



INVESTOR PRESENTATION

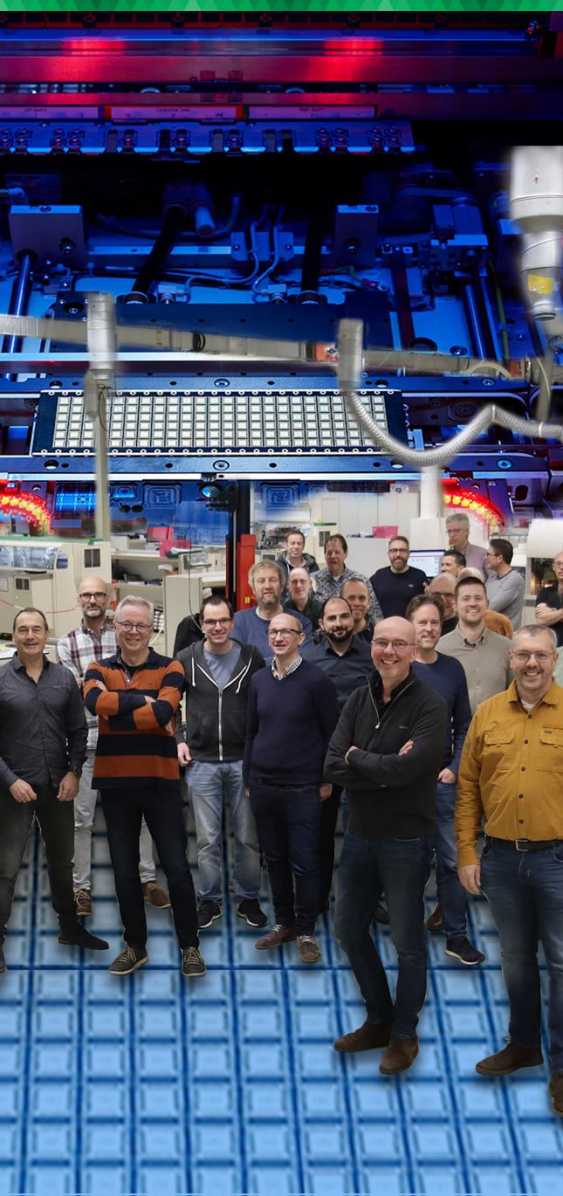
November 2024

Safe Harbor Statement



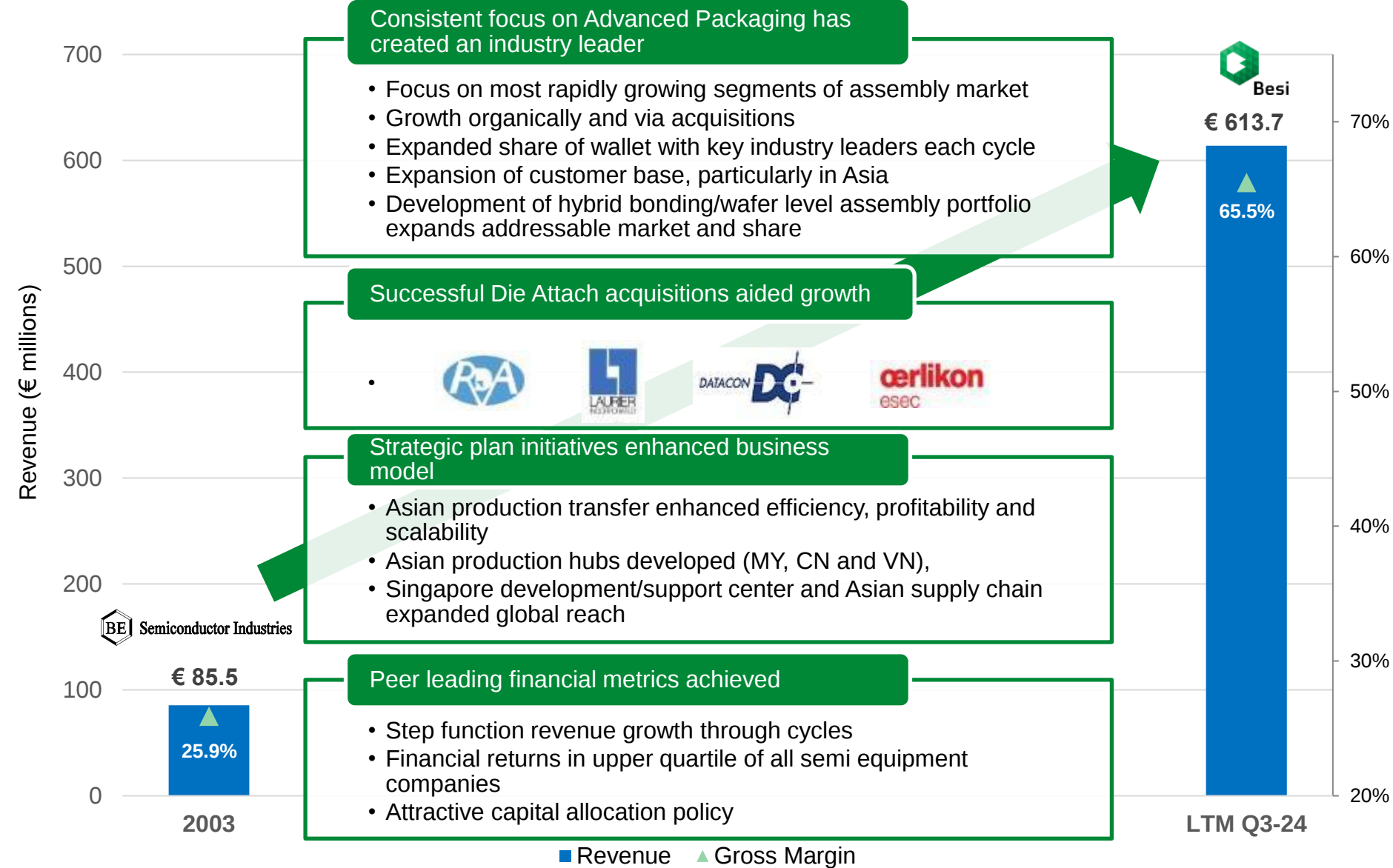
This presentation contains statements about management's future expectations, plans and prospects of our business that constitute forward-looking statements, which are found in various places throughout the presentation, including, but not limited to, statements relating to expectations of orders, net sales, product shipments, expenses, timing of purchases of assembly equipment by customers, gross margins, operating results and capital expenditures. The use of words such as “anticipate”, “estimate”, “expect”, “can”, “intend”, “believes”, “may”, “plan”, “predict”, “project”, “forecast”, “will”, “would”, and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. The financial guidance set forth under the heading “Outlook” contains such forward-looking statements. While these forward-looking statements represent our judgments and expectations concerning the development of our business, a number of risks, uncertainties and other important factors could cause actual developments and results to differ materially from those contained in forward-looking statements, including any inability to maintain continued demand for our products; failure of anticipated orders to materialize or postponement or cancellation of orders, generally without charges; the volatility in the demand for semiconductors and our products and services; the extent and duration of the COVID-19 and other global pandemics and the associated adverse impacts on the global economy, financial markets, global supply chains and our operations as well as those of our customers and suppliers; failure to develop new and enhanced products and introduce them at competitive price levels; failure to adequately decrease costs and expenses as revenues decline; loss of significant customers, including through industry consolidation or the emergence of industry alliances; lengthening of the sales cycle; acts of terrorism and violence; disruption or failure of our information technology systems; consolidation activity and industry alliances in the semiconductor industry that may result in further increased customer concentration, inability to forecast demand and inventory levels for our products; the integrity of product pricing and protection of our intellectual property in foreign jurisdictions; risks, such as changes in trade regulations, conflict minerals regulations, currency fluctuations, political instability and war, associated with substantial foreign customers, suppliers and foreign manufacturing operations, particularly to the extent occurring in the Asia Pacific region where we have a substantial portion of our production facilities; potential instability in foreign capital markets; the risk of failure to successfully manage our diverse operations; any inability to attract and retain skilled personnel, including as a result of restrictions on immigration, travel or the availability of visas for skilled technology workers; those additional risk factors set forth in Besi's annual report for the year ended December 31, 2023 and other key factors that could adversely affect our businesses and financial performance contained in our filings and reports, including our statutory consolidated statements. We expressly disclaim any obligation to update or alter our forward-looking statements whether as a result of new information, future events or otherwise.

- I. Company Overview
- II. Market Overview
- III. End-User Market Trends
- IV. Strategy
- V. Financial Update and Summary
- VI. Appendix



I. COMPANY OVERVIEW

Company History



Capital Allocation

Attractive capital allocation program

€ 2.0 billion of dividends and share repurchases since 2011*

Represents ~30% of total revenue

Strategic/Financial

Disciplined execution has created leader in advanced packaging

Best in class financial metrics

Superior through cycle financial performance versus peers

Shareholder Return

Superior Total Returns:**
85% (3 year)
367% (5 year)
2,447% (10 year)

Consistent TSR outperformance versus peers

Upper quartile ranking for all semi-equipment companies

* Includes share repurchases through September 30, 2024

** Through September 30, 2024

Total Semiconductor Manufacturing Equipment 2023: \$110 Bn

Front end: \$99 Bn
(90%)

Assembly: \$4 Bn
(4%)

Test: \$7 Bn
(6%)

Besi focus

Assembly Process

Dicing	Die Attach	Wire Bond	Packaging	Plating	
	✓		✓	✓	Leadframe Wire Bond
	✓		✓		Substrate Wire Bond
	✓		✓		Substrate Flip Chip / TCB
	✓		✓		Wafer Level Hybrid, EMIB, TCB, Flip Chip, FOWLP

Source: TechInsights, September 2024

Die Attach (77% of 2023 Revenue)

Multi-Module Attach



Epoxy / Soft Solder



Flip-chip



Direct Lid Attach



Embedded Bridge Attach



Thermo Compression



Hybrid Bonding



Packaging and Plating (23% of 2023 Revenue)

Leadframe Molding



Substrate Molding



Wafer and Panel Molding



Trim and Form



Singulation



Plating



Wet Processing



Serving Blue Chip Customers Across Key End-Markets

Customers

- Diversified, blue chip customer base**
 - Top 10 customers ~52% of 2023 revenue
 - No customer > 10%
- Supplying leading IDMs, fabless producers and subcontractors**
 - Sell direct to IDMs
 - Sell to fabless producers via subcontractors
 - 52% IDMs/48% subcontractor order split in 2023
- Long-term relationships**
 - Many exceed 50 years

Independent Device Manufacturers (IDMs)



Subcontractors



Fabless IDMs



End-User Markets

Mobile
30%



Computing
24%

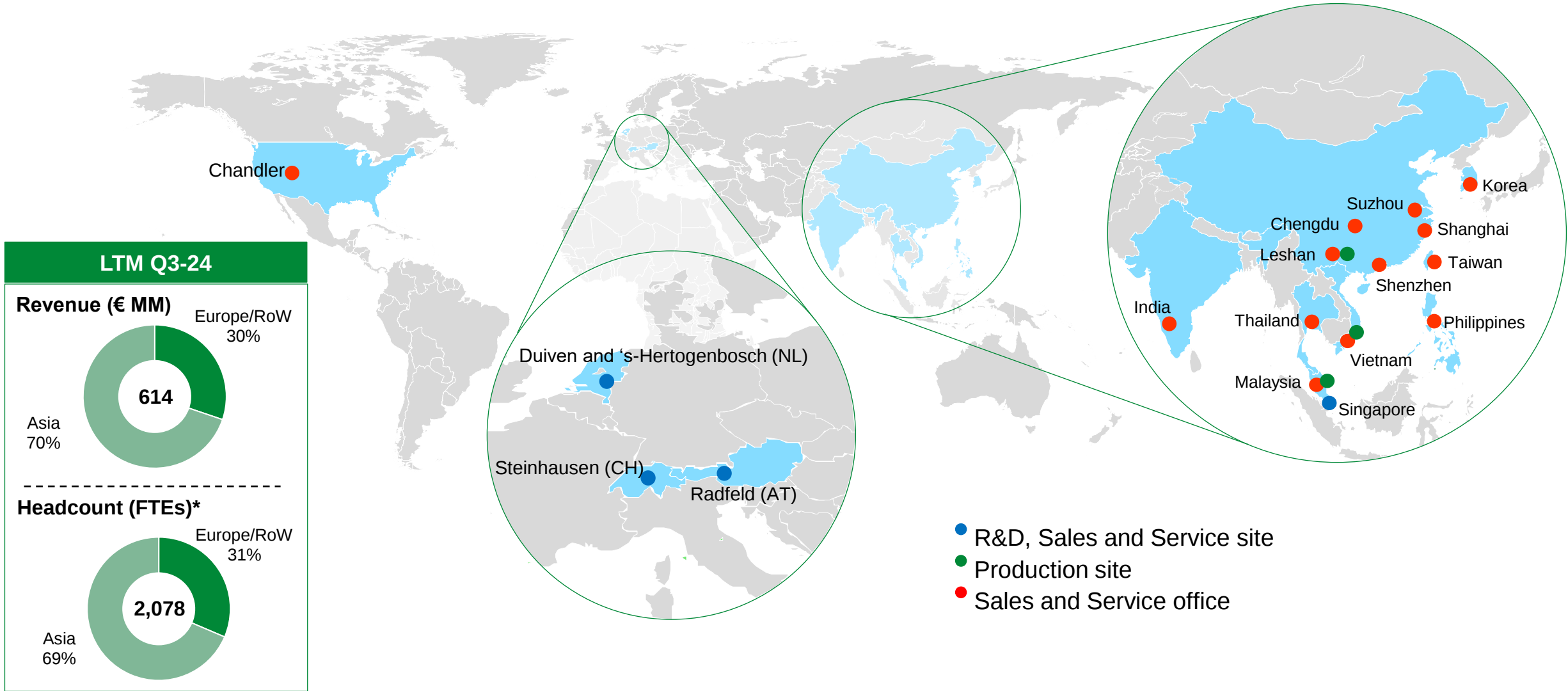


Auto/
Industrial
29%



Fiscal 2023 data.

Global Operations Supported by European Development Centers and Asian Production Footprint/Supply Chain



* Including temporary headcount

Summary Financials



Year Ended December 31, (€ MM)	2021	2022	2023	YTD Q3-24	YTD Q3-23
Orders	939.1	663.7	548.3	464.8	381.9
<i>Growth (%)</i>	99%	(29%)	(17%)	22%	
Revenue	749.3	722.9	578.9	454.1	419.2
<i>Growth (%)</i>	73%	(4%)	(20%)	8%	
Gross Profit	446.8	443.1	375.8	297.8	271.9
<i>Margin (%)</i>	60%	61%	65%	66%	65%
EBITDA	335.1	317.1	239.1	166.2	166.4
<i>Margin (%)</i>	45%	44%	41%	37%	40%
Operating Income	317.6	294.1	213.4	145.0	147.3
<i>Margin (%)</i>	42%	41%	37%	32%	35%
Net income	282.4	240.6	177.1	122.7	122.2
<i>Margin (%)</i>	38%	33%	31%	27%	29%
Net Cash*	370.4	346.5	113.0	110.7	90.2

* Calculated as Cash and cash equivalents, including deposits minus total debt. Excludes lease liabilities

Long-term, step function growth in cyclical business

- Increased revenue, profitability and market share per cycle

YTD-24 revenue +8.3% and net income +0.4% vs. YTD-23

- Contrasting growth trends: AI vs. mainstream assembly
 - Strength in AI for 2.5D and 3D applications
 - Extended mainstream assembly downturn
 - Weakness in smartphone and auto markets
- Gross margins increased to 65.6%
- Lower profitability due to:
 - Higher R&D spending
 - Higher share-based compensation expense

Orders up 21.7% vs. YTD-23

- Due to increased AI demand for hybrid bonding, photonics and 2.5D assembly solutions

Strong margins and profitability

- Attractive gross and net margins maintained due to favorable product mix, cost control efforts, flexible supply chain

Strong cash generation supports shareholder friendly capital allocation policy

Besi Market Cap and Liquidity Have Expanded Shareholdings Have Migrated to US/UK



Market Profile

Symbol/ Index

- BESI
- Euronext AEX

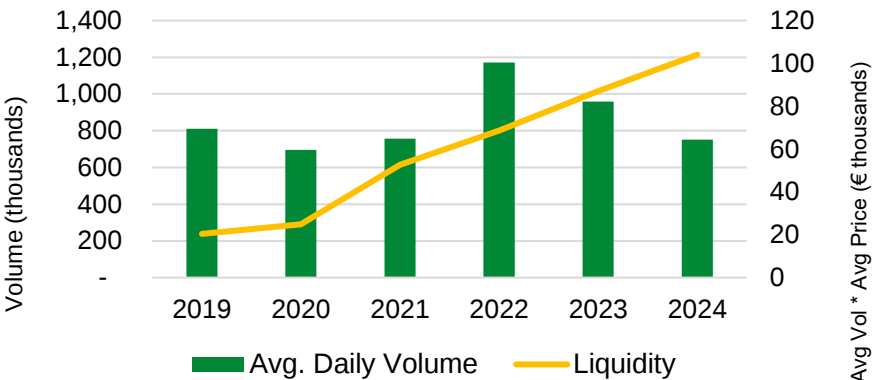
Market Cap*

- € 9.0 billion
(\$ 10.1 billion)

Dividend Policy

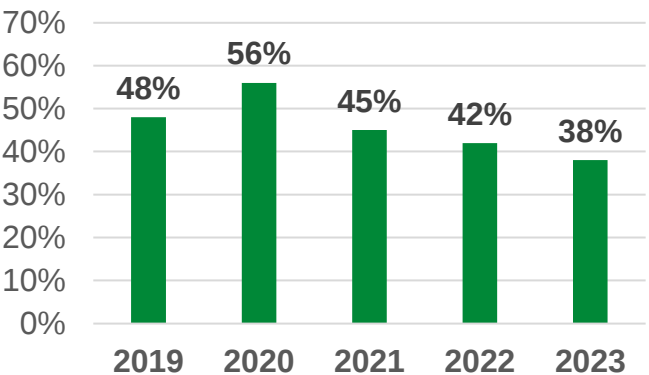
- Pay out 40-100% of
net income per annum

Avg. Daily Volume and Liquidity*

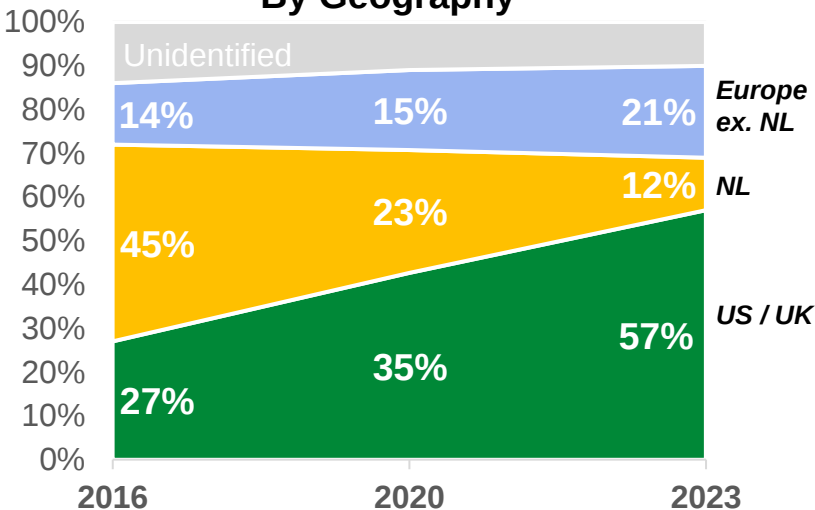


Share Ownership

Top 10 Shareholders** (% of shares outstanding)

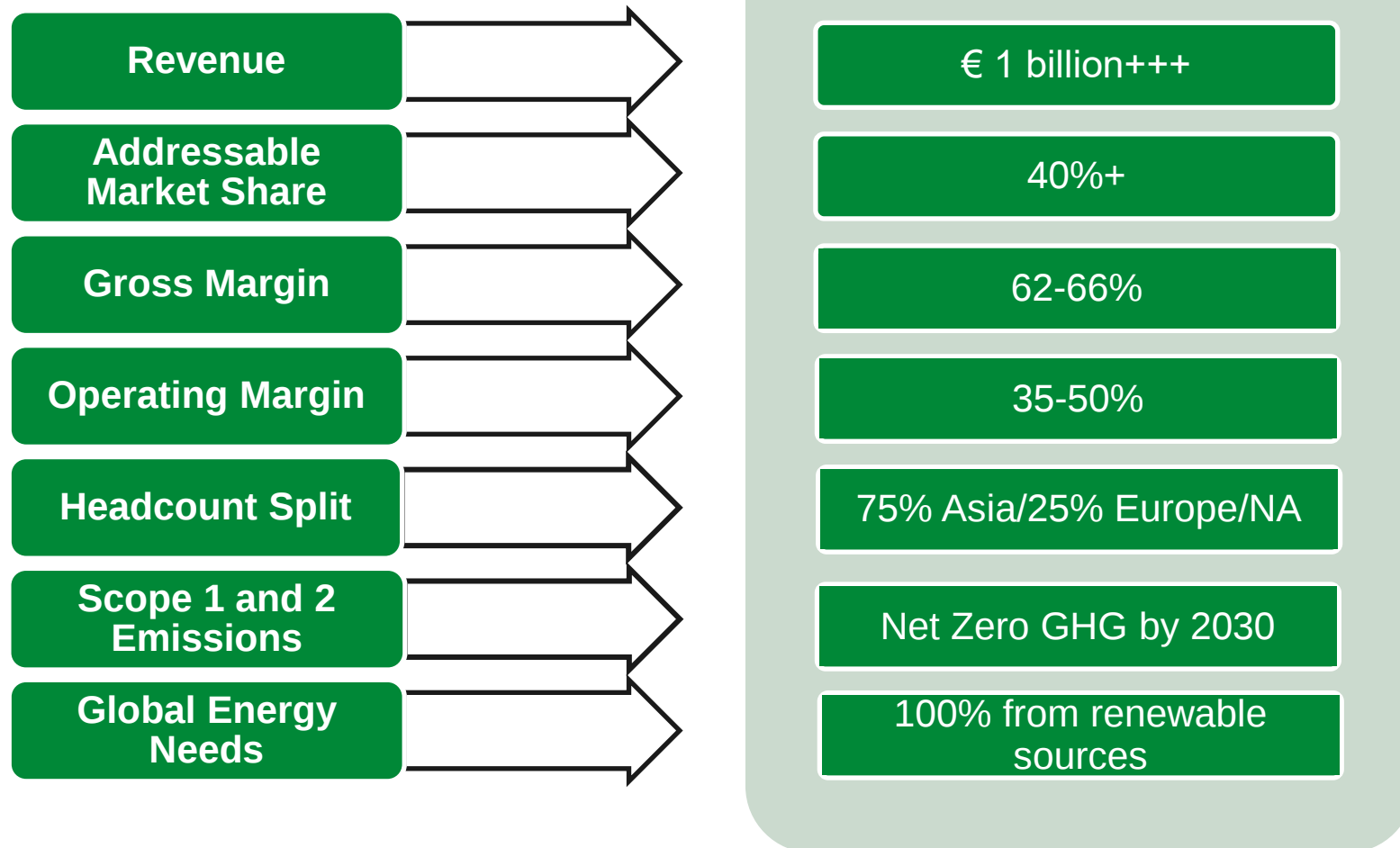


By Geography



Share ownership is based on information per AGM of presented year.

* As of September 30, 2024 ** Besi estimates



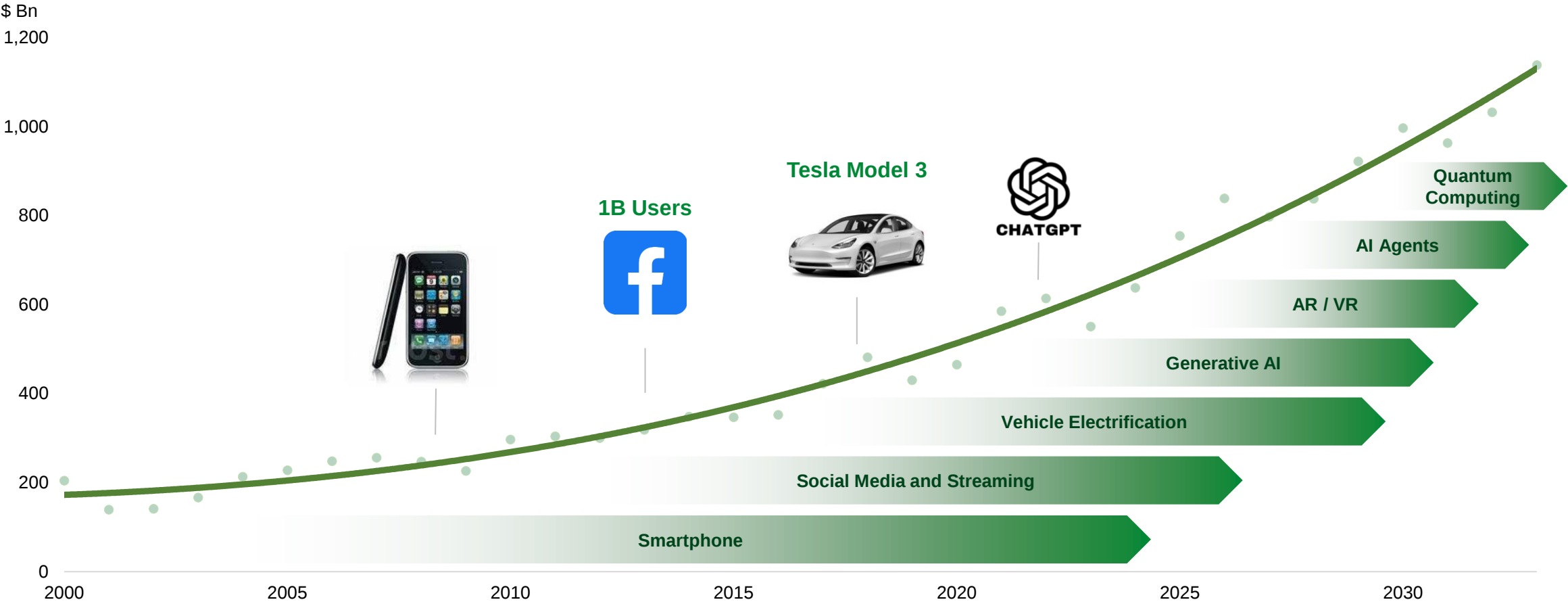


II. MARKET OVERVIEW

Semiconductor Sales Expected to Reach \$1 Trillion by 2030

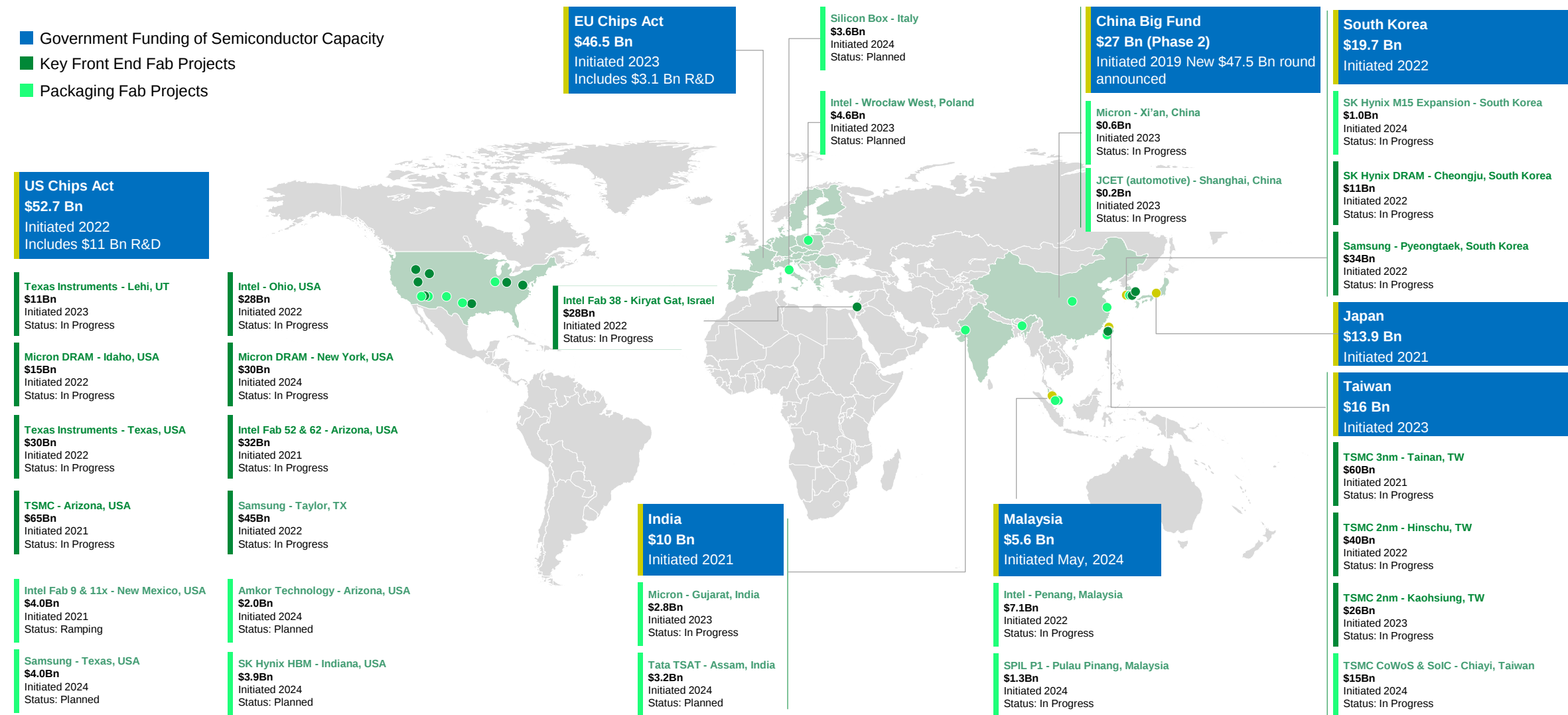
Driven by Various Megatrends

Annual Semiconductor Sales



Source: TechInsights

Government Funding Helps Drive New Fab Capacity Globally



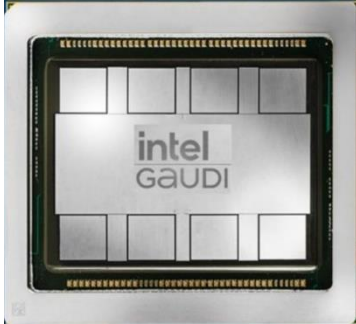
Source: TechInsights, May 2024; Company estimates

Non-exhaustive list

AI Drives Significant Growth: Particularly in Advanced Logic and Memory Markets

Data Center AI Devices

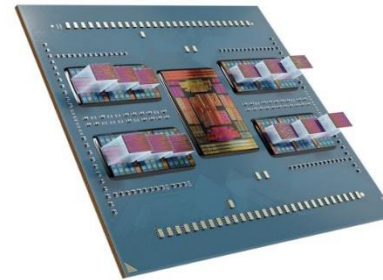
GPU / Accelerator



HBM



CPU



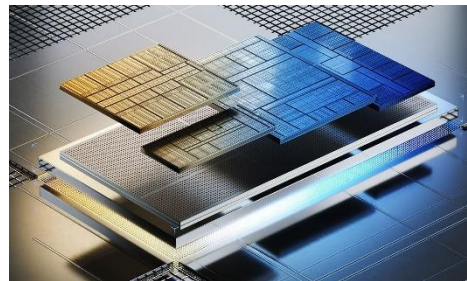
Source: Intel, SK Hynix, AMD

Edge AI Devices

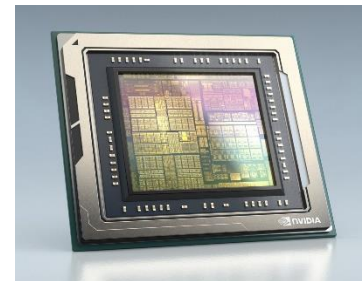
Mobile



PC



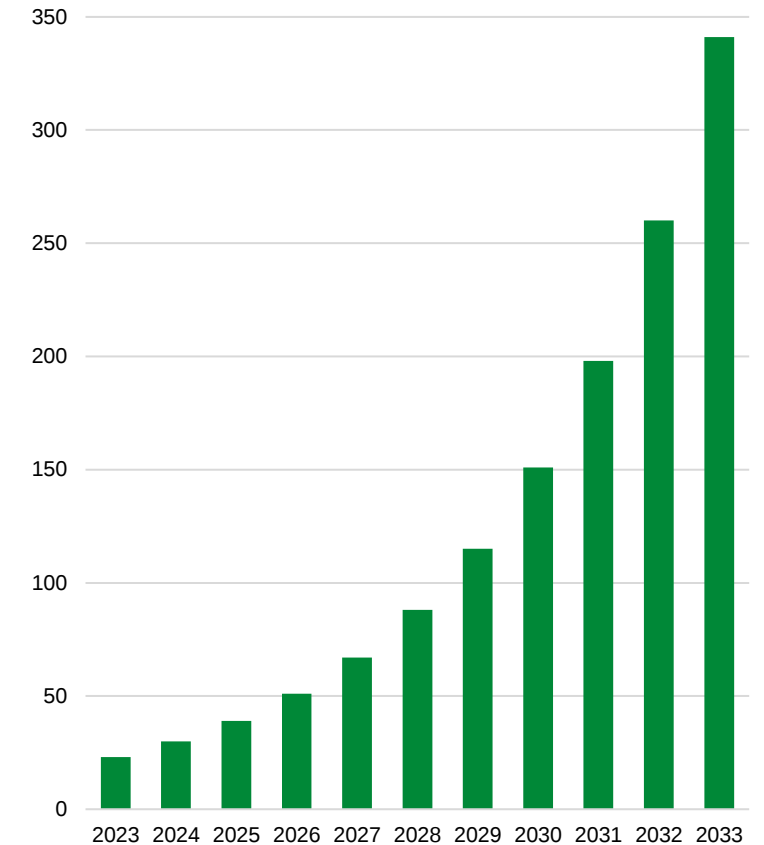
Automotive



Source: Google, Intel, NVIDIA

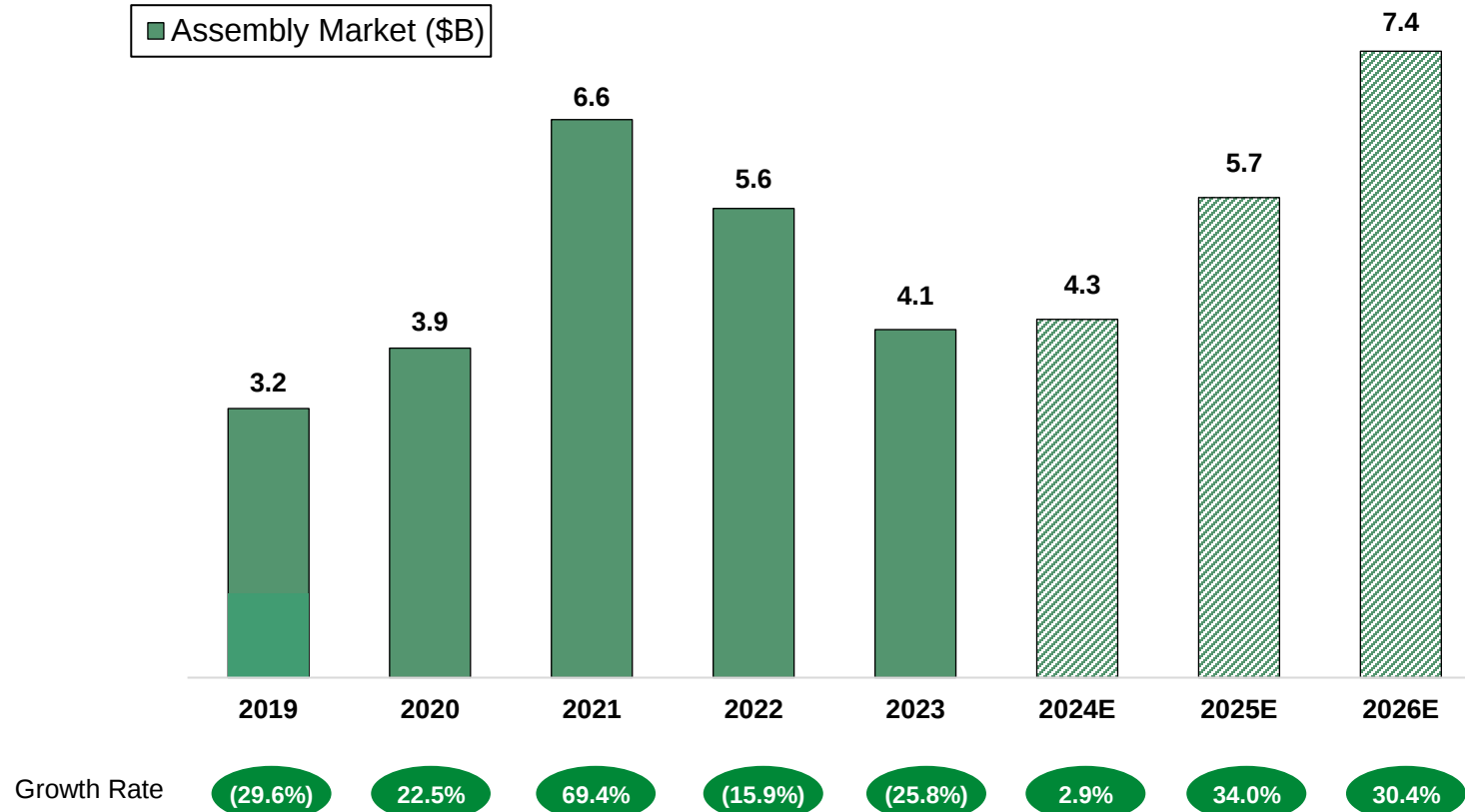
AI Chip Market Revenue 2023 - 2033

Annual Revenue (\$ Bn)



Source: Statista 2024

Assembly Equipment Market Rebound Pushed Out to 2025



Downward revisions to 2024 estimates reflect slow mainstream recovery

- Techinsights now forecasts 2.9% increase
- Reduction from last forecast of 9.3%

Market expected to recover strongly in 2025/2026

- Forecast \$ 7.4 billion in 2026
- +80% from 2023 levels

Secular fundamentals intact:

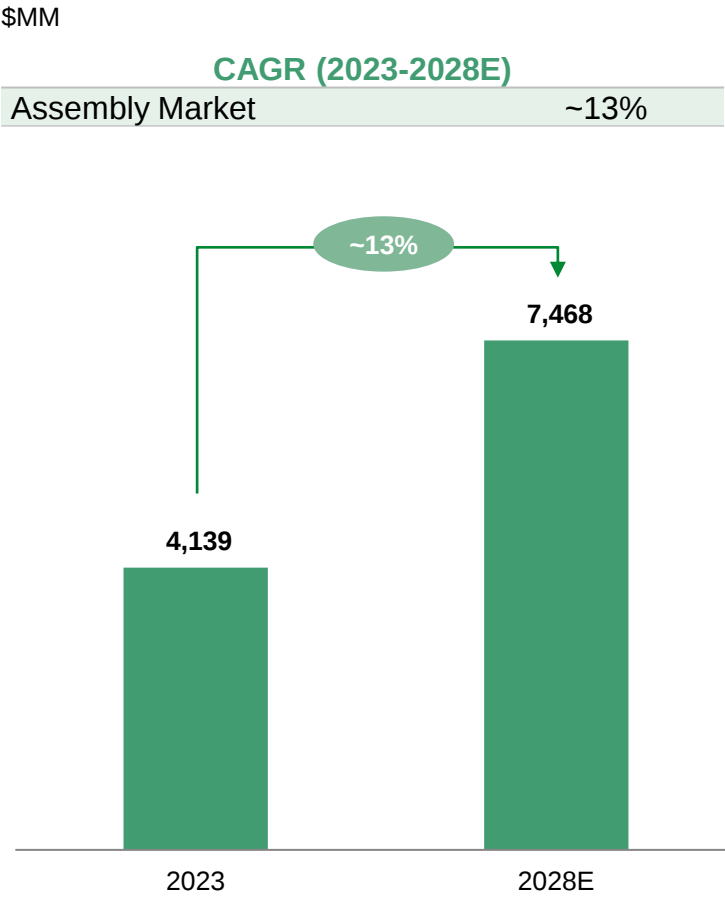
- AI, Datacenter, HPC, 5G-6G primary drivers
- Investment in new process technologies: hybrid bonding/CSP
- Onshoring new advanced packaging fabs

Source: TechInsights, September 2024. Assembly equipment revenue excludes service revenue

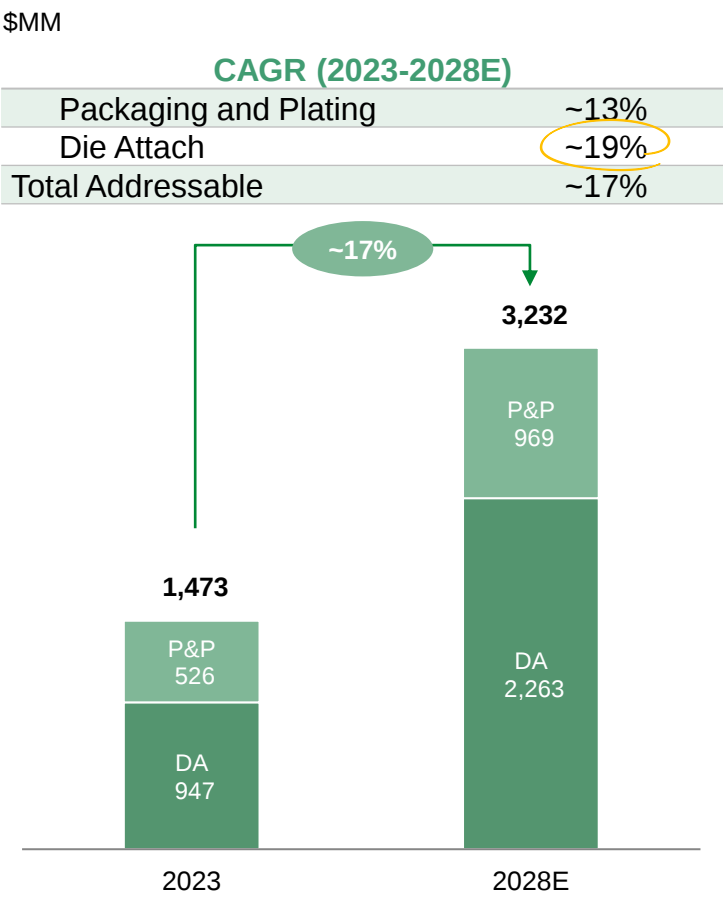
Strategic Focus on Highest Growth Segments of Assembly Market



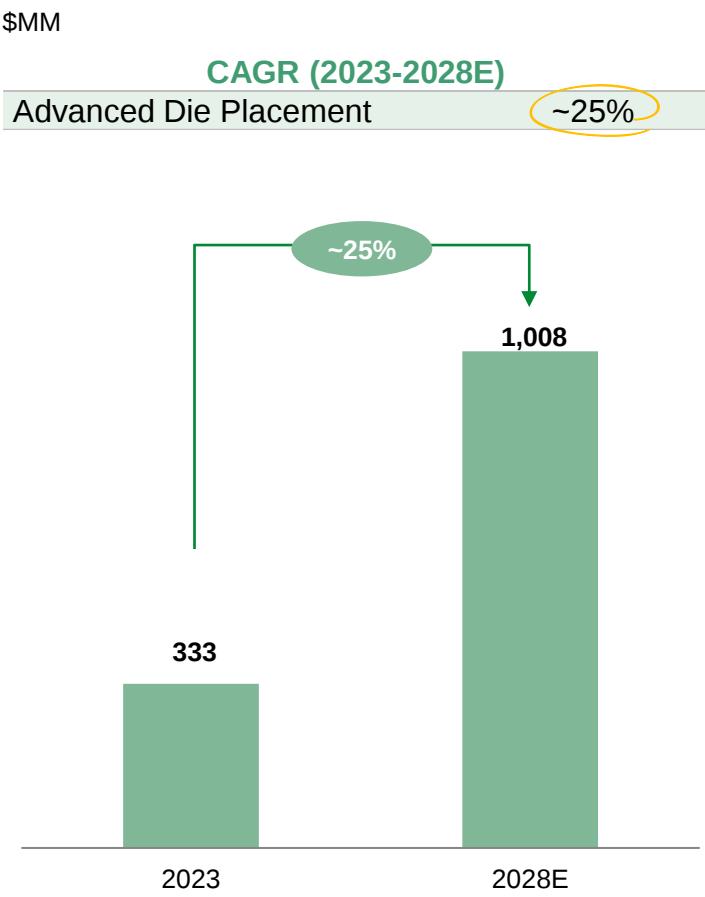
Assembly Equipment Market (~18% share)



Besi Addressable Market (~35% share)



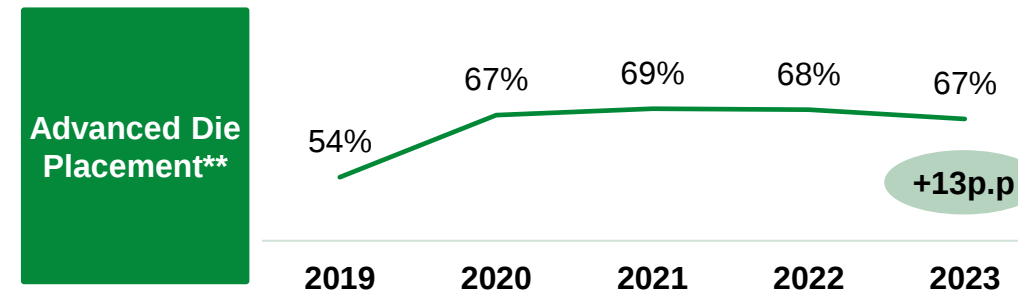
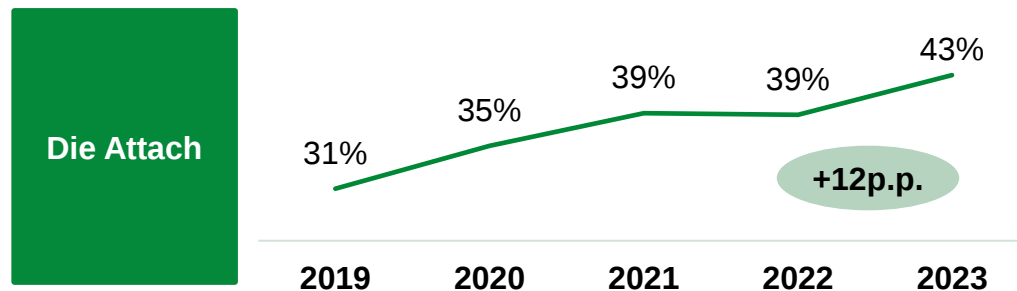
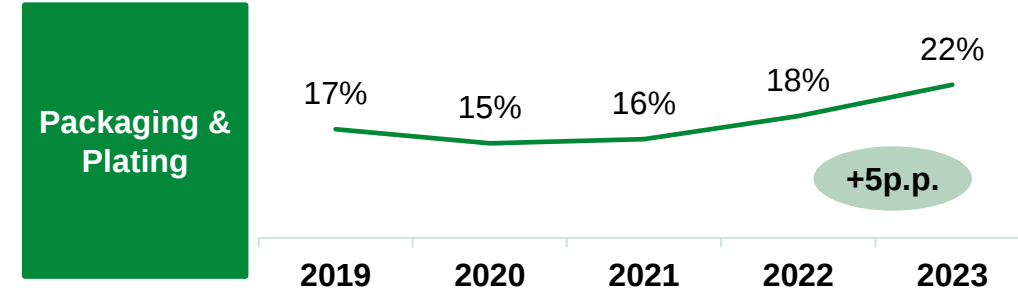
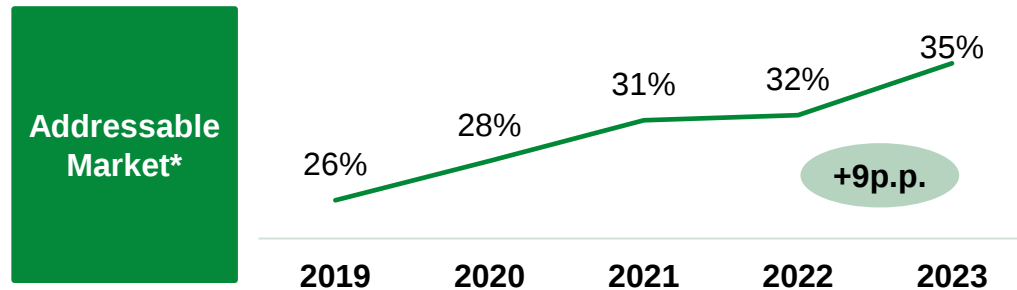
Advanced Die Placement (~67% share)



Source: TechInsights, September 2024

Increasing Market Share in Key Market Segments

Besi Market Share

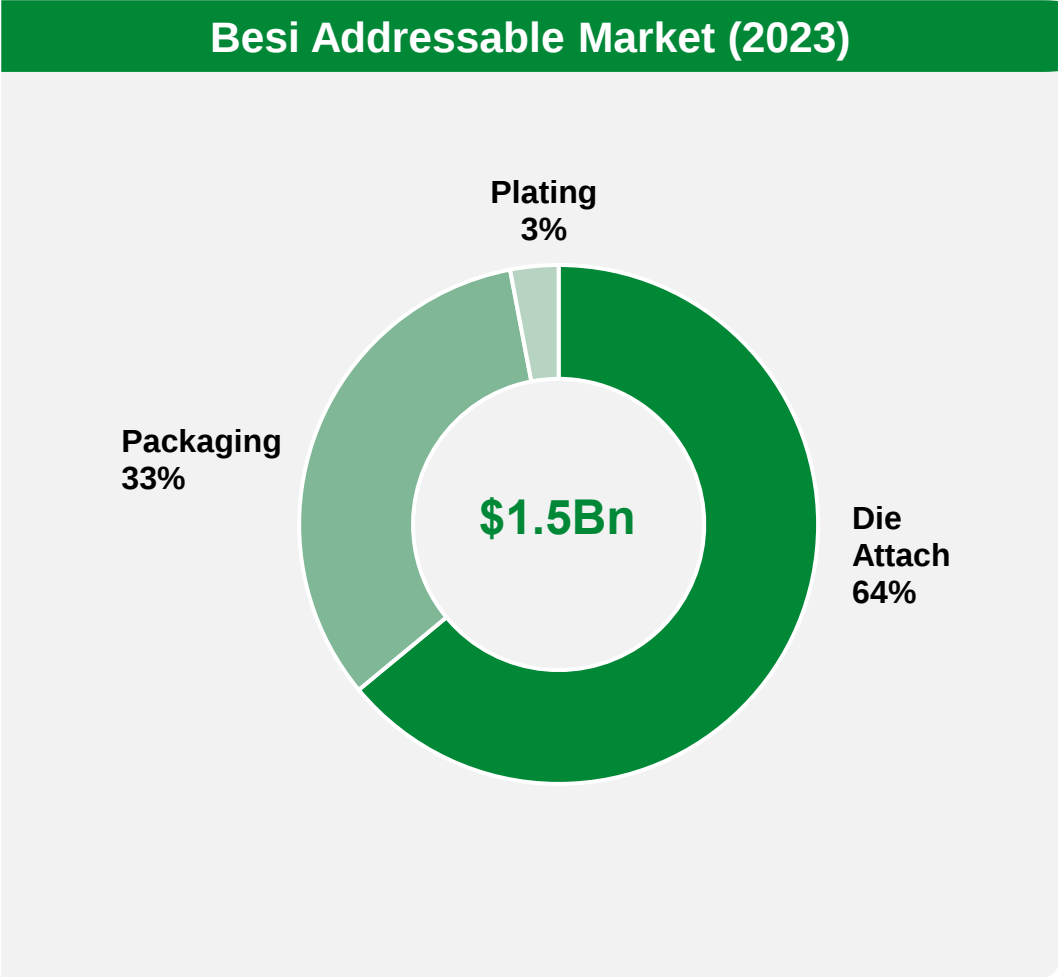
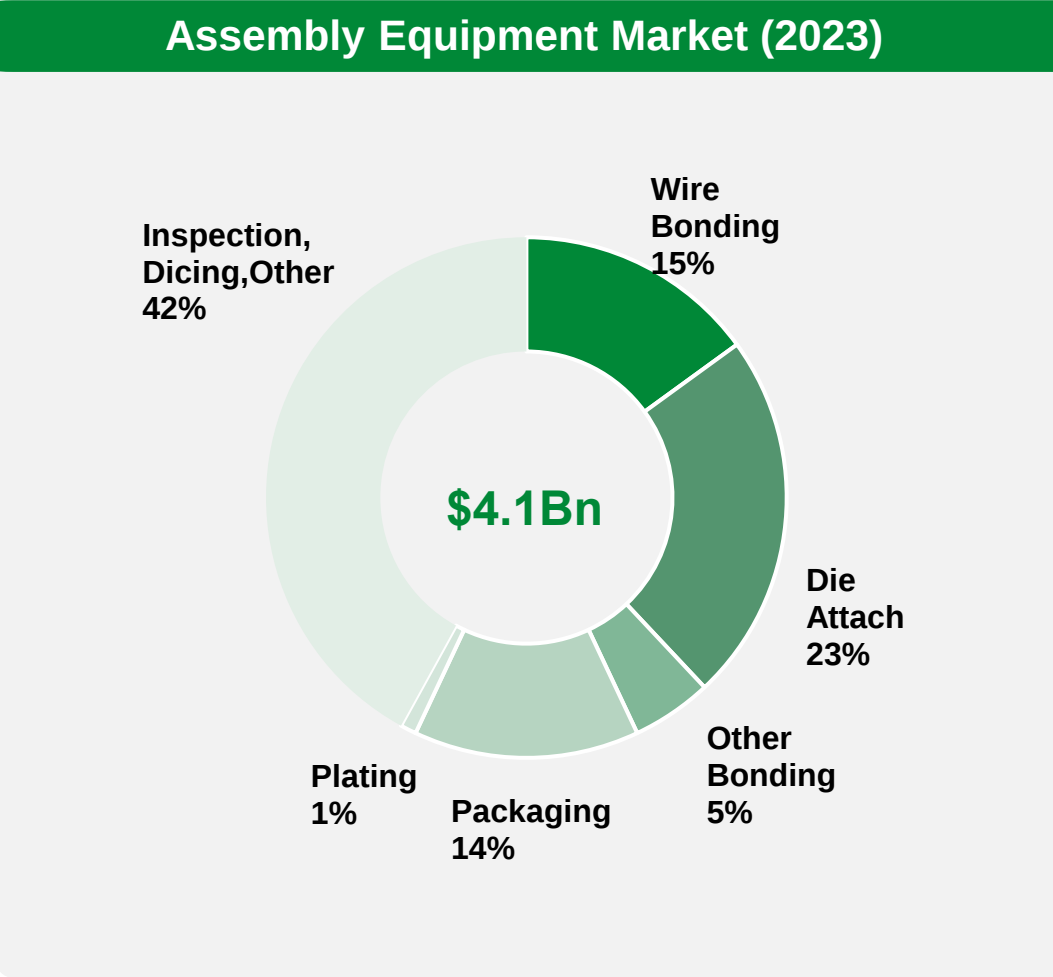


Source: TechInsights, May 2024

* Excludes wire bonding, dicing, and other

** Advanced die placement defined as < 7 micron accuracy per TechInsights

Assembly Equipment Market Composition



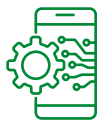
Source: TechInsights, September 2024



III. END-USER MARKET TRENDS

Principal Growth Drivers in Besi's End-User Markets

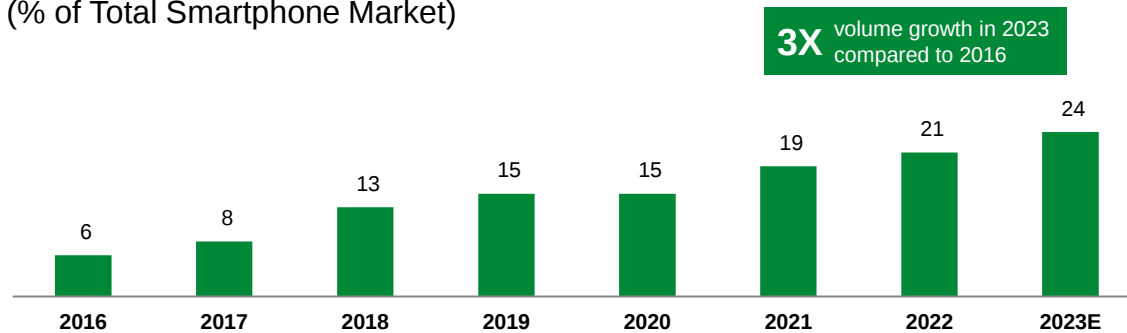
Mobile	Computing	Automotive	Industrial / Other
 Generated by ImageFX			
On Device AI	Generative AI	Autonomous Driving	Automation
Foldable Phones Camera Technology 5G Advanced → 6G	Datacenter Gaming Photonics	Vehicle Electrification Connectivity Infotainment	Smart Grid Industrial IoT Clean Energy



Mobile – Key Market Drivers

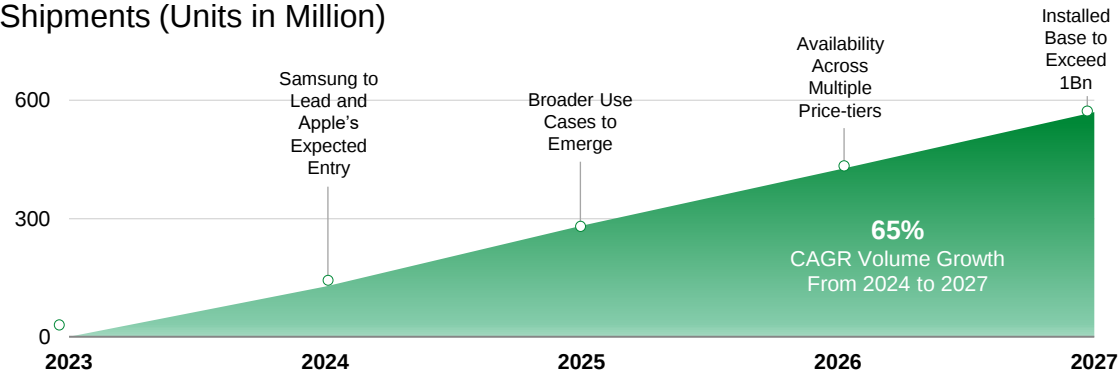
Fast Growing Market for Premium Smartphones, Wearables and Other Mobile Devices

Premium Smartphone Market Share Growing Rapidly
(% of Total Smartphone Market)



Global GenAI Smartphone Shipment Forecast

Shipments (Units in Million)



Source: Counterpoint

Driven by Key Megatrends



New generative AI engines



Edge/AI enabled phones



Advanced cameras and 3D imaging



Under display biometric ID



New AR/VR devices

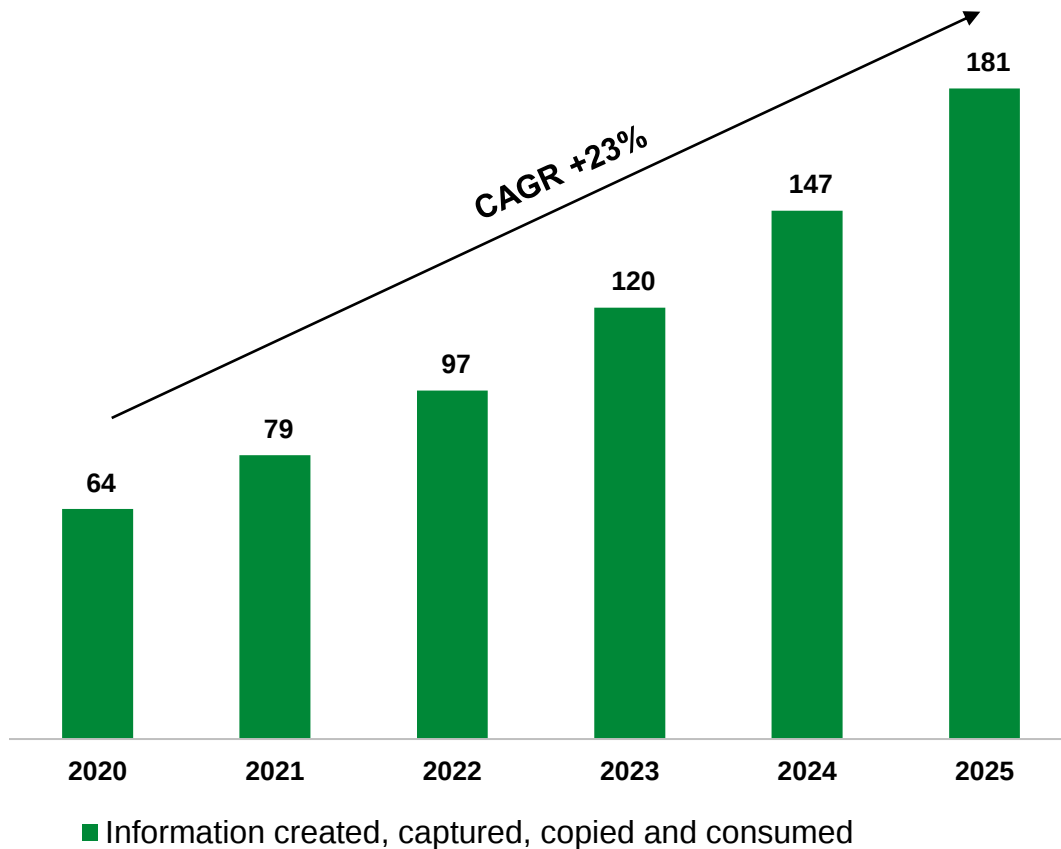


5G advanced devices



Data Volumes Growing Exponentially

Zetabytes



Source: Statista, December 2022; OpenAI

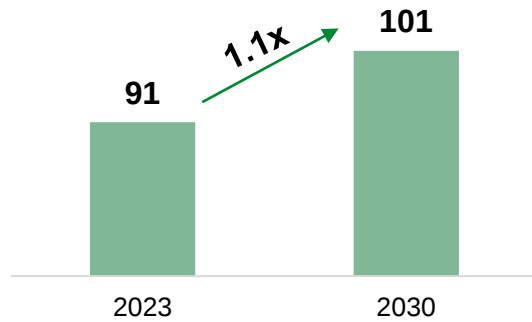
Driven by Key Megatrends

	Data volumes growing exponentially
	New generative AI engines
	Supercomputers
	Datacenters
	Edge AI tablets, PCs, laptops
	Gaming and infotainment

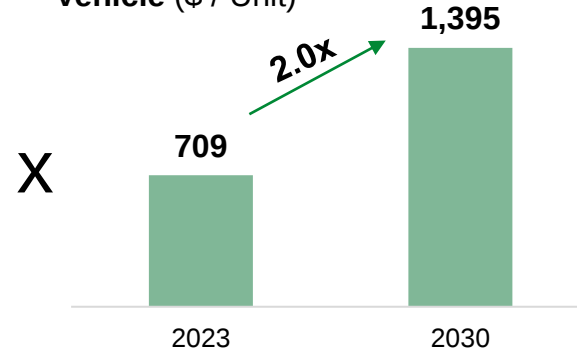


Favorable Automotive Market Outlook

Global Vehicle Production (MM Units)

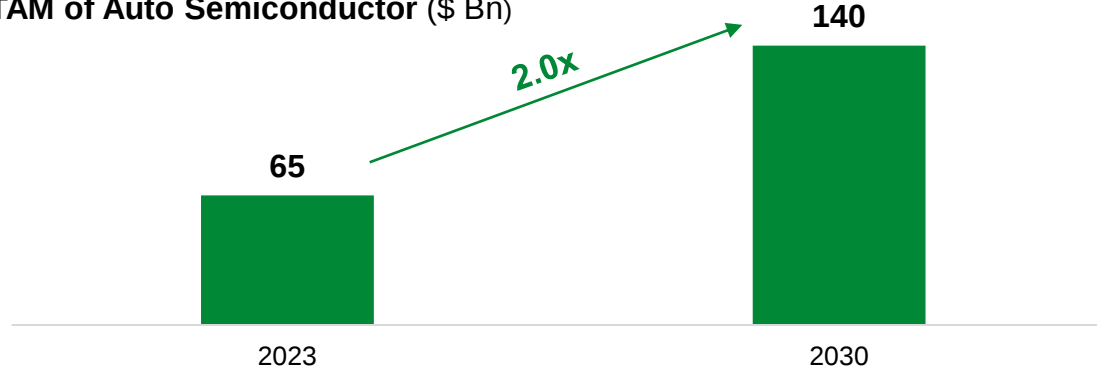


Avg. Semiconductor Content per Vehicle (\$ / Unit)



X

TAM of Auto Semiconductor (\$ Bn)



Driven by Key Megatrends



EV Adoption



Edge AI enhanced features



SiC and GaN power devices



Advanced camera modules and sensors



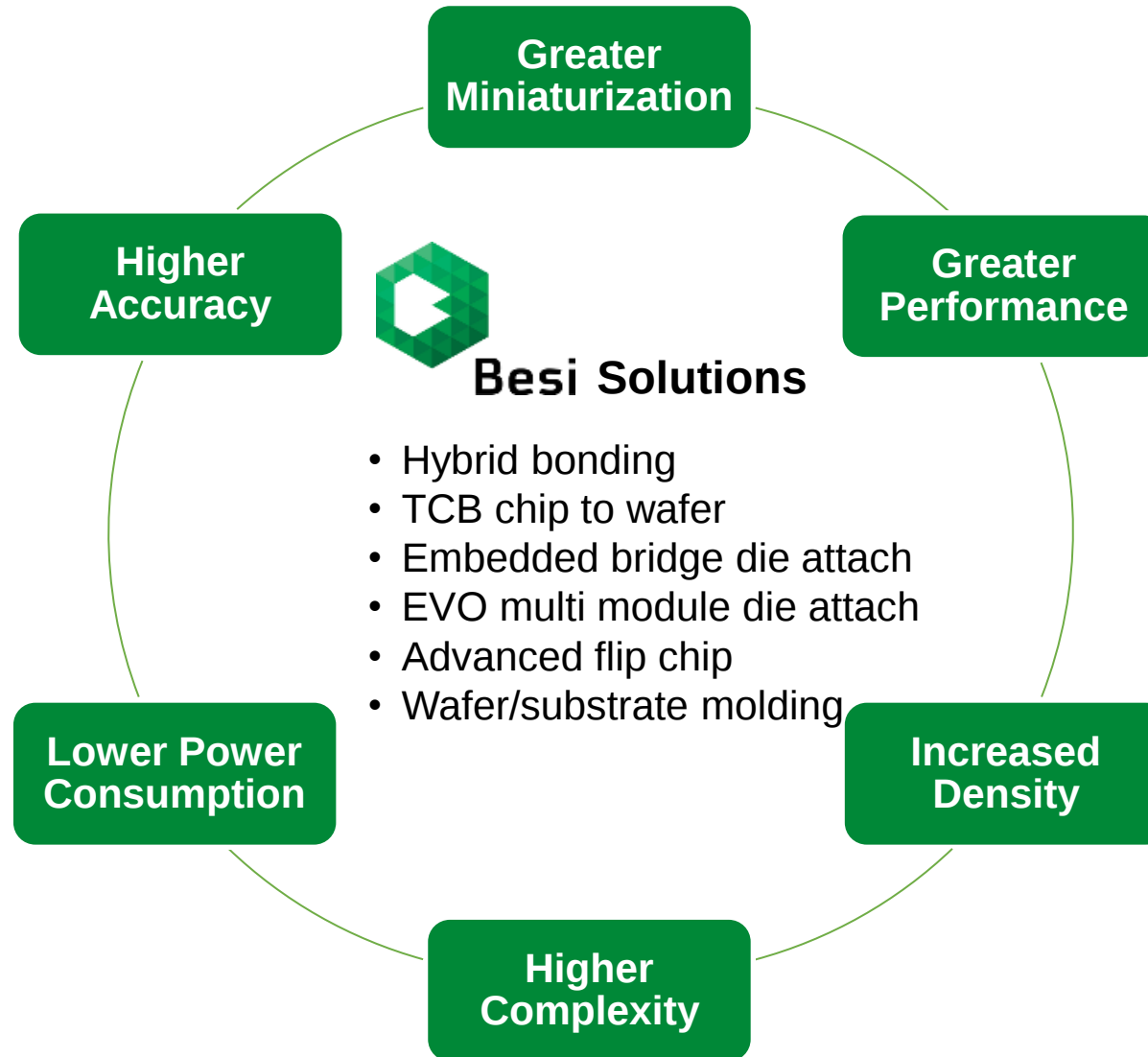
Autonomous driving



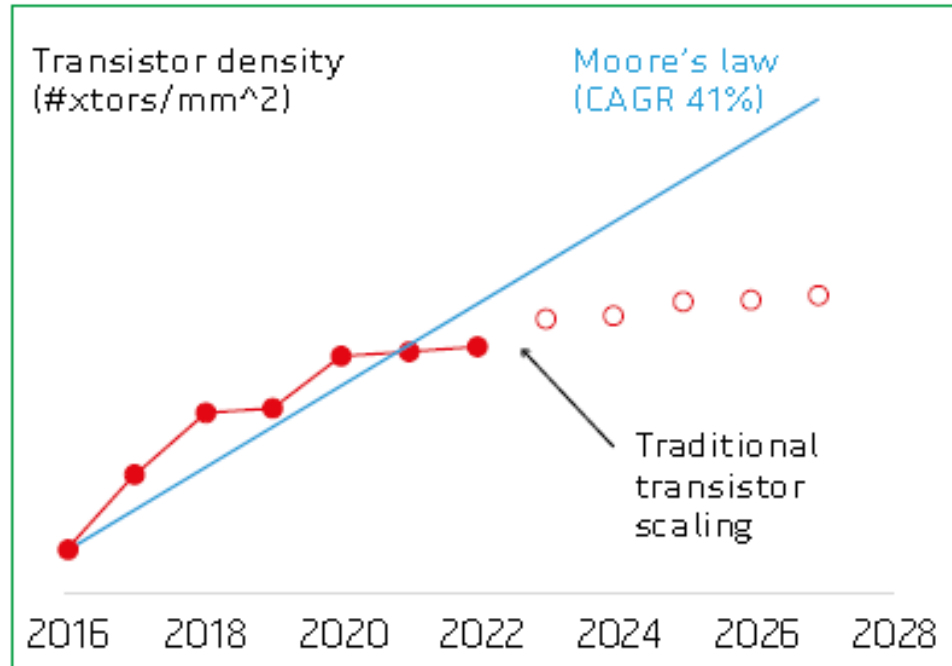
Factory automation 4.0

Source: TechInsights

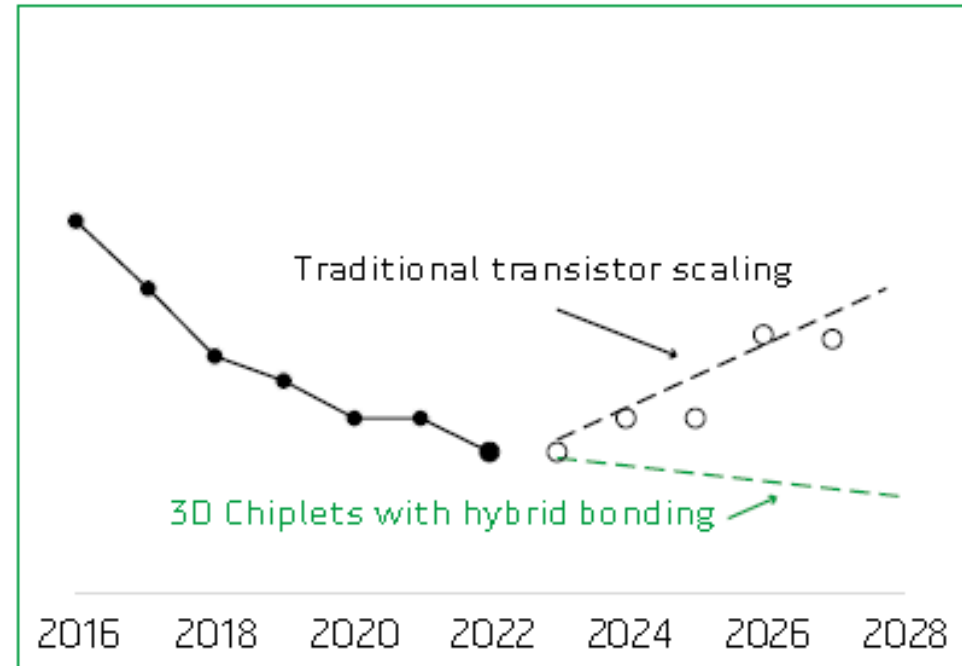
Advanced Packaging Solutions Critical to Development of Next Generation Applications



Moore's Law Scaling Is Slowing



Cost Per Transistor Is Increasing

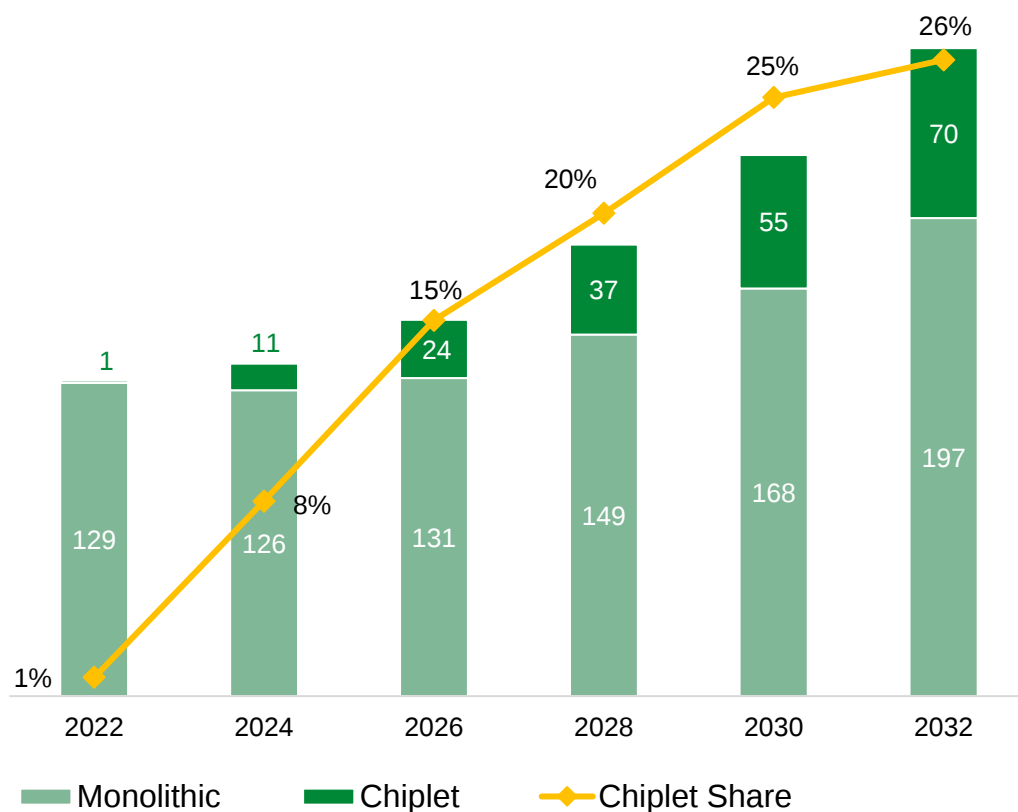


Source: Qualcomm and Besi

Chiplet Usage Increasing Rapidly Due to Favourable Economics for Advanced Applications

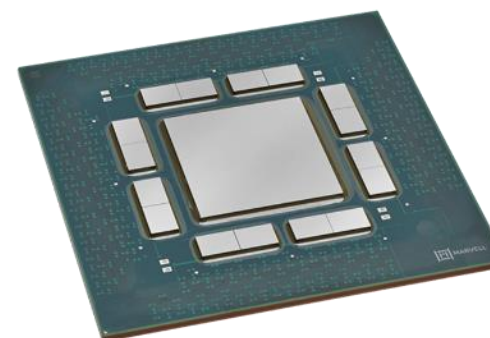
Wafer Foundry Addressable Market

\$ Bn

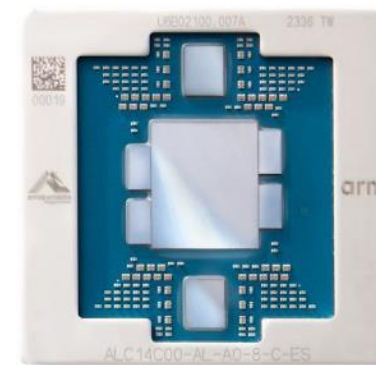


Source: CSM foundry model, ISM foundry model

Examples of chiplets



Marvell Data Center
Switch 17 chiplets



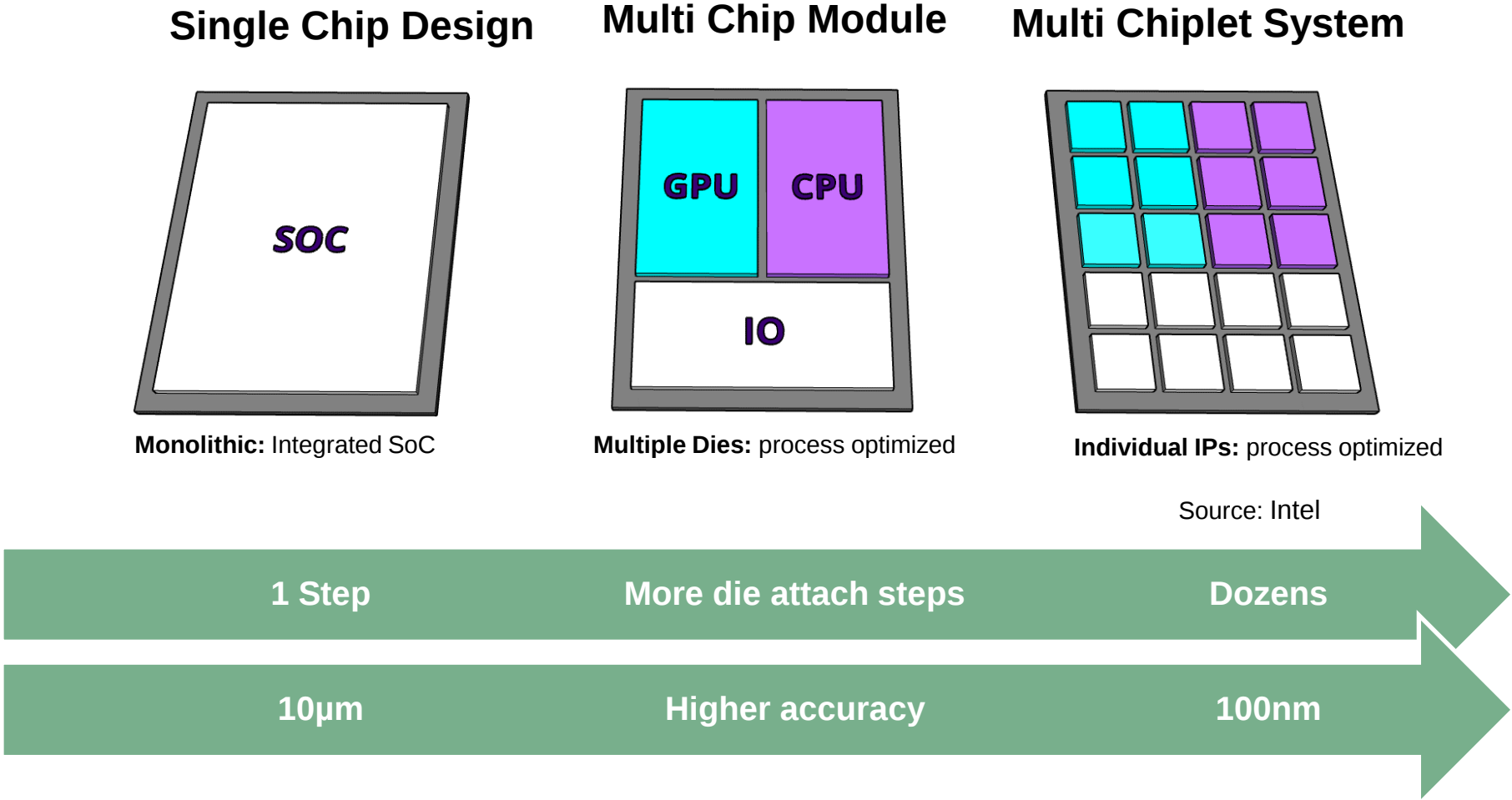
Amazon Data Center
CPU 7 active chiplets

Favorable economics due to:

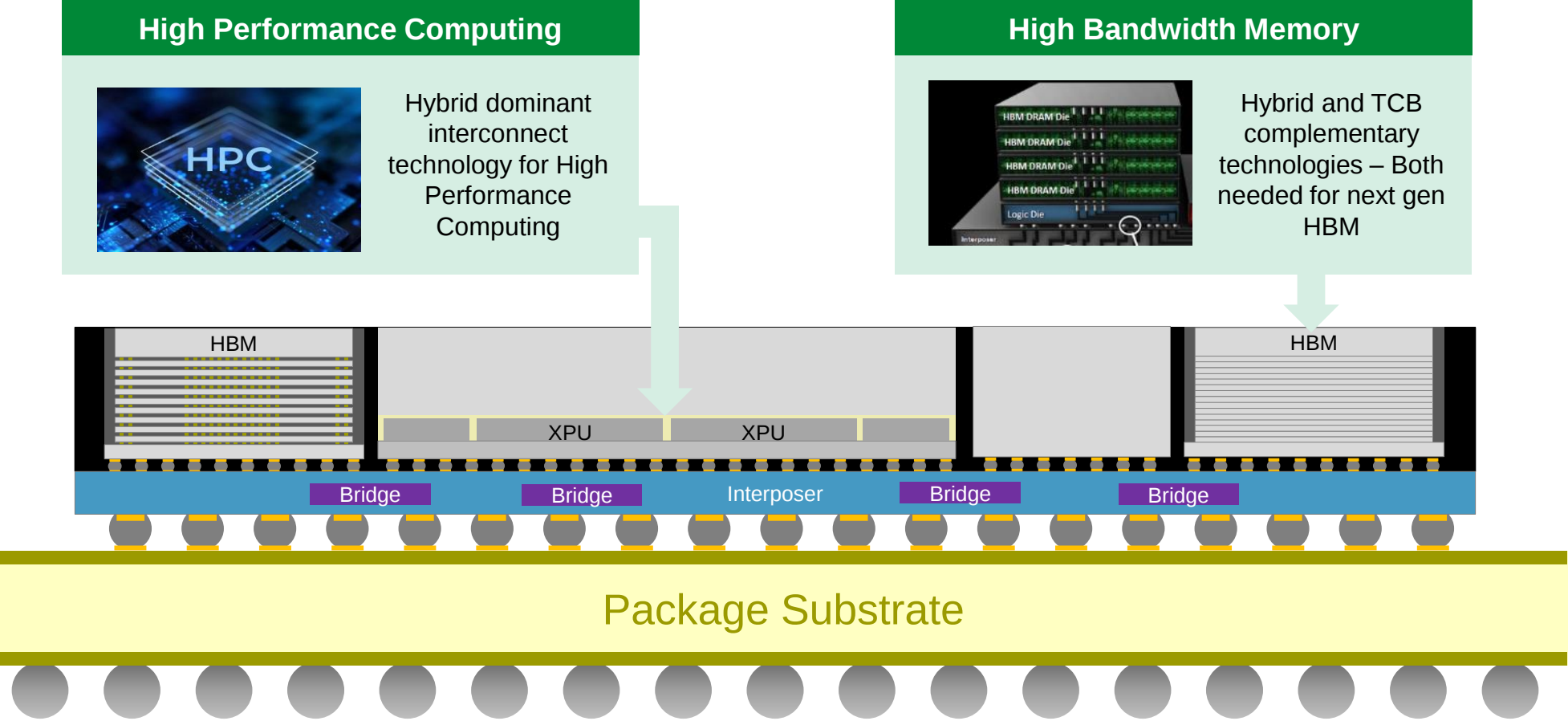
- Reduced die cost
- Increased die yield resulting from smaller die sizes
- Faster development cycle times
- Increased flexibility and technology reuse

Besi's systems facilitate chiplet packaging

Chiplet Adoption Drives Higher Capital Intensity



Chiplet Packages Use a Variety of 2.5D/3D Assembly Processes Including Hybrid Bonding and Thermo Compression Bonding (TCB)

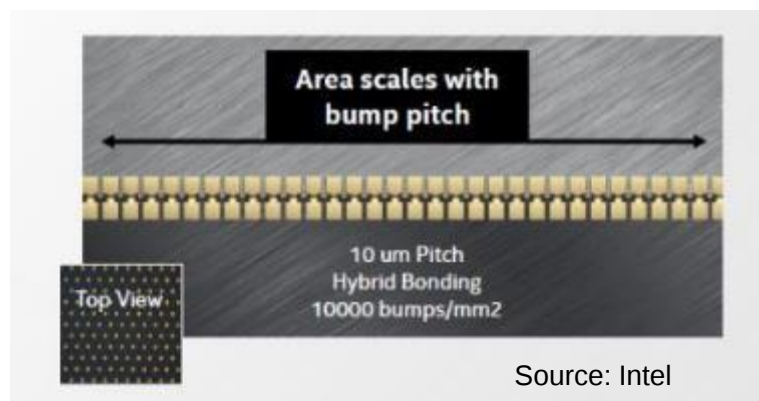


Besi is a leader in Hybrid Bonding and TCB solutions

Note: XPU can be a GPU, CPU or other

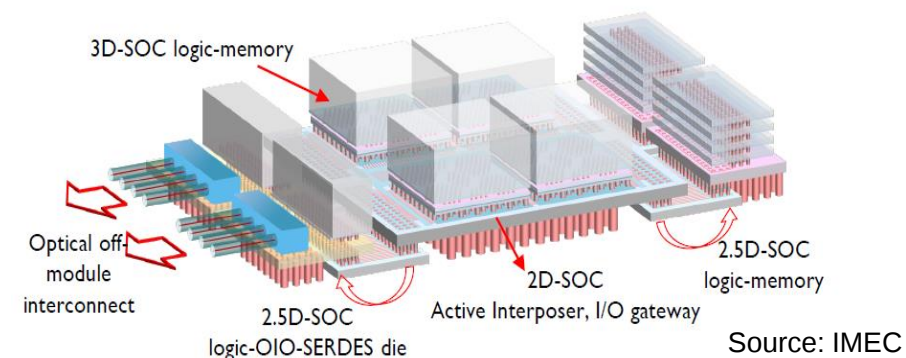
Hybrid Bonding Enables Faster, More Complex Devices With Submicron Placement Accuracy and Less Heat/Power Generation

Direct Cu-Cu 3D Interconnect



1,000x increase in contact density

Heterogeneous Chiplet Integration



More transistors per package

New Chip Architectures

- Quasi-monolithic 3D
- Optimal use of nodes
- Customized designs
- Highly configurable

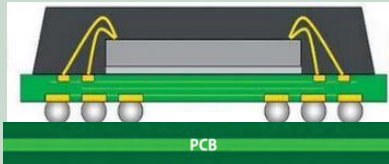
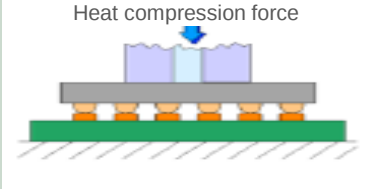
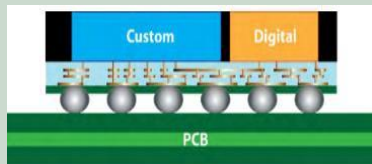
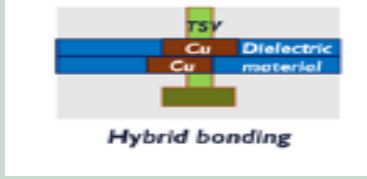
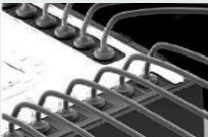
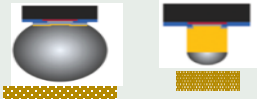
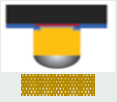
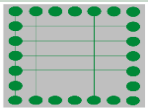
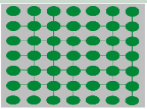
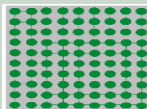
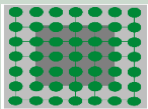
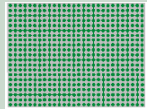
Increased Performance

- Highest compute power
- Increased data transfer
- Higher bandwidth
- Higher speed

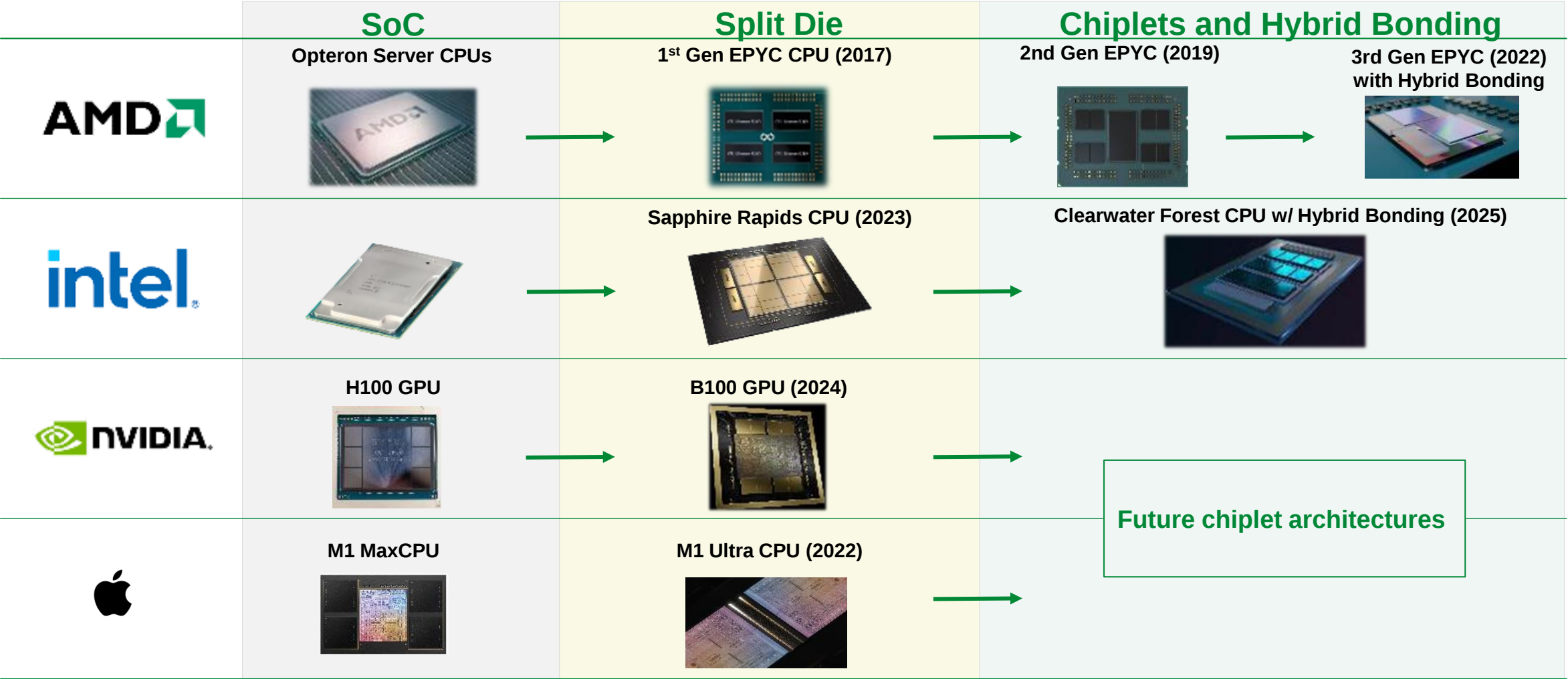
Lower Cost of Ownership

- Higher die yield
- Lower energy per bit
- Lower cost per contact
- Lower heat dissipation

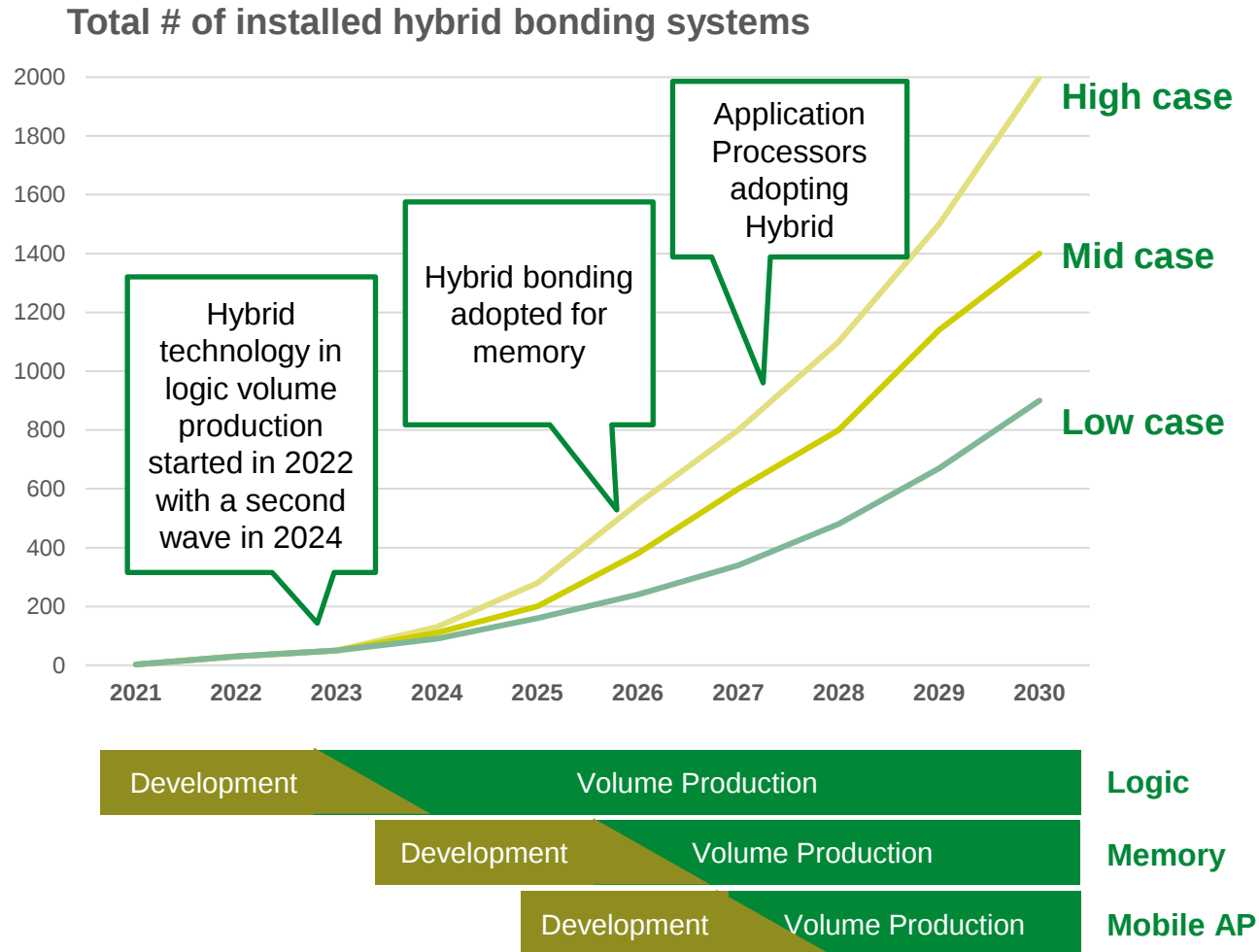
Moore's Law Helps Drive Growth of Wafer Level Assembly

	Wire Bond (1975)	Flip Chip (1995)	TCB Bonding (2012)	HD Fan Out (2015)	Hybrid Bonding (2018)
Architecture					
Contact Type	 Wire	 Solder ball or copper pillar	 Copper pillar	 RDL or copper pillar	 Copper to copper
Contact Density	 5-10/mm ²	 25-400/mm ²	 156-625/mm ²	 500+/mm ²	 10K-1MM/mm ²
Substrate	Organic/leadframe	Organic/leadframe	Organic /Silicon	None	None
Accuracy	20-10μm	10-5μm	5-1μm	5-1μm	0.5-0.1μm
Energy/Bit	10pJ/bit	0.5pJ/bit	0.1pJ/bit	0.5pJ/bit	<.05pJ/bit

Important Process Step for Future Product Roadmaps



Hybrid Bonding Market Potential – Logic and Memory Cases Confirmed



Estimated 900 – 2,000 systems by 2030

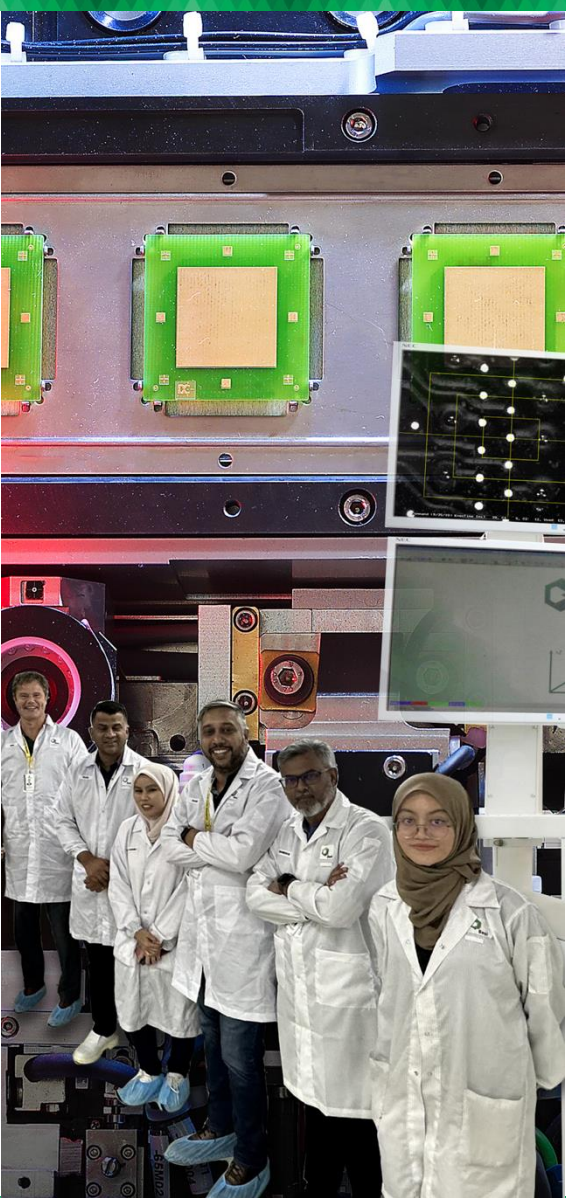
Changes vs. Prior Forecast

- Market potential for each case increased 6% because of HB adoption expanding from 3-9 customers
- Logic adoption increased with 2nd customer in volume production and capex forecasts of leading players. TSMC projects 100% annual growth until 2026
- Memory adoption confirmed but one year later
 - First Hybrid packaged HBM4(E) 16-high stack in 2026
- Edge AI driving hybrid adoption for mobile AP

Potential upside to estimates:

- Co-packaged optics
- Complex CMOS sensors

Source: Besi estimates, June 2024



IV. STRATEGY



Business

- Contrasting assembly market trends continue
 - **Accelerating AI demand driven by 2.5/3D and photonics applications**
 - AI-related advanced packaging orders ~50% of Besi's total for past 12 months
 - **Slow recovery for mainstream assembly markets:**
 - Smartphones, automotive and China still weak
 - Pockets of excess capacity still exist

Development

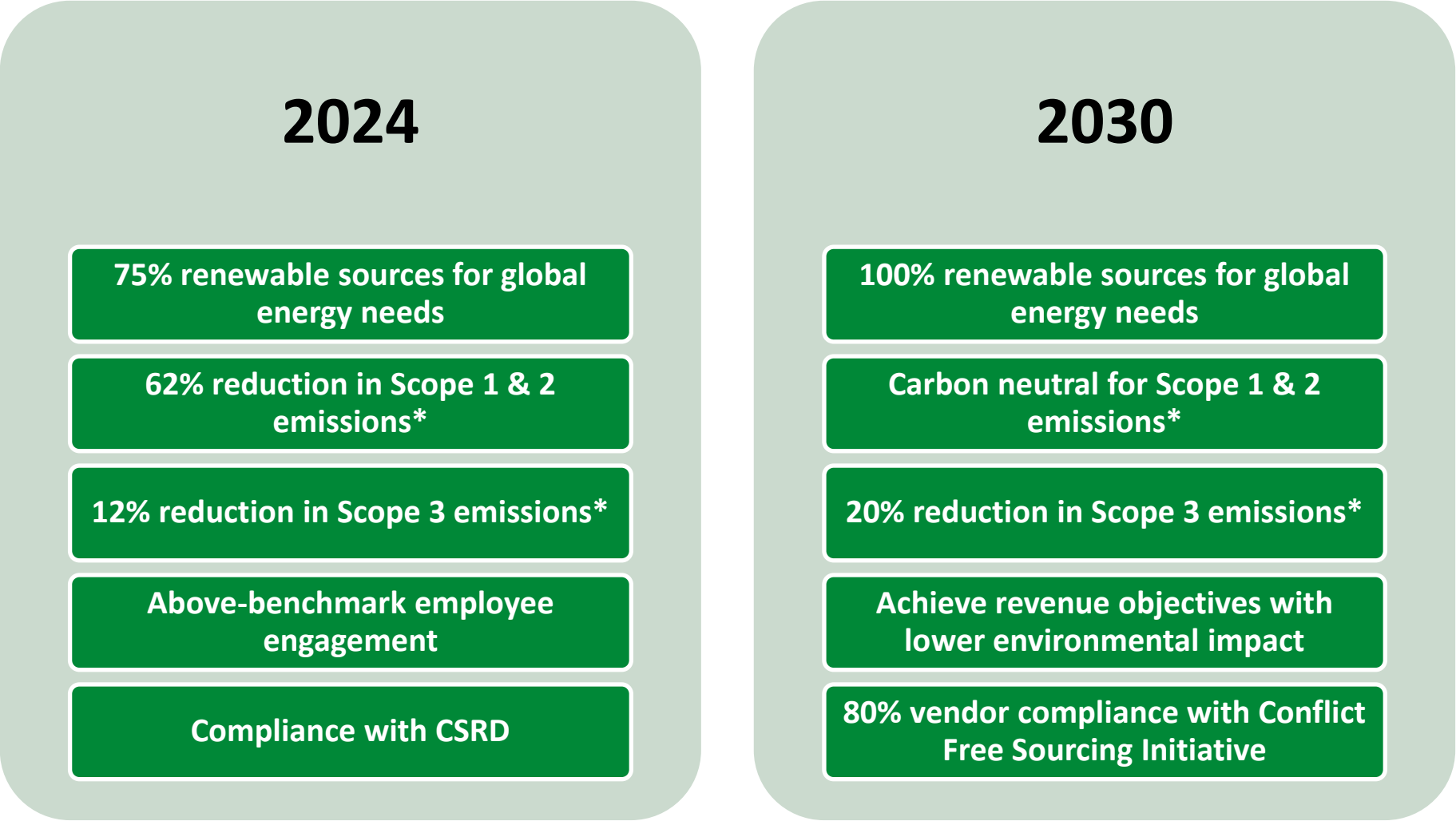
- Expanded R&D investment continues. YTD-24 spending up 28.9% vs. YTD-23
- Substantial hybrid bonding orders received in Q3-24 from existing and new customers
- Additional orders anticipated in Q4-24 from multiple customers as adoption continues to expand globally
- Increased interest in TCB Next system from logic and memory customers

Operations

- Expanding advanced packaging production capacity
 - Intend to double Malaysian clean room capacity
 - Increase Singapore advanced packaging capabilities
 - Expand R&D and process development for hybrid bonding and TCB
 - Expand customer support

2023 Highlights

- ✓ Progress continues versus Besi's 2024 ESG targets
- ✓ Completed 76% of ESG initiatives developed since 2020
- ✓ Energy from renewable sources increased to 71% versus 20% in 2021
- ✓ Scope 1 & 2 emissions intensity declined by 38% versus 2021
- ✓ Set objective of net zero greenhouse gas emissions by 2030 in operations
- ✓ Launch of Design-to-X initiative to enhance sustainability and reduce cost
- ✓ Conducted Double Materiality Assessment for European CSRD reporting in 2025
- ✓ Improved ratings with MSCI, Sustainalytics, ISS ESG and S&P Global



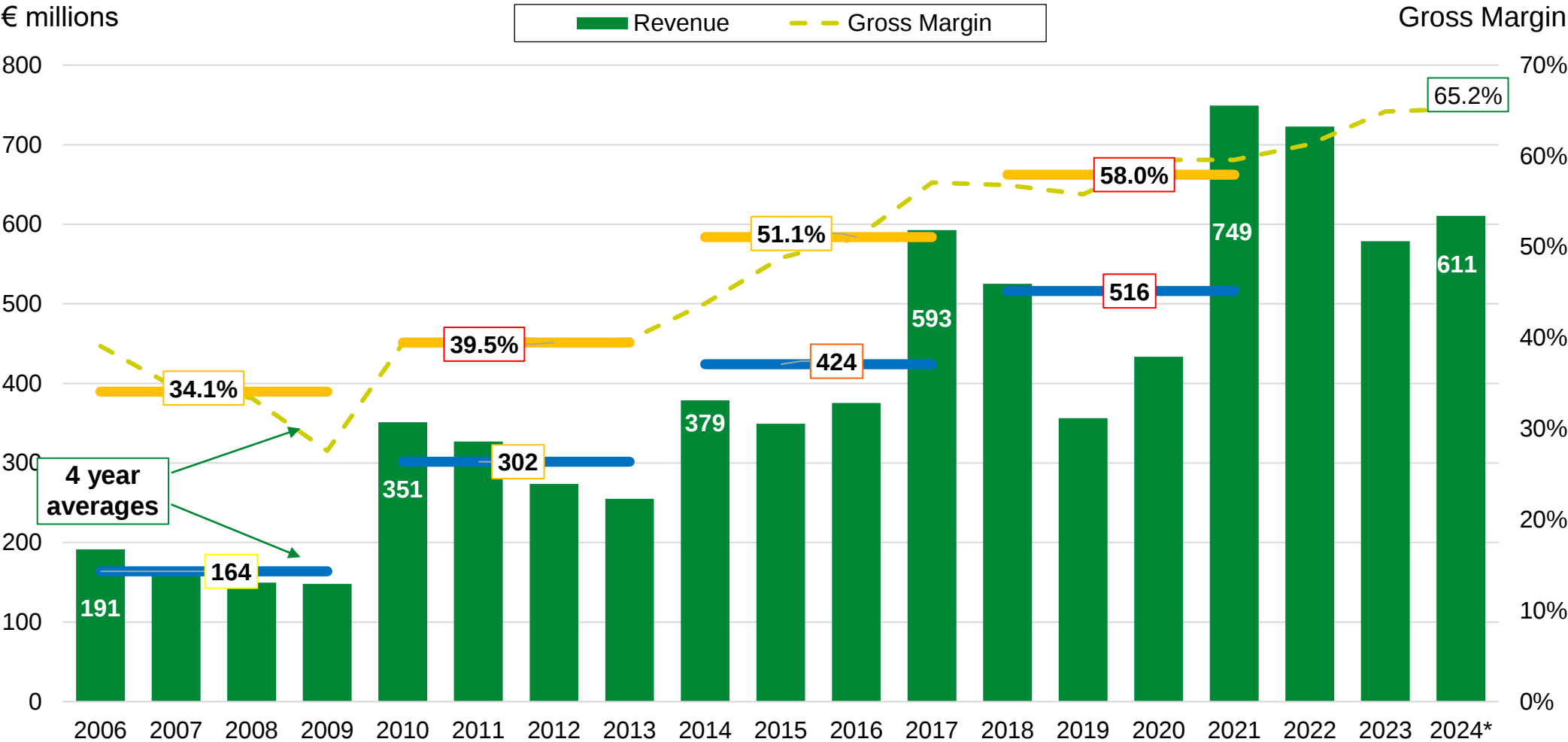
Carbon Neutral By 2050

* As per Greenhouse Gas Protocol. Targets relative to 2021 baseline data



V. FINANCIAL UPDATE AND SUMMARY

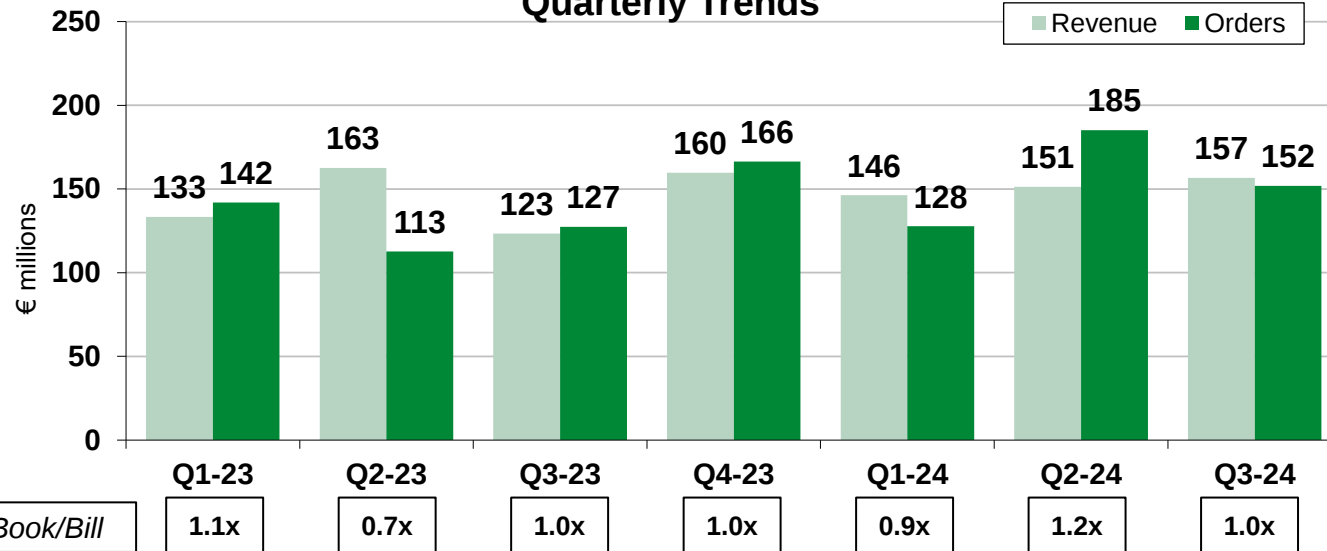
Through Cycle Revenue and Gross Margin Trends



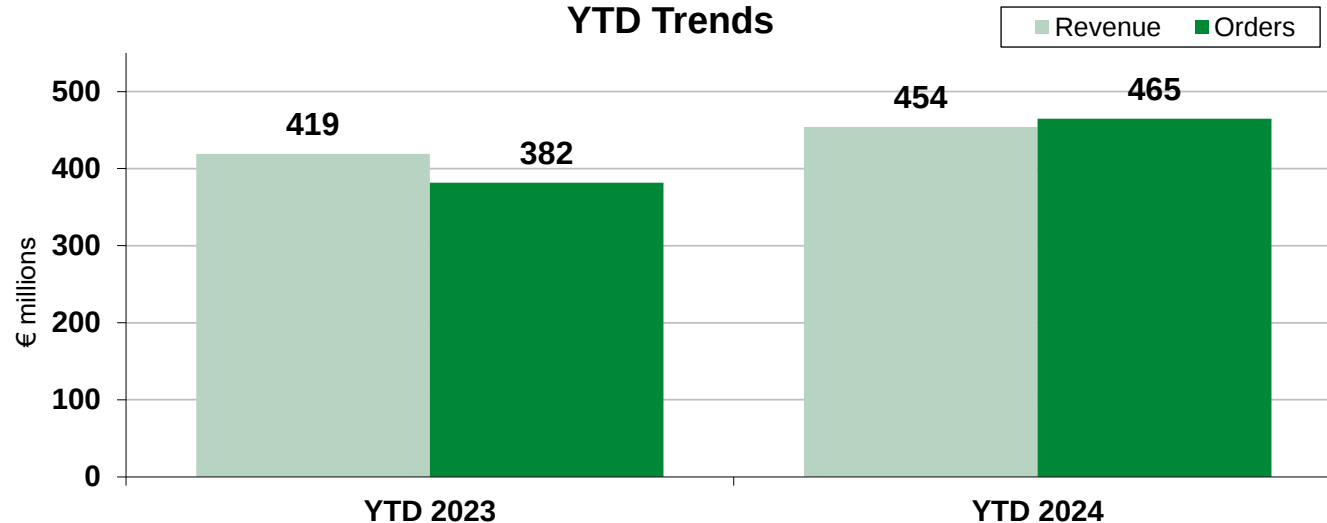
* 2024 including midpoint of guidance for Q4-24

Revenue/Order Trends

Quarterly Trends



YTD Trends



Q3-24 vs. Q2-24

- **Revenue: +€ 5.4 million (+3.6%)**
 - Above mid point of guidance
 - Higher computing including hybrid bonding and photonics
- **Orders: -€ 33.4 million (-18.0%)**
 - Decreased sequential hybrid bonding orders

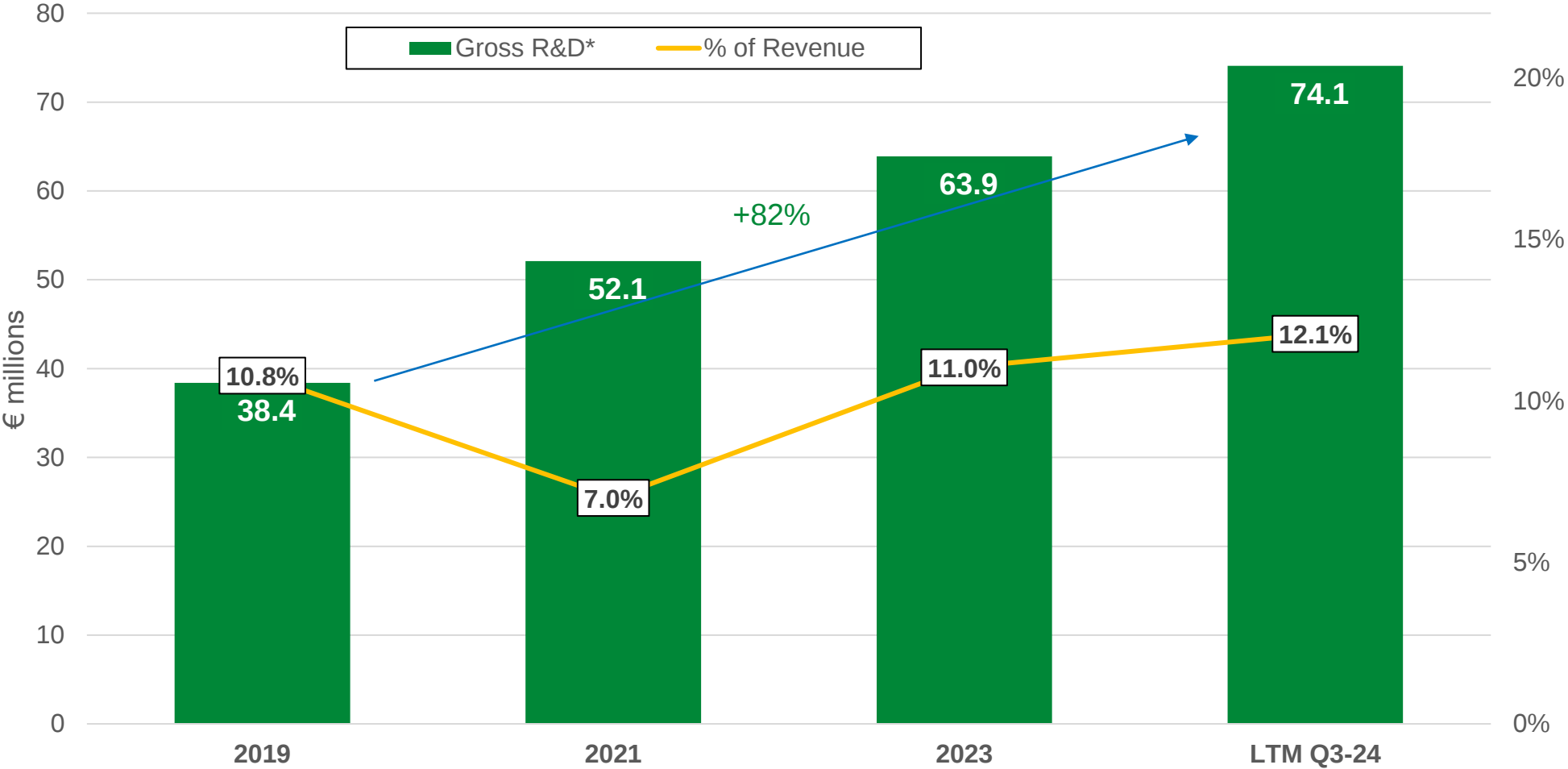
Q3-24 vs. Q3-23

- **Revenue: +€ 33.3 million (+27.0%)**
 - Higher computing including hybrid bonding, photonics and other AI applications
- **Orders: +€ 24.5 million (+19.2%)**
 - Increased hybrid bonding orders

YTD-24 vs. YTD-23

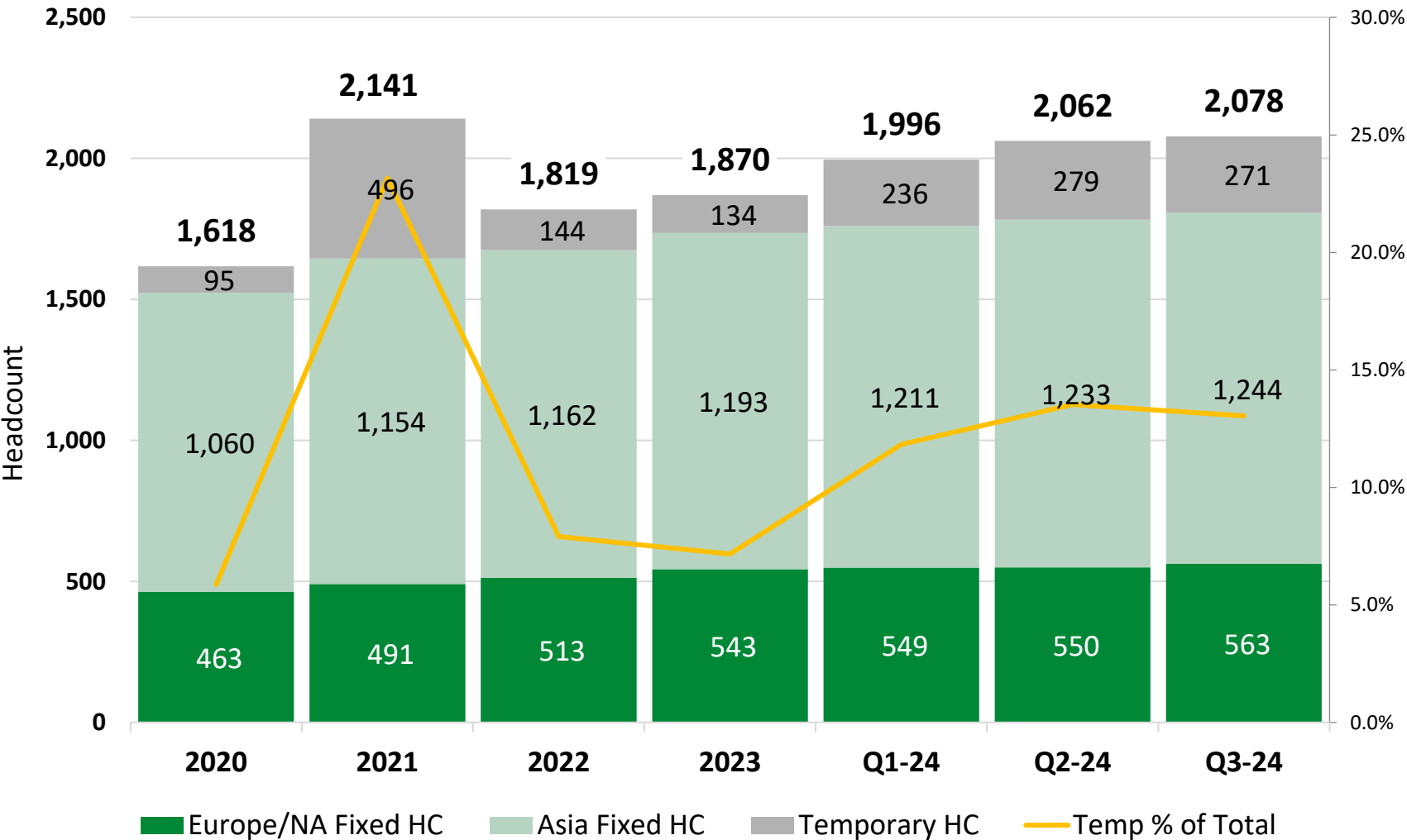
- **Revenue: +€ 34.9 million (+8.3%)**
 - Increased demand by computer end markets
 - Hybrid bonding and photonics applications
 - Taiwanese and Korean subcontractors
 - Partial offset: lower automotive and mobile
- **Orders: +€ 82.9 million (+21.7%)**
 - Increased hybrid bonding and photonics
 - Partial offset: lower automotive and mobile

Significant Expansion of R&D Spending in Support of New Product Introductions



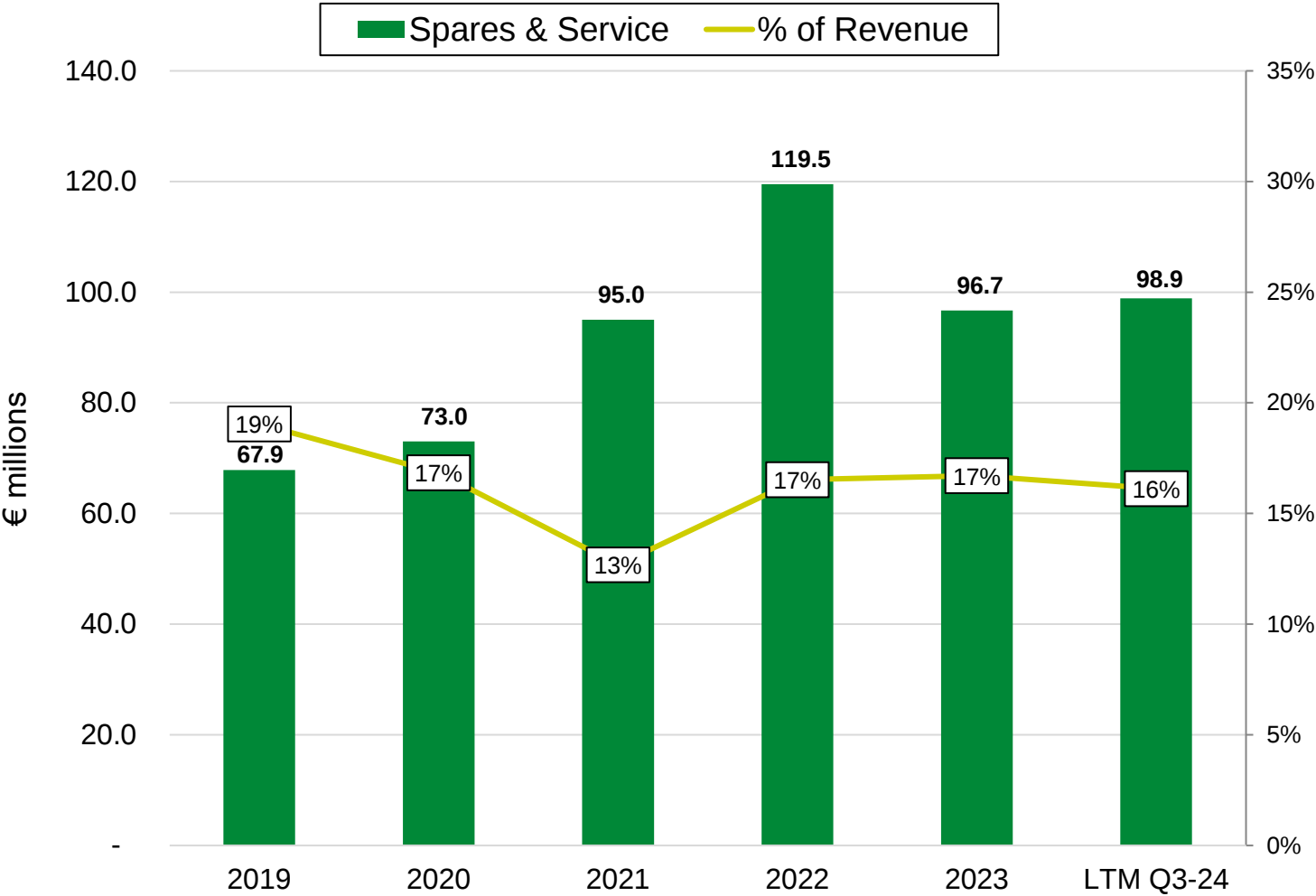
* Gross R&D spending excludes impact from capitalization/amortization of R&D costs

Headcount Trends



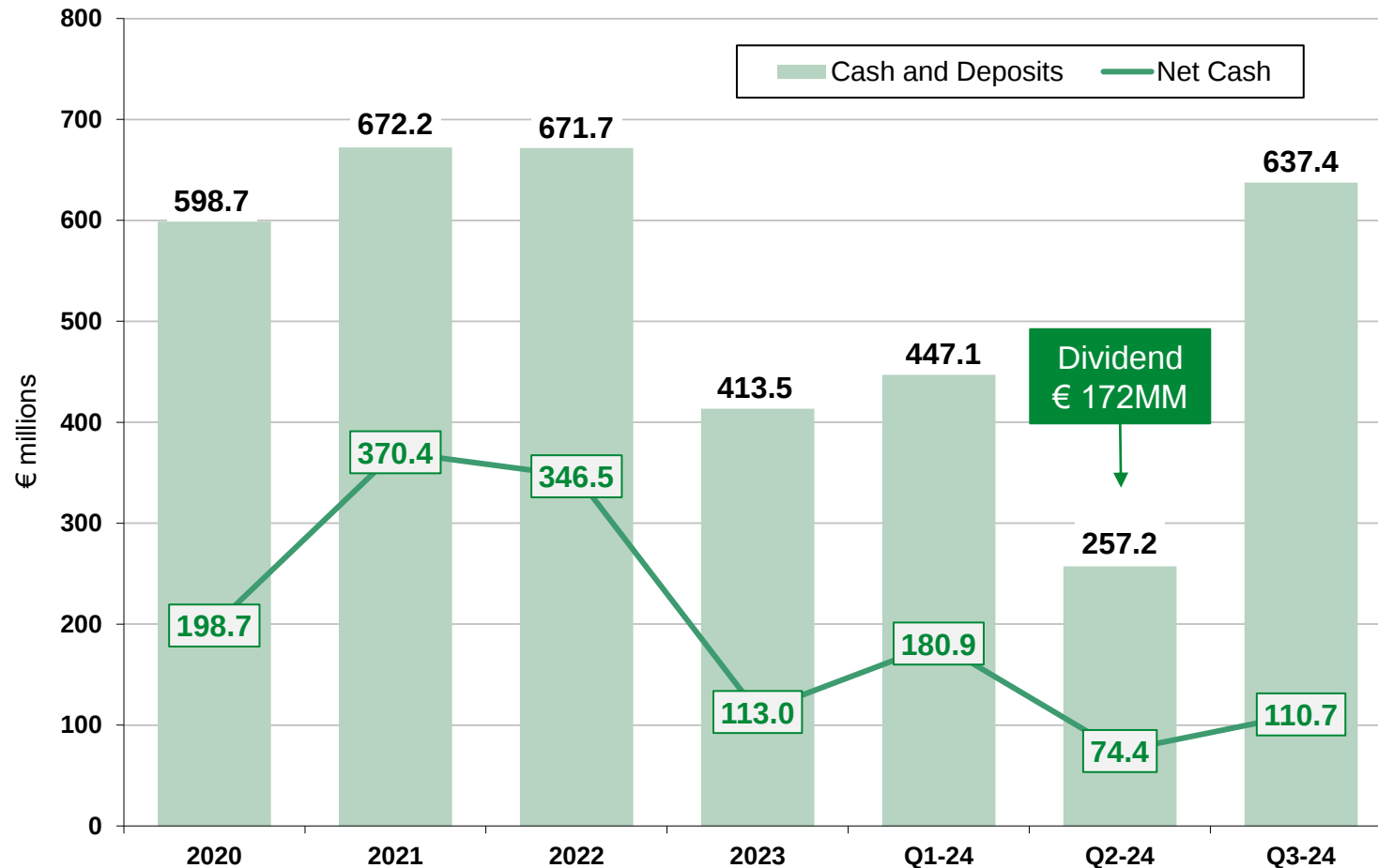
- Increasing European and Asian fixed headcount to support wafer level assembly expansion
- Increasing temporary Asian production headcount this year to support order growth

Spares/Service Activities Represent Important Area of Growth



- **Increased to 15-20% of revenue since 2017**
 - Diverse customer base
 - Less cyclical part of business
 - Highly profitable
- **Revenue will increase as installed base grows, particularly wafer level**
- 44% growth from 2019 to 2023

Strong Liquidity Position Maintained. Net Cash Increased Both Sequentially and Year Over Year



Q3-24 vs. Q2-24

- Cash and deposits of € 637.4 million
 - + € 380.2 million primarily due to:
 - + € 350.0 million Senior Note issuance
 - + € 72.0 million cash flow from operations
 - - € 27.8 million capital allocation
 - - € 6.4 million Senior Note issuance costs
 - - € 4.4 million capitalized R&D
 - - € 2.1 million capex
- Net cash of € 110.7 million = 18% of LTM revenue
 - + € 36.3 million or 48.8%

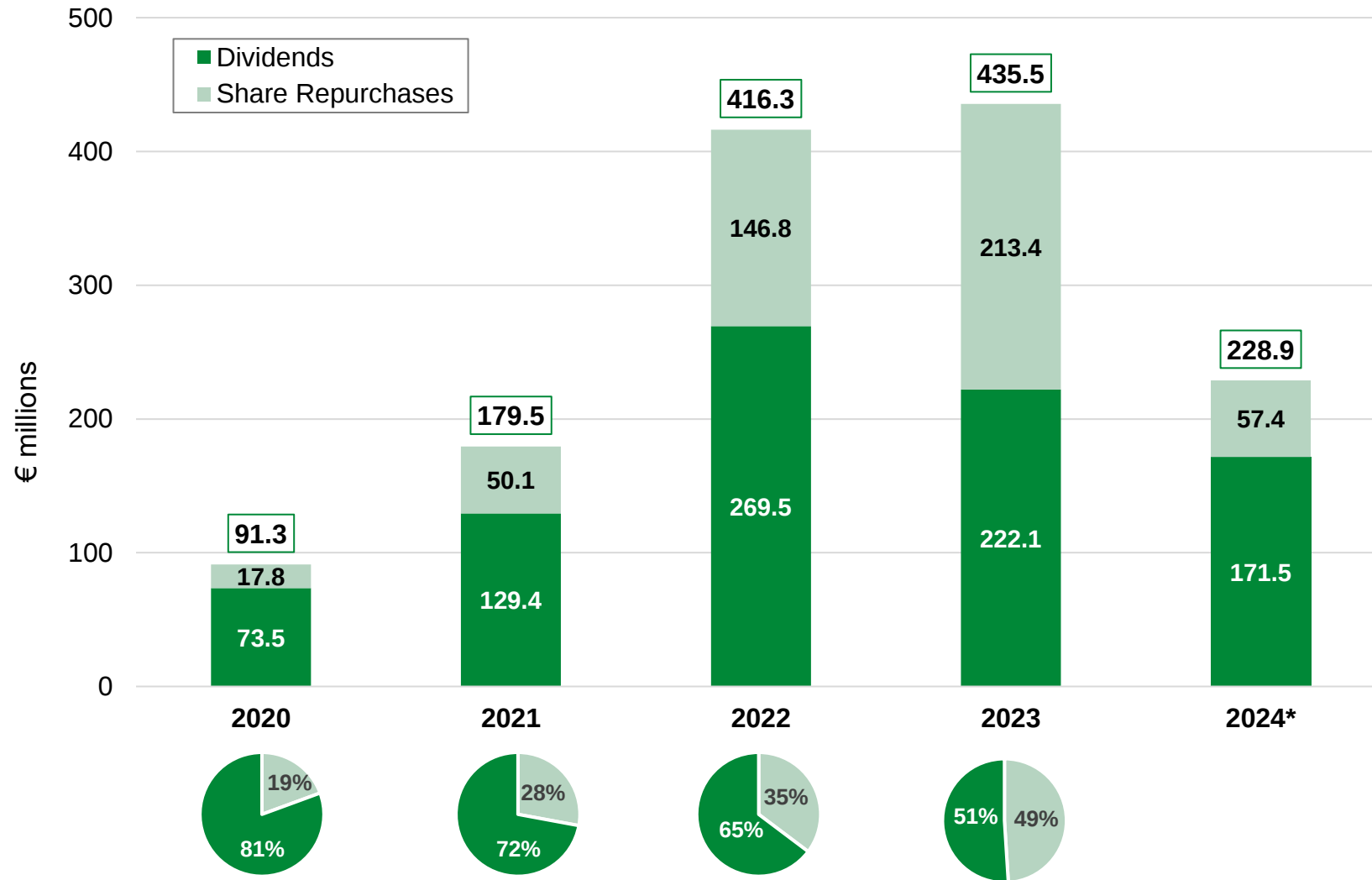
Q3-24 vs. Q3-23

- Net cash + € 20.5 million or 22.7%

Notes outstanding:

- Convertible Notes: € 199.3 million
- Senior Notes: € 350.0 million

Attractive Capital Allocation Policy Continues



- **€ 2.0 billion distributions since 2011**
 - ~€ 200 million distributed in 2024 through Q3
- **New € 100 million share repurchase program:**
 - € 7.0 million purchased through September 30, 2024 at average price of € 110.55

* Includes share repurchases through September 30, 2024

Guidance Q4-24 and FY 2024

€ in millions

Q3-24

Q4-24

Revenue

€ 156.6

+10%
to
-10%

Gross Margin

64.7%

63% - 65%

Operating Expenses

€ 46.2

+5%
to
0%

FY 2024E*

vs. FY 2023

€ 610.7

+5.5%

65.2%

+0.3
pts

€ 200.1

+23.2%

* Assumes midpoint of guidance for Q4-24

**Assembly market
ever more critical in
semiconductor value
chain**

**Disciplined strategic
focus has created an
industry leader**

**Long term secular
trends drive
advanced packaging
growth**

**Wafer level assembly
new growth
opportunity**

**Market presence has
grown via key IDMs,
supply chains and
partners**

**Tech leadership and
scalability result in
superior financial
returns**

**Commitment to
sustainable growth
and fighting climate
change**

**Attractive capital
allocation policy**