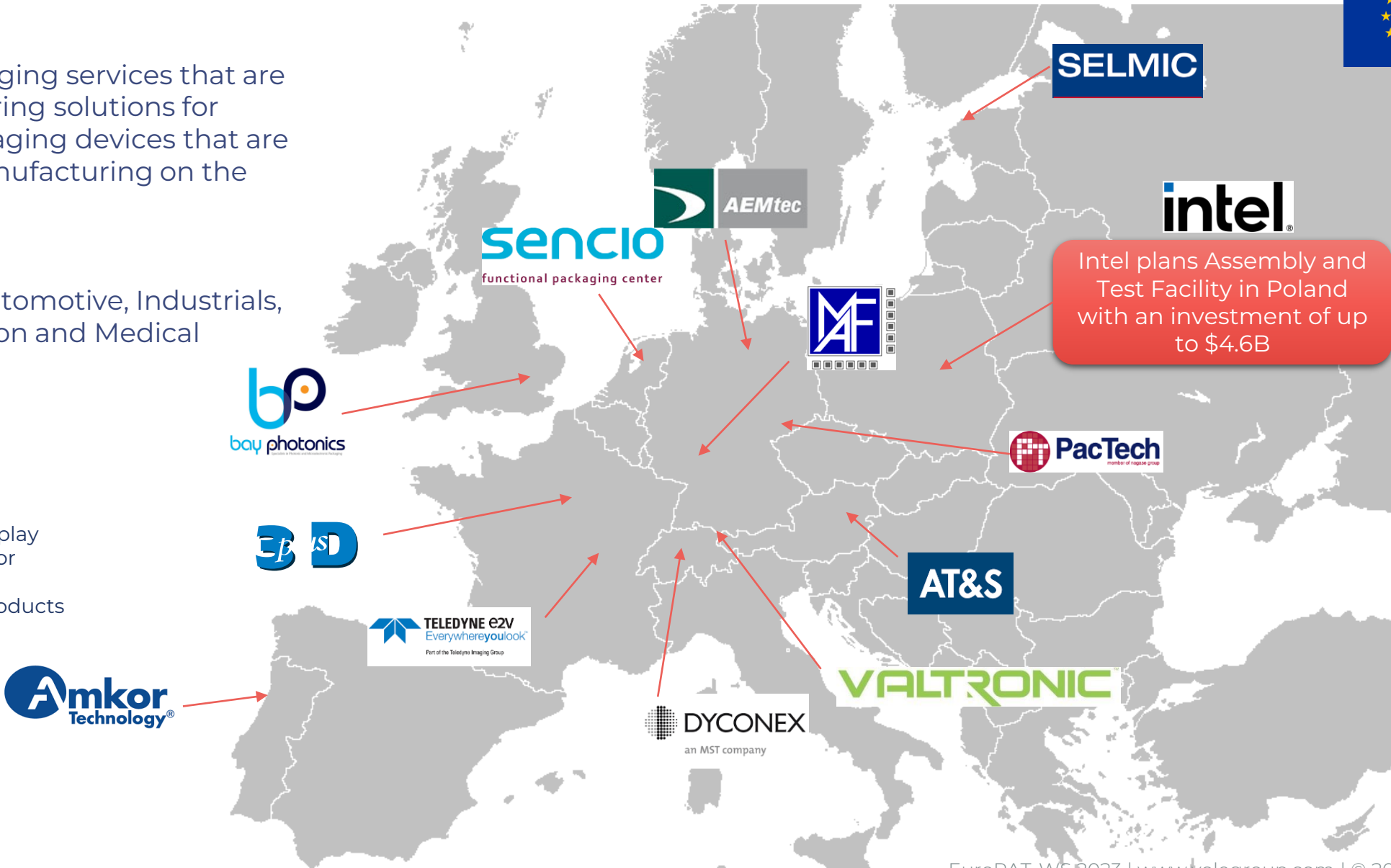
Currently, more than 90% of the AP revenues are generated in fabs located in Asia, although only 69% of the revenues are created by companies headquartered in Asia.

EUROPEAN MANUFACTURING PACKAGING SERVICES PROVIDER (NON-EXHAUSTIVE LIST)



- Europe has packaging services that are focused on delivering solutions for power, MEMS, Imaging devices that are designed and manufacturing on the continent
- Serving mainly Automotive, Industrials, Telecommunication and Medical markets

* Companies offering pure-play packaging design services or packaging manufacturing services only for internal products are not reported here



THANK YOU FOR YOUR ATTENTION!

Q&A?