

A decorative graphic on the left side of the slide, featuring five horizontal, overlapping bands with a dark purple and blue color palette, containing abstract, glowing patterns that resemble data or light trails.

# Semiconductor Market Outlook: AI Investment Supercycle

2024 GSA Asia Pacific Executive Forum- Taiwan-  
October 30, 2024

# Agenda

Key takeaways

Current market

IT and AI investment

Semi Market Forecast

AI Semi Infrastructure upside scenario

Essential guidance

# Key Takeaways

Semiconductor market sees gradual improvement in utilization rates, starts to rebound strongly in 2H'24 as 2-year inventory correction subsides, and AI inferencing starts to scale

- Revenue growth and recovery this year will be concentrated in HPC, AI, and memory
- Top line semiconductor revenues growing 21%; followed by double digit growth in 2025
- Automotive, Consumer, and mature foundry markets continue to remain soft, with elevated inventory, excess capacity, resulting in strong pricing pressure
- AI Cumulative economic impact equals 3.5% of global GDP in 2030
- Global Enterprises will spend \$1.5 trillion on IT between 2025-2028; over \$300 billion on AI platforms
- Long term semi revenue growth remains on track for a double digit CAGR from 2024-2028 after 2023 correction



# Current Market Outlook

# Market Scenario Next Year

- IDC sees better-than-expected memory, datacenter, and smartphone demand in 2025
  - (+) Nvidia GPU and networking, and AMD AI demand better than anticipated
    - (+) Cloud Service Providers (CSPs) will continue to invest heavily into 2025
    - (-) CSPs may pause spending in 25H1 to evaluate service levels as power efficiency an area of investment and focus
    - (+) Enterprise to start pursuing on-prem AI datacenter upgrades in 1H25
  - (+) Smartphone semiconductor revenues increasing
    - (+) Large stimulus in China begins to awaken dormant consumers driving demand for smart appliances and automotive EV adoption
    - (+) 2024/2025 unit volume better than expected
    - (+) 5G turned on in emerging markets in LATAM, Indonesia, and India.
      - Shift in production of phones beyond China, specifically India, to support local initiatives in the country drive investment and partnerships with new set of customers
- (+) AI Smartphones begin healthy ramp in 2025 accelerating semi content growth

# Market Scenario 2025 (con'td)

- (+) HBM bit demand increasing while DRAM ASPs better than expected
  - (+) HBM demand crowding out DRAM capacity in near term
  - (+) ASPs to remain firm in Q4 and in Q1 due to limited capacity
  - Strength in memory demand will begin to drive capital investments in 2025
- (-) Automotive & Industrial inventory correction to persist, revenues down to flat respectively 25Q2
  - (-) China contributing the most to softness in Automotive
  - (-) High semiconductor inventory across Industrial & Automotive will take longer to normalize
  - (+) Automotive chip demand bottom 4Q/Q1 with unit production demand to start improving in 2H25.



# IT Outlook & Key AI Developments

# Today's Tech Market Climate

## Economic Indicators

GDP and IT spending resilient, but downside risks in play

Delayed interest rate cuts may affect timing of some capital spending

Tech spending is expected to be strong, but some new projects and upgrades are vulnerable to budget cuts in a downside scenario

## Buyer Trends

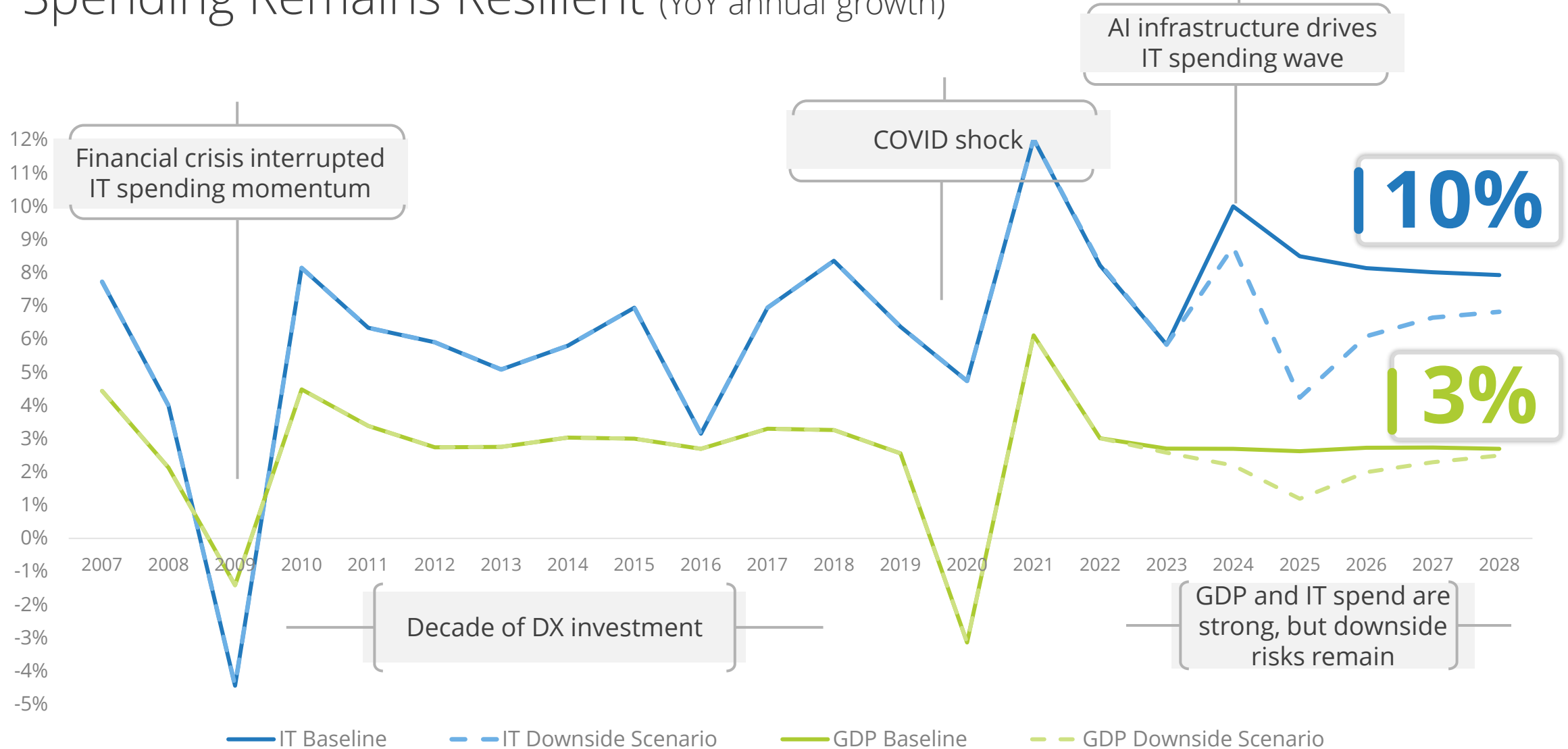
Overall IT budgets have been surprisingly strong, AI infrastructure driving demand; as cloud resets

Software and cloud investments drive overall tech spend throughout the forecast period

**We expect IT growth at 2.5-3.5x GDP for 2024**



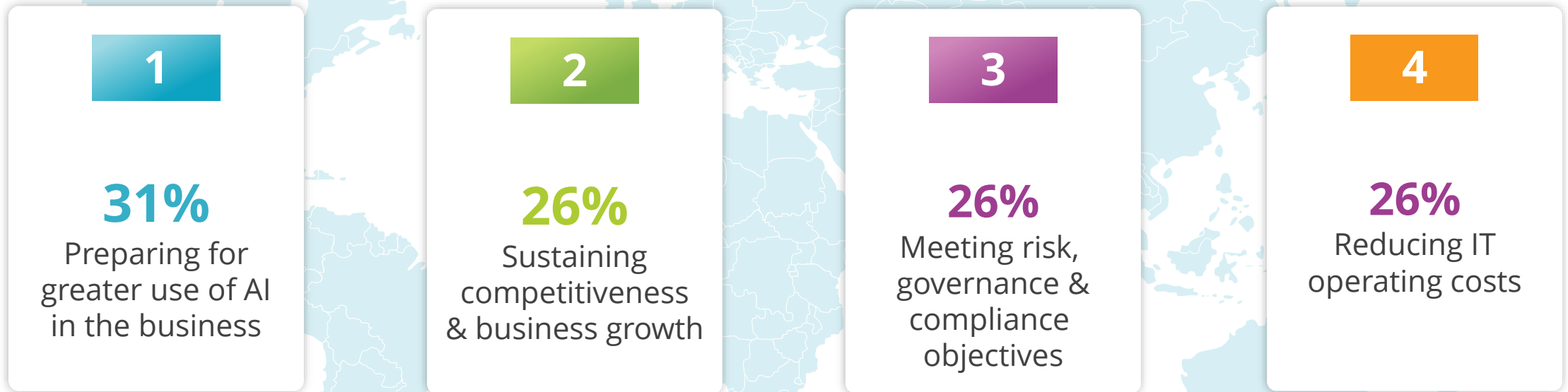
# IT Spending Remains Resilient (YoY annual growth)



Source: IDC Worldwide Black Book (September 2024) growth in constant currency; excludes telecom spending and business services

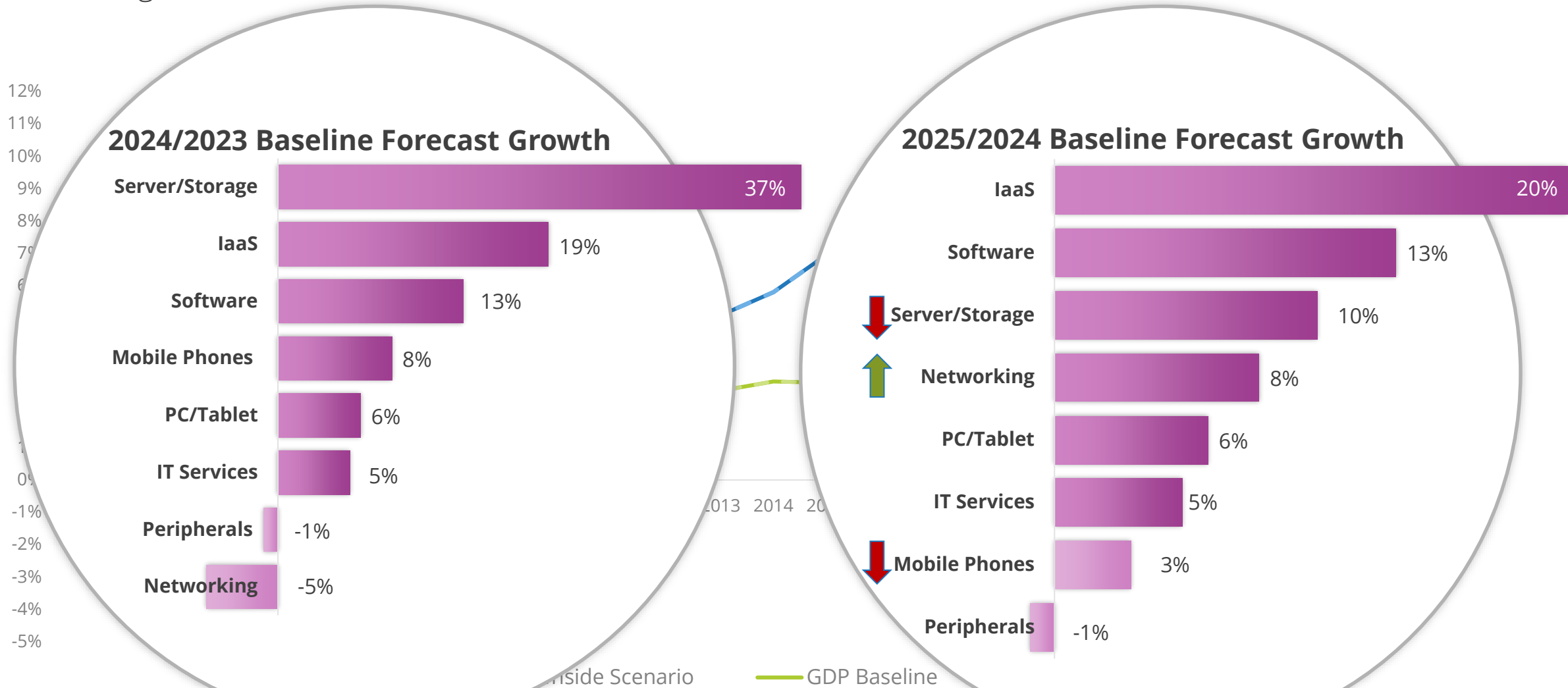
# September 2024: Key Factors Driving Spending Increase Priorities

What are the top factors driving the significant increases in 2025 spending in selected areas



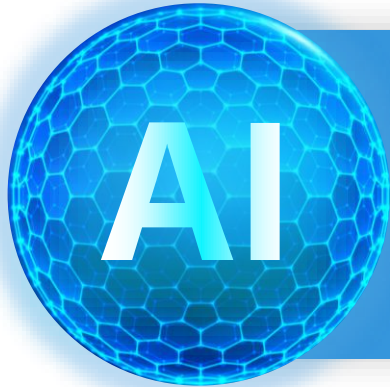
# Where Is The Growth?

(YoY annual growth)



Source: IDC Worldwide Black Book (September 2024) growth in constant currency; excludes telco and business services

# The Global AI Economic Impact



Cumulative **Global Economic Impact** of  
**\$19.9 Trillion by 2030.**  
3.5% of global GDP in 2030

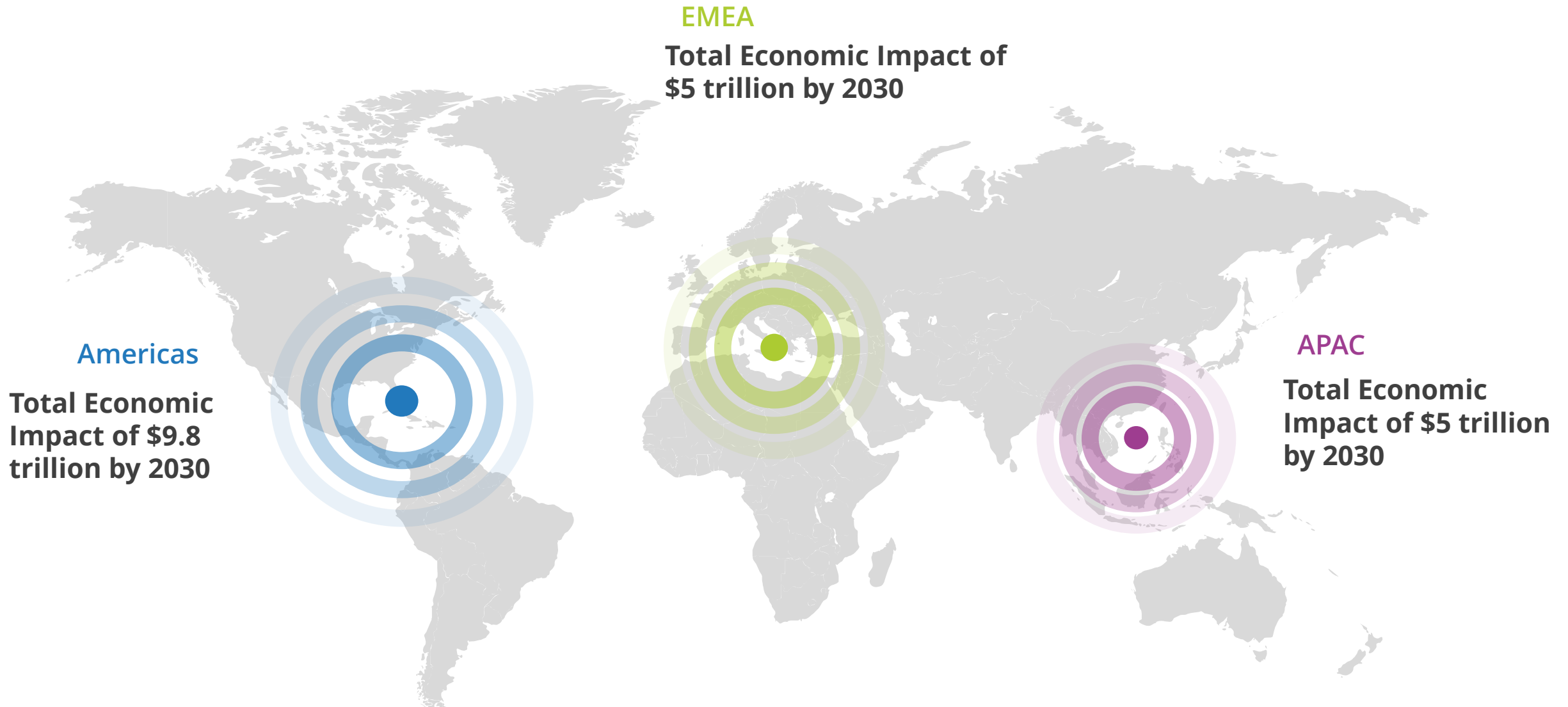
Increased **spending on AI solutions and services** driven by accelerated AI adoption

Economic **stimulus among AI adopters**, seeing benefits in terms of increased production and new revenue streams

Impact along the whole **AI providers supply chain**, increasing revenue for the providers of essential supplies to AI solutions and services providers

**In 2030, every new dollar spent in AI solutions and services by AI adopters will generate \$4.6 into the economy, in terms of indirect and induced effects.**

# Global AI Economic Impact by Region



Note: Regional economic impact is calculated as the cumulative sum of the direct, indirect, and induced economic impact from 2024 to 2030.

# What is at Stake

## All AI (2023-2028)

32.8% CAGR  
16.4% of 2028 IT spend

## GenAI (2023-2028)

73.5% CAGR  
6.7% of 2028 IT spend

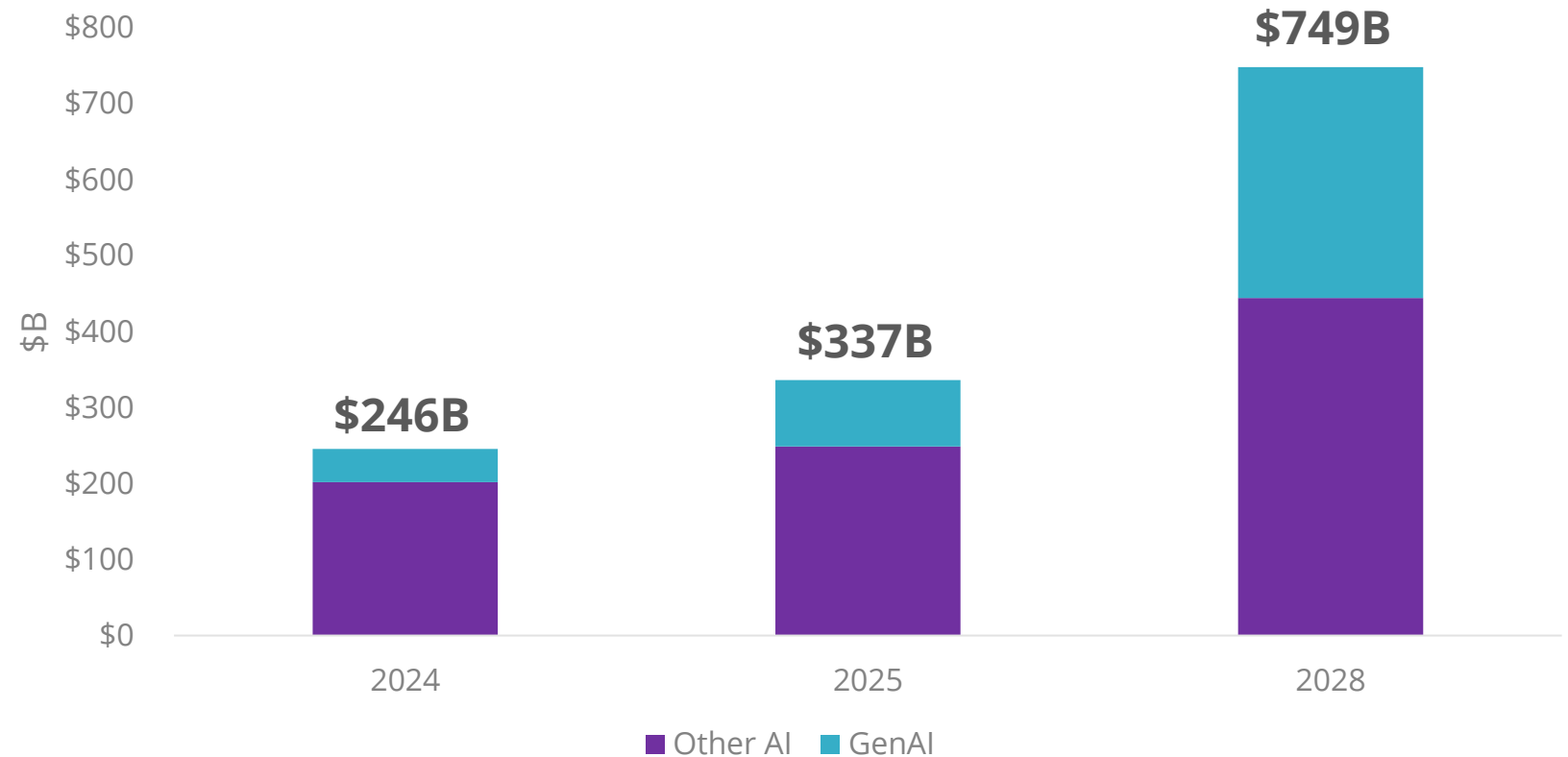
## Enterprise Predominates

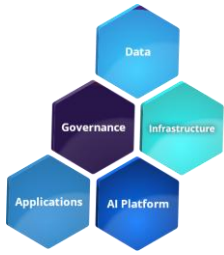
67% of 2025 AI spend  
71% in 2028

## GenAI: Driving Better Use of Entire AI Budget

41% of all AI spend in 2028

## Worldwide AI Forecast (2024-2028)





# Leading the AI Tech Operating Model Transition

**\$1.5T**

Enterprises (25-28)

**+\$285B**

for Services

## Customer Clusters



Risk-averse



Balanced



Operationally focused

**IDC**  
prediction  
2024

By 2026, 75% of G1000 adopt value-based AI economics models covering tech acquisition cost, productivity gains, decision making, and innovation



# Semiconductor Market Forecast



# IDC's Market Forecast (September 24)

- We expect total market to be +21.5% in 2024, and +15.9% in 2025, vs. +21.1% and +15.2% in June
- We see better-than-expected memory, datacenter, and smartphone chip demand in 2024 and 2025
- We raise 2026 from flat to +2.7% due to better memory bit demand
- We lower our growth rates for 2027 and 2028 as CSPs front load AI investments in 2024-2025
- Our 2027-2028 forecast assumes memory is flat-to-down despite positive demand dynamics from AI enabled edge and endpoint application ramping in 2027.

# Market Scenario for 2026

- We raised our growth rate from flat to +2.7%
  - (+) Memory companies to begin CapEx investments in mid 2025 leading to incremental supply in 2026
  - (+) AI PC and AI Smartphones launching in 2025 will continue to ramp through 2026
  - (+) Enterprise AI investment continues to ramp
  - (-) additional capacity in Non-memory will soften pricing negotiations in 2026 and bring in lead times specifically in mainstream and mature nodes
  - (-) Industrial, and Automotive target inventory levels will be back to normal as new designs drive demand

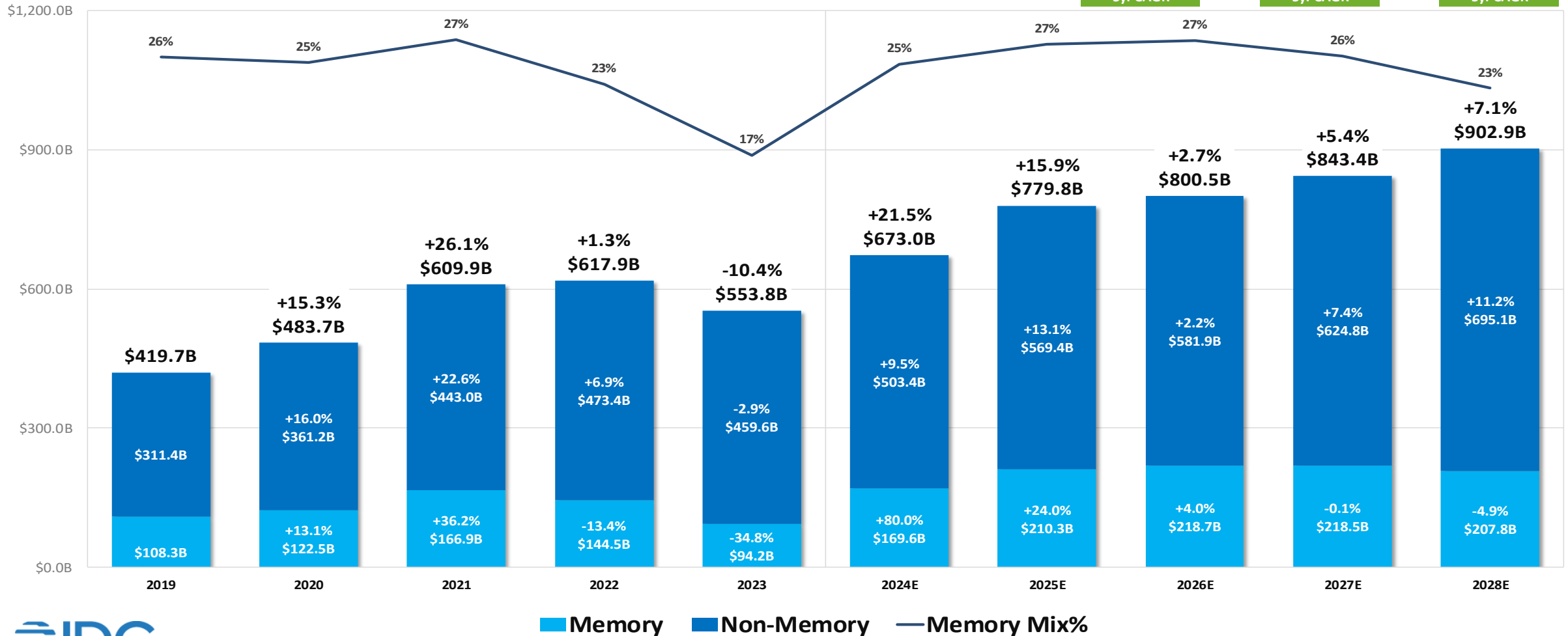
# Market Scenario 2027-2028

- We are lowering growth for 2027 and 2028 given the faster than anticipate growth in datacenter in 2024-2025.
  - IDC sees +5.4% and +7.1% growth with 2027 and 2028, respectively, vs +7.1% and +11.5% previously
  - (-) CSPs capex growth moderates as CSPs broaden product offerings to include lower tier segments and shift investments to the edge
  - (+) AI PCs and Smartphones launched in 2025 and 2026 will accelerate AI to the Edge and IoT endpoints
  - (+) Enterprise AI investment ramps strongly into 2027-2028 as cloud pricing on-prem costs are optimized
  - (+) Automotive electrification and autonomization, and Industrial digital transformation and decarbonization accelerate as semiconductor supply chains leverage AI to automate and scale
- (~) Memory revenue growth remains wild card in 2027-28 as supply comes online to meet increased AI workloads

across datacenter, edge, client, and endpoints.

# Semiconductor Total Market

2024-2028 Forecast  
Revenue | USD Billion

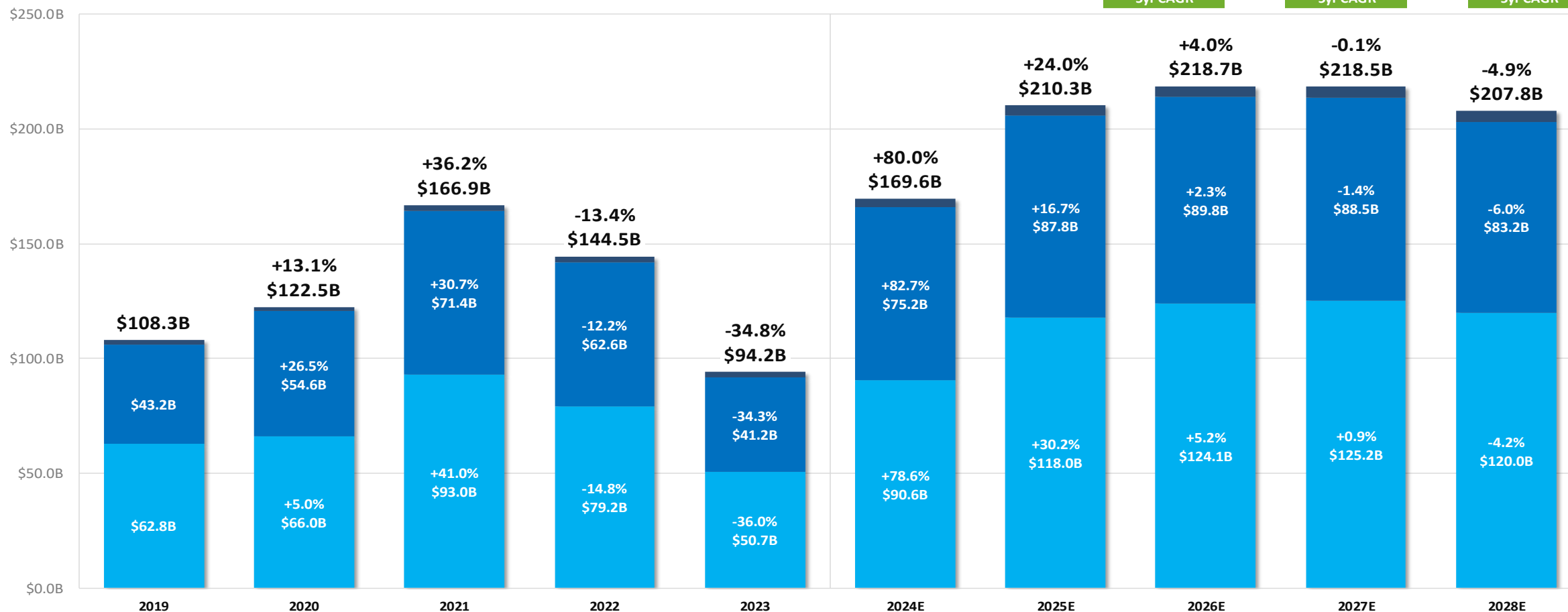


Source IDC Estimates

# Memory Market

## 2024-2028 Forecast by Memory Type

Revenue | USD Billion



**+18.8%**  
DRAM  
5yr CAGR

**+15.1%**  
Flash  
5yr CAGR

**+17.1%**  
Total Memory  
5yr CAGR



■ DRAM ■ Flash ■ Other Memory

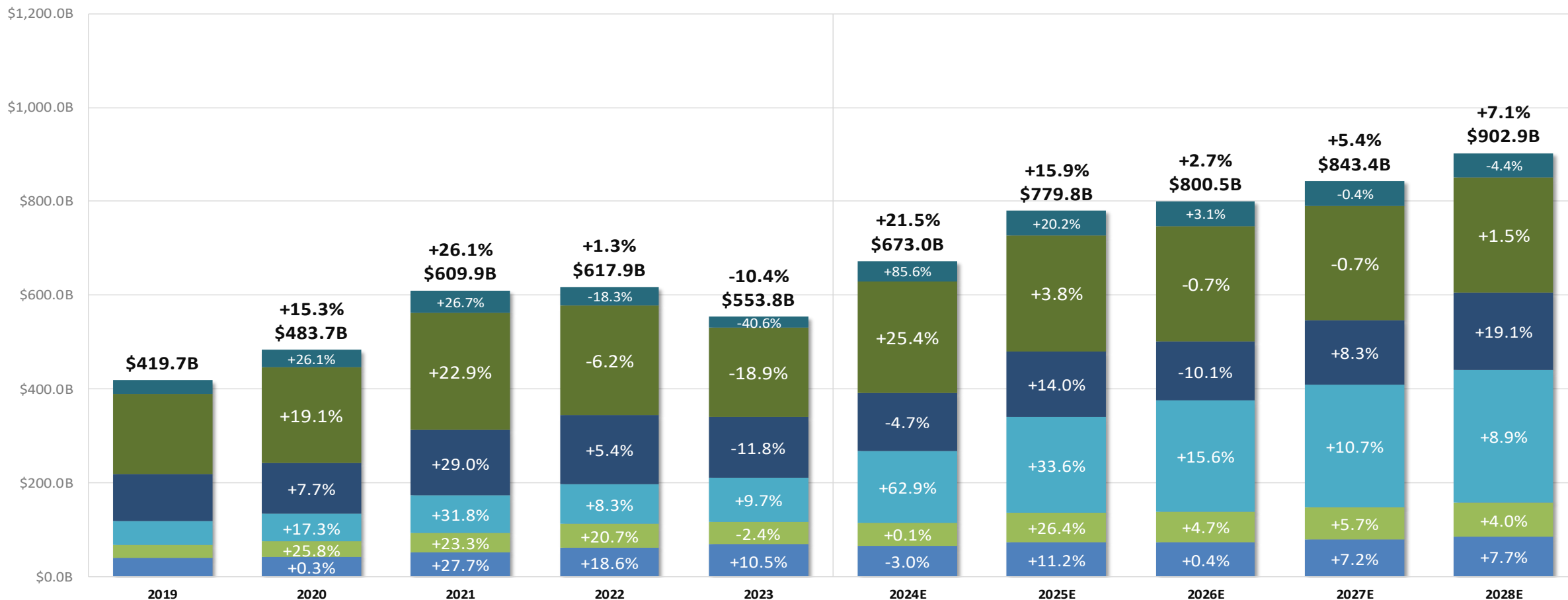
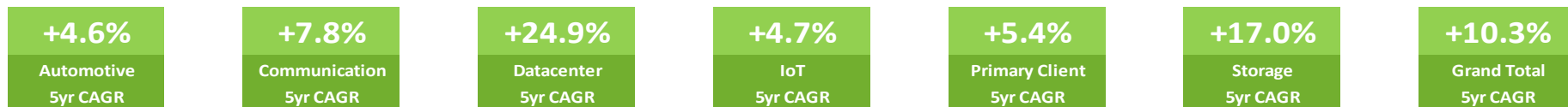
DRAM, NAND revised April, October

Source IDC Estimates

# Total Market by Deployment

## 2024-2028 Forecast

Revenue | USD Billion



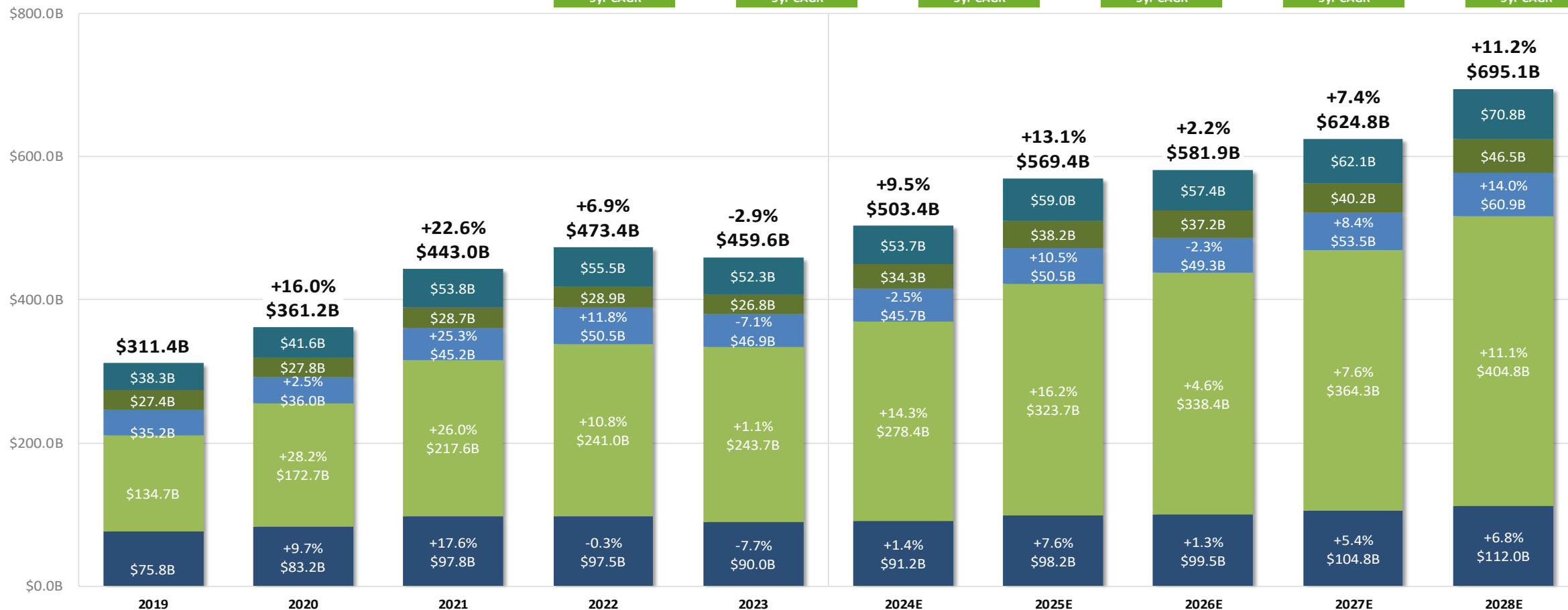
■ Automotive ■ Communication ■ Datacenter ■ IoT ■ Primary Client ■ Storage

Source IDC Estimates

# Semiconductor Markets **ex-Memory**

## 2024-2028 Forecast by Device Type

Revenue | USD Billion



■ Microcomponents ■ Application Specific ■ Analog ■ Optoelectronics ■ \*Other

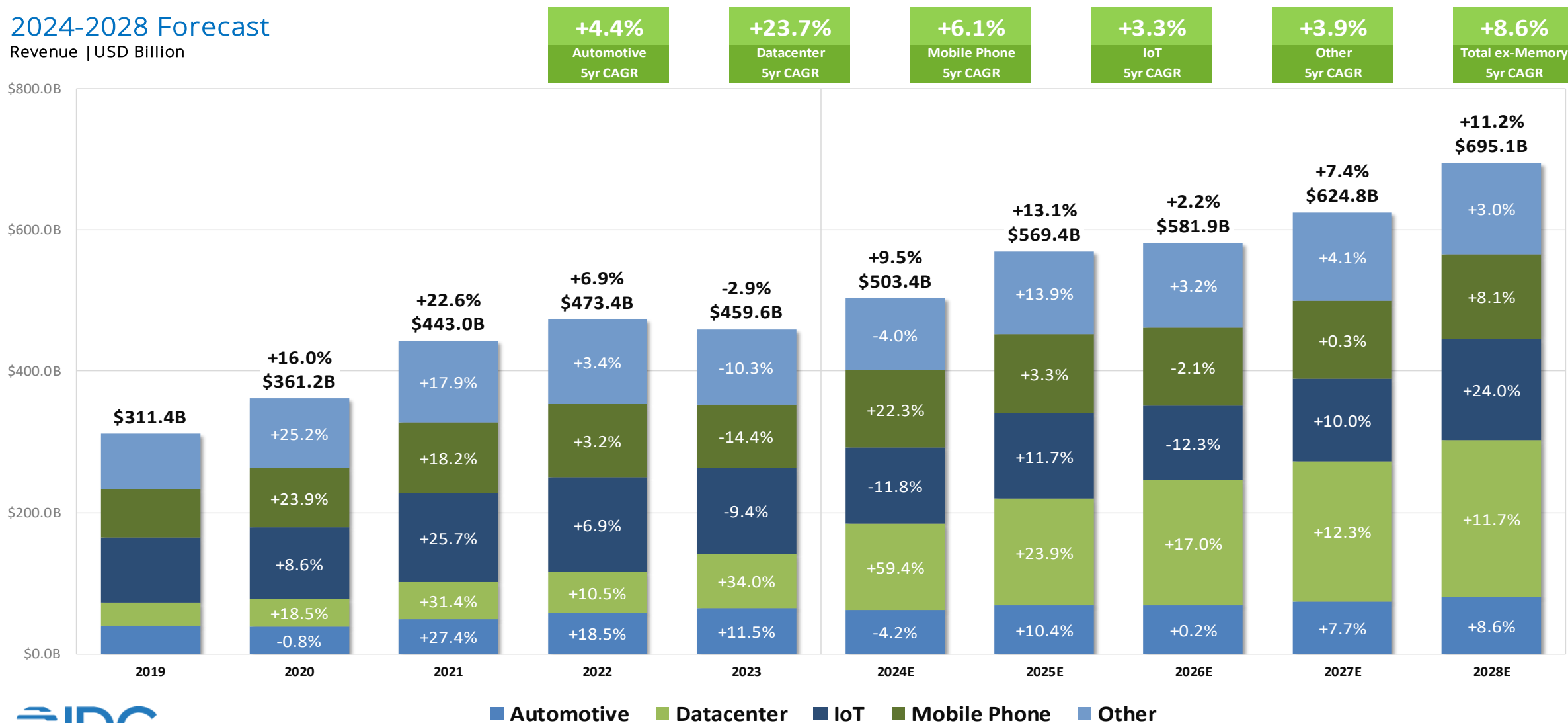
\*Other includes Logic, Discretes Sensors Actuators

Source IDC Estimates

# Focus Markets *ex-Memory*

## 2024-2028 Forecast

Revenue | USD Billion



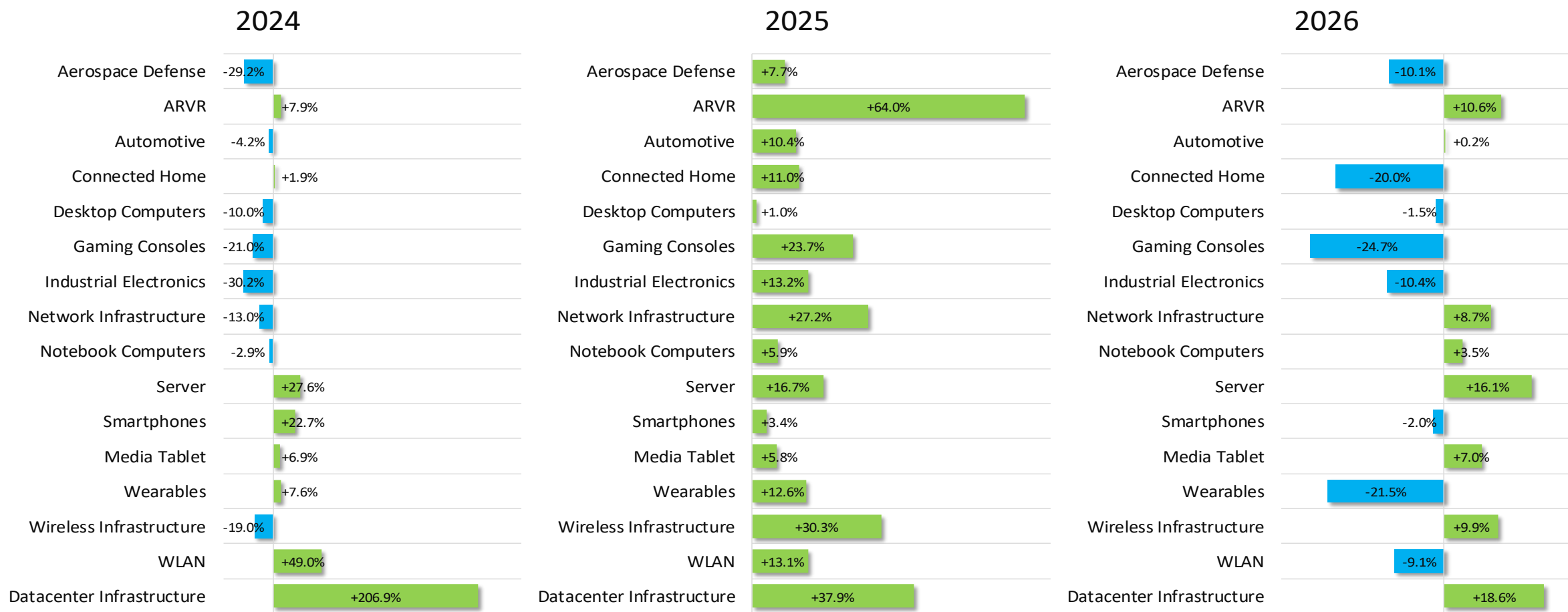
Source IDC Estimates



# Key Application Markets **ex-Memory**

2024, 2025, 2026 Forecast

Revenue | USD Billion



Source IDC Estimates



# AI Semiconductor Infrastructure Current vs Upside Scenario

# Datacenter Application Markets

## Deployment End Market: Enterprise & Cloud

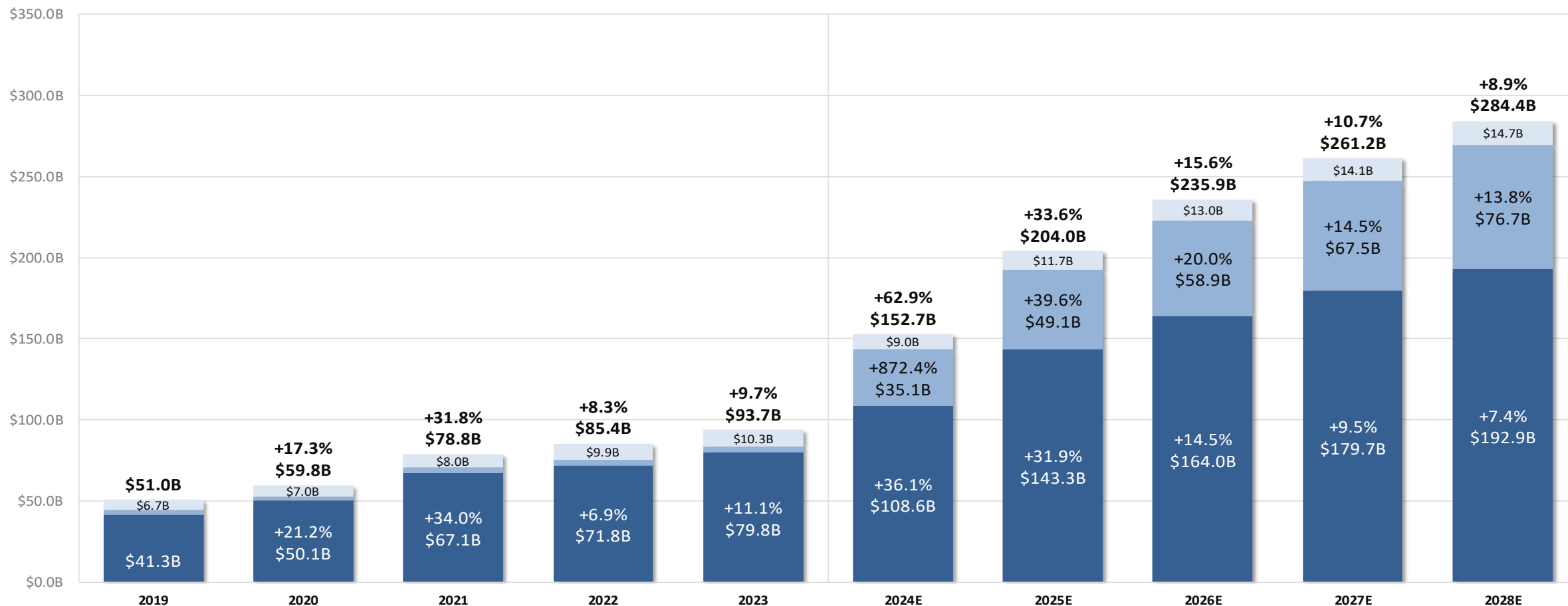
Revenue | USD Billion

**+19.3%**  
Server  
5yr CAGR

**+84.2%**  
Other Network  
5yr CAGR

**+7.3%**  
Switch and Router  
5yr CAGR

**+24.9%**  
Total  
5yr CAGR

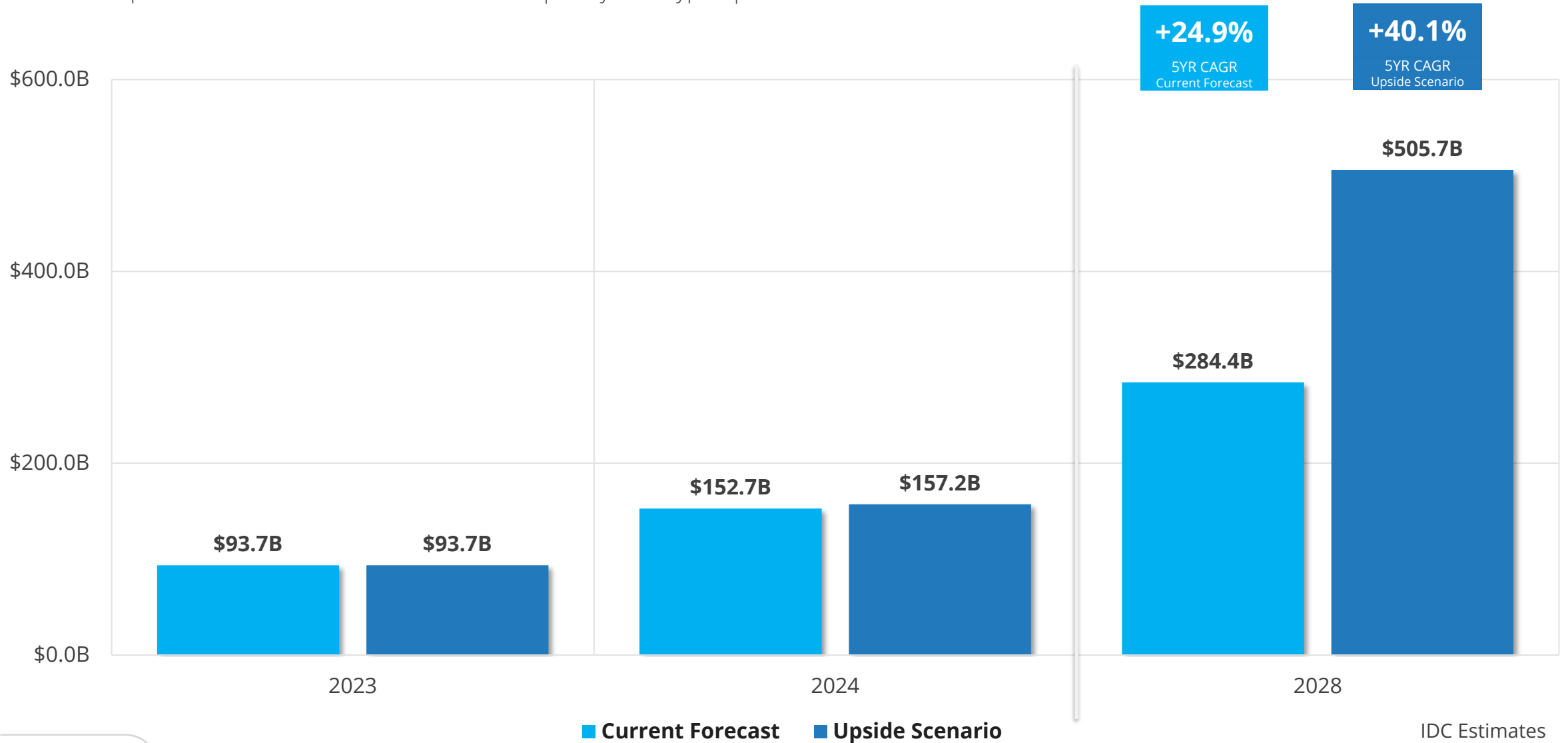


■ Server ■ Other Network ■ Switch and Router

Source IDC Estimates

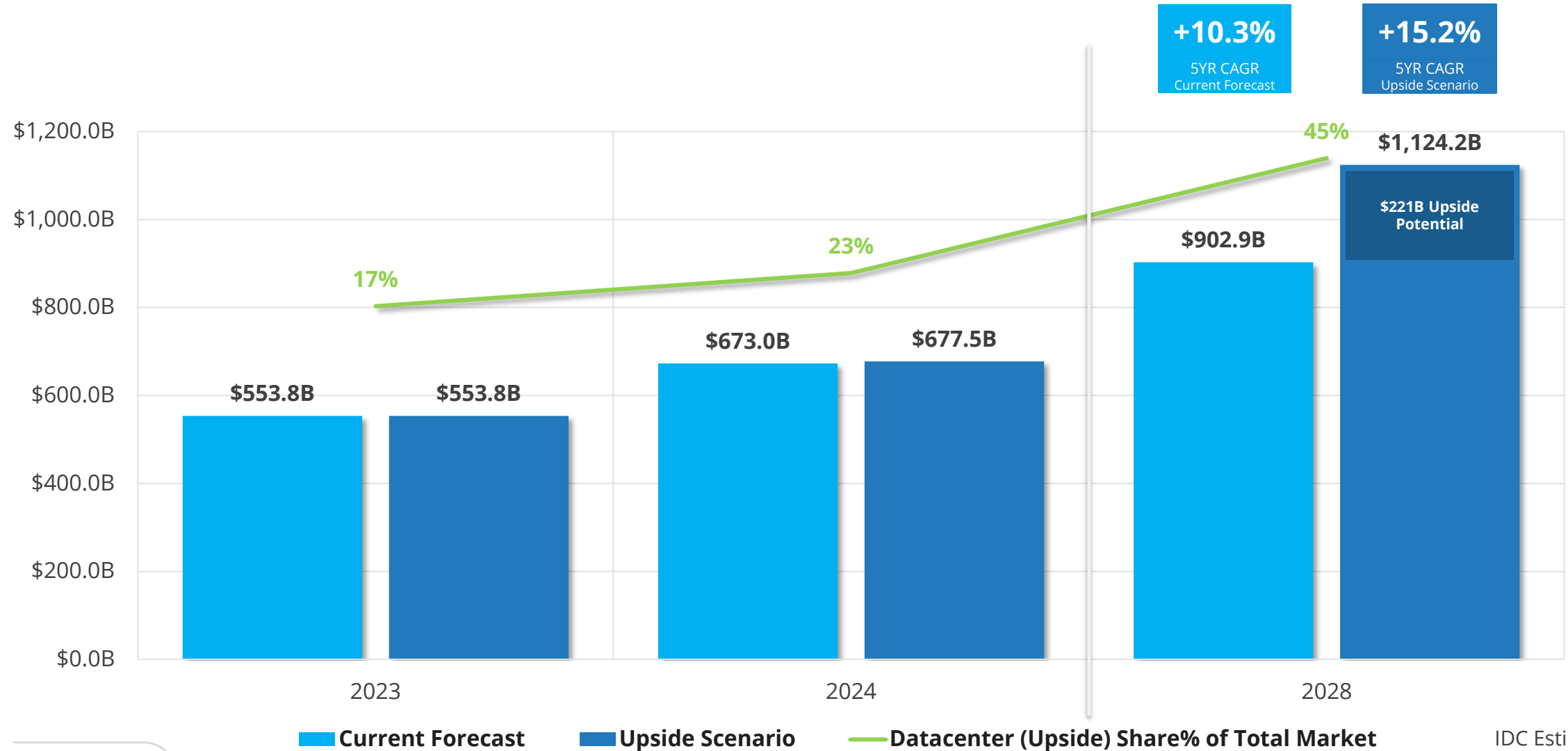
# Datacenter Semiconductor Forecast (upside)

Current vs. upside scenario semiconductor revenue | All system types | USD Billion



# Semiconductor Total Market Forecast

Current vs. upside scenario | Datacenter AI gross margin and ASP expansion, system integration enables moving up value stack and drives industry revenue acceleration | All device types | USD Billion





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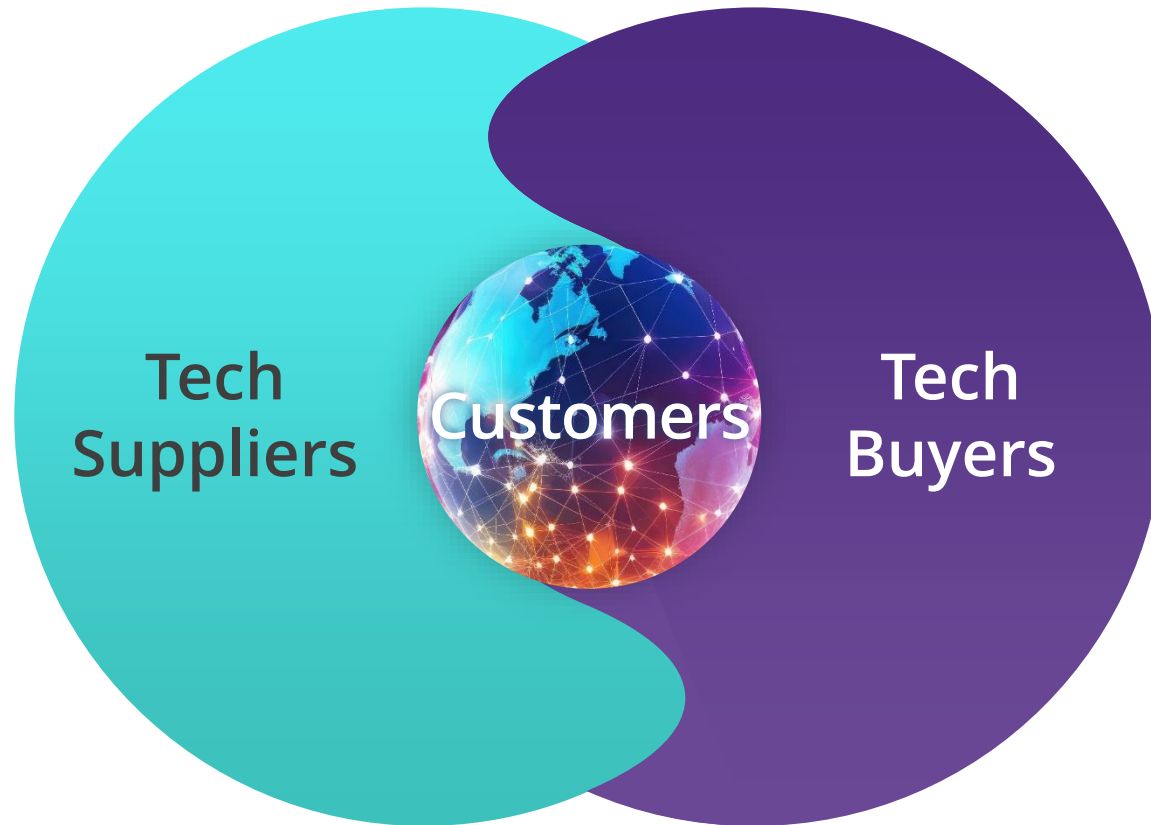


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Plan



Market



Sell

1

Assess the market

- Custom Market Models
- Market Share & Competitive Analysis
- Vertical analysis
- Spending Guides
- Due Diligence & Investment Analysis

Custom Analytics

2

Know Your Customers

- Quantitative primary research
- Focus groups
- Brand equity index
- Customer Personas
- Gap analysis
- Market simulator

Buyer Behavior

3

Build Awareness

- Existing Research
- Guest Blogs
- Analyst Videos
- Infographics
- Webcasts / Speaker Engagements
- Infobriefs
- Press Support

Licensed & Customized Content

4

Generate & Nurture Leads

- Custom Research
- Spotlights
- iViews / White Papers
- Lead Gen Assessment Tools
- Multimedia
- E-books
- Partner Marketing

Thought Leadership

5

Support Decisions

- Business Value Research
- ROI Spotlights
- ROI / BV White Paper
- Business Value / ROI Calculators (Snapshot Tools)
- Business Value Selling Tools

Business Value

6

Engage the Right Channels

- Partner Program Validation
- Channel Industry Best Practices
- Competitive Channel Insights
- Routes to Market Segmentation & Profitability Analyses

Partnering

7

Enable & Educate Sellers

- Market Education Workshops
- Buyer Conversation Guides
- Partner Enablement Success Guides
- Online & Video Tutorials
- Interactive Selling Tools

Sales Enablement