2035 - THE EDGE AI REVOLUTION: WHEN 80% OF AI MIGRATES TO THE EDGE

From centralized AI to distributed intelligence:
Technologies, Markets and Strategic Issues 2020-2035

Target Sectors

Industry 4.0, Healthcare, Smart Cities, Automotive,
IT & Telecom, Retail, Agriculture, Energy & Utilities

Author
Yannick Gablin
Director – MEA / Digital Services

Alvarez & Marsal

CONFIDENTIAL – NOT FOR DISTRIBUTION

SECTION 1 –

DETAILED TIMELINE

2020 – 2022 : The Awakening of the Giants

When AI left the laboratories to conquer the world

● Art & Creativity   ● LLM Models   ● Code   ● Science   ● Open Source

2020

GPT-3

OpenAI unveils a model with 175 billion parameters.. Emerging capabilities at scale.

175B params | Training: $10M

January 2021

DALL-E

Inaugurates AI-powered visual creation. Transforms the text-image relationship.

Arch. Clip+VAE | 2.5M pic/day

July 2022

Bloom

Democratize multilingual AI. A European alternative to US models.

176B params | 46 languages

November 2022

ChatGPT

The tipping point. 100M users in 2 months. The world discovers the power of AI.

100M users | Val $20B

End of 2020

AlphaFold 2

DeepMind Solves a 50-year-old challenge. Accelerates drug discovery.

98% precision | 200M struct.

June 2021

CoPilot

First coding assistant for the general public. Increases productivity by 55%.

1.2M devs | 40% code auto

August 2022

Art for All

Midjourney and Stable Diffusion make visual creation accessible to all.

10M users | Open Source

ALVAREZ & MARSAL

2023 – 2025 : The Surge

Generative AI is invading every corner of our lives.

Art & Creativity   LLM Models   Competition   Open Source

July 2023
Llama 2
Democratizes access to LLMs. Enables open innovation at scale.

70B params

February 2024
Sora
Transforms professional video creation. Redefines the boundaries of AI realism.

1080p 60s

June 2024
Claude 3.5
Surpasses all benchmarks. Massive enterprise adoption.

2x times faster

March 2023
GPT - 4
Establishes a new standard for reasoning. Native multimodality revolutionizes use cases.

1.76T params

November 2023
GPT - 4 Turbo
Makes AI economically accessible. Massive context window opens new horizons.

128k context

March 2024
Claude 3
Establishes ethics as a competitive advantage. Record window allows for analysis.

200k context

2025
Gemini 3
Native integration into the Android ecosystem. Extreme multimodality.

10M context

ALVAREZ & MARSAL

2026-2030: The Great Consolidation of AI Models

From 153 active or experimental AI models and 42 vendors, to an oligopoly of 25 survivors

⚙️ Consolidation Phases

1 2026: The Great Purge   **-60%**

Rationalization Criteria

Capital > $500M Required
ARR > $50M Mandatory
Distribution > 50M Users

Victims (73 Models)

"Me-too" without differentiation
Underfunded startups
Features sold as products

2 2027 – 2028 : The Great Rebundling   **-50%**

M&A Mechanisms

30+ major acquisitions
40 "Features" tools absorbed
Vertical integration of platforms

Impact (80 to 40 Models)

Microsoft acquires 8 startups
Google is integrating 6 specialists
Anthropic IPO or acquisition

3 2029 – 2030 : The Final Oligopoly   **STABLE**

Market Structure

Sovereignty: Regional Champions
Proprietary differentiation
Locked ecosystem (Network effects)

25 Survivors

5 Global Giants (70% share)
5 Regional Champions (15%)
15 Niche Specialists (15%)

Chart — Models by year:

- 153 Models (2026)
- 80 (2027)
- 40 (2028)
- 30 (2029)
- 25 Survivors (2030)

2026: Capital > $500M Required / ARR > $50M Mandatory / Distribution > 50M Users

2028: Features cleansing / Vertical integration

2029: Sovereignty / Differentiation

2030: Stabilization / Confirmed Oligopoly
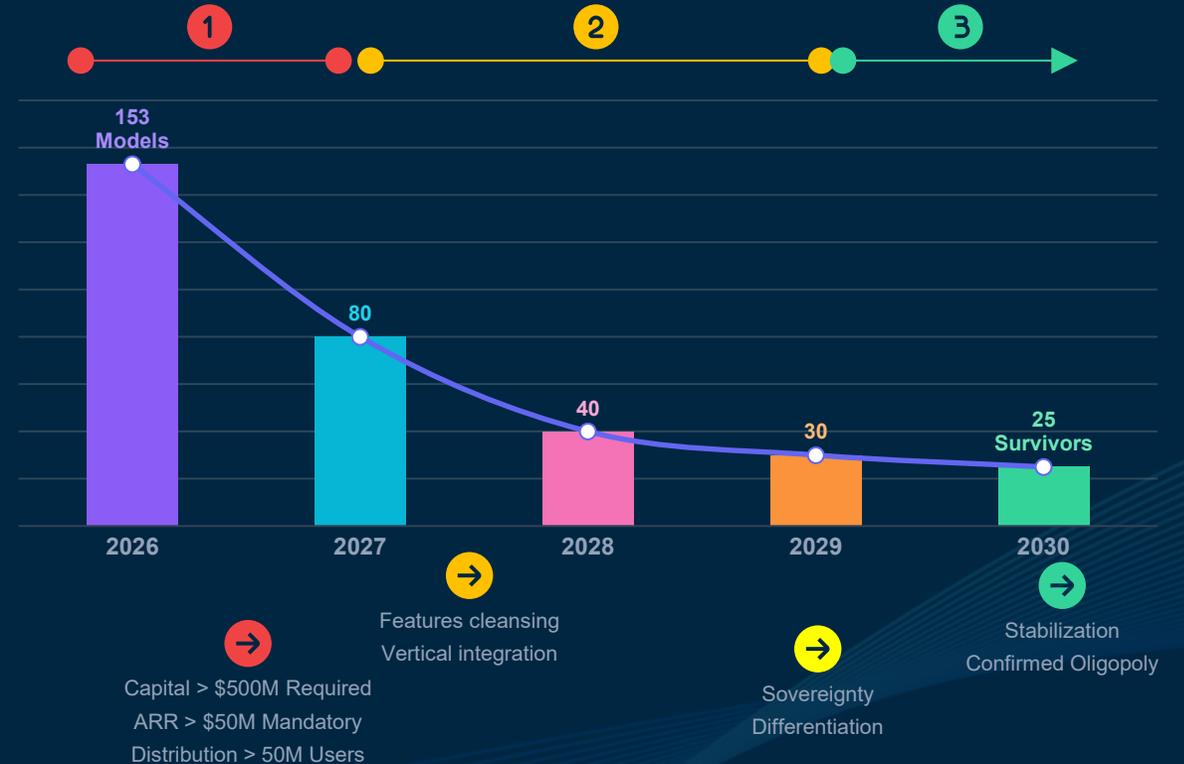
👑 2030 : Top 10 Survivors

84% Eliminated
Oligopoly 2030 Structure
Value VC New Era

TIER 1 – Global Leaders

OpenAI – 35%
Google – 25%
Anthropic – 10%

TIER 2 - Challengers

Meta - OpenSource
xAI – 5%
Ernie - 10% (China)

TIER 3 - Specialists

Mistral (Europe)   **Cohere**
MidJourney
Perplexity

2029 – 2032 : The Great Upheaval

AI is reshaping the global economy and our societies

Silicon War

Fall of the Titans

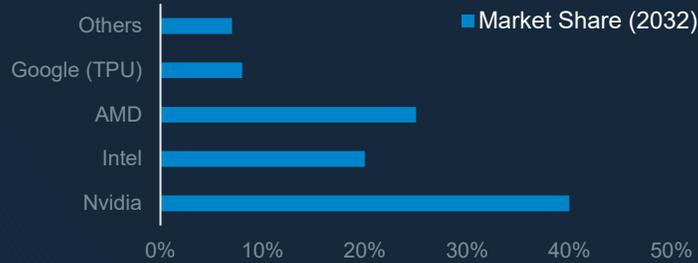Nvidia loses its monopoly (2025 to 2032 : -80%). Intel is reborn thanks to chip sovereignty (2025 to 2032 : +85%). Hardware becomes the number one geopolitical issue.

■ Market Share (2032)

Chart: Market Share (2032) by vendor
- Others
- Google (TPU)
- AMD
- Intel
- Nvidia

X-axis: 0%, 10%, 20%, 30%, 40%, 50%

Infrastructure Expenses

Explosion of cumulative costs ($ Trillions)

Inc. Data Centres, Chipset, Energy, Network, Training

Line chart Y-axis: 0, 2, 4, 6, 8
X-axis: 2028, 2029, 2030, 2031, 2032

Social Emergency

The Great Obsolescence

Automation is mainly hitting white-collar workers. Universal Basic Income is no longer a theory, but a necessity for political survival.

% Jobs replaced (estimate)

Bar chart Y-axis: 0%, 2%, 4%, 6%, 8%, 10%, 12%, 14%, 16%

Country	Description
USA	Service economy, white-collar workers dominant
Western Europe	Stronger social protection, slower transition
Japan	Population aging, already advanced robotization
China	Mass industrialization, rapid automation
Emerging countries	Agricultural/manufacturing economy, fewer white-collar workers

Workforce 2.0

Robots Invasion (100k units end of 2027)

Millions of robots in factories and homes. The cost of labor is collapsing.

2029 - 500k units — Massive pilot deployment

Vendors : Tesla Optimus (300k), Figure AI (150k), 1X Technologies (50k).
Sectors : Automotive, Logistic, Warehouse (e.g., Amazon)
Unit Price : $35k

2030 - 2M units — Industrialization

Vendors : + Boston Dynamics production, chineese startups (BYD, Xiaomi).
Sectors : + Agriculture, Hospitality, Construction
Unit Price : $30k

2031 - 8M units — Public adoption

Distribution : Industry (5M), Serviices (2M), Domestic (1M)
Unit Price : from $15k (domestic model) to $25k
Impact : massive pressure on manufacturing employment

2032 - 40M units — Ubiquity

Worldwide Dist. : USA (15M), China (18M), Europe (5M), RoW (2M).
Sectors : all sectors, inc. Retail & Healthcare
Unit Price : from $10k (basic model) to $20k

ALVAREZ & MARSAL

2033 – 2035 : AGI, the Point of No Return

Metrics of the Technological Singularity

2035 Economic Impact
Source : PWC Global

Global Growth GDT

+$357 Trillion

Annual AI Revenues

$8.5 Trillion

Infrastructure
Source : Epoch AI / Forbes
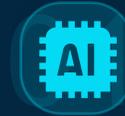
Compute Capacity (x1000 vs 2025)

10^{27} **Flops**

Global Electricity Consumption

8%

2032 / 2035

∞

AGI

Artificial General Intelligence

Societal Transformation
Source : McKinsey / OECD

Global workforce transformed / replaced

40%

Active Autonomous Agent

2 Billions

Event Horizon
Source : Sutskever 2025

AGI Estimate (Probability > 50%)

5 – 20 Years

Major Innovation Cycle (2M AI Patents per Year)

3 Months

ALVAREZ & MARSAL

SECTION 2 –
SECTORS IMPACTS

Strategic roadmap : When each sector shifts towards the Edge

Technology milestones and deployment phases by industry sector

Domains	2020	21	22	23	24	2025	26	27	28	29	2030	31	32	33	34	35

🖥 Technology Milestones

Cloud LLM / GenAI	POC (2020–22)	PILOT (22–23)	PRODUCTION (23–26)	SCALE & COMMODITY (26–35)
Edge LLM	POC (23–24)	PILOT (24–25)	PRODUCTION (25–28)	SCALE (28–35)
SLM (<10B)	R&D (24–25)	PILOT (25–26)	PRODUCTION (26–29)	MASSIVE SCALE (29–35)
AI Agentic	R&D (26–27)	PILOT (27–28)	PRODUCTION (28–31)	AUTONOMY (31–35)
Swarm Intelligence	R&D (28–29)	PILOT (29–31)	PRODUCTION (31–33)	SCALE (33–35)

🏭 Industrial Deployments

Industry 4.0	PILOT (21–22)	SMART FACTORY (22–26)	INDUSTRY 5.0 (26–35)
Automotive	R&D (22–23)	L2/L3 ADAS (23–26)	L4 AUTO (26–29)	V2X FLEET (29–35)
Smart Cities	TRAFFIC AI (23–26)	SAFETY / ENERGY (26–30)	FULLY CONNECTED (30–35)
Health	TRIALS (24–27)	REMOTE DIAG. (27–30)	LOCAL AI DEVICES (30–35)
IT & Telecom	5G POC (20–21)	EDGE CLOUD (21–24)	MEC ROLLOUT (24–30)	6G AI NATIVE (30–35)
Energy & Utilities	GRID AI (24–26)	MICROGRIDS (26–30)	AUTONOMOUS GRID (30–35)
Retail	FREE CHECK OUT (24–26)	LOSS PREV. (26–30)	HYPER PERSONAL (30–35)
Agriculture	DRONES (24–26)	PRECISION (26–28)	AUTO HARVEST (28–30)	FULL AUTO FARM (30–35)

Legend:
● POC / R&D (Exploration) ● Pilot (Validation) ● Production (Deployment) ● Scale (Commoditization)

ALVAREZ & MARSAL

8 transformed industries : Where Edge AI creates the most value

Accelerated Adoption by Industry (2025-2026) & Value Transformation

### Priority verticals (2026 projections)

IT & Telecom — Leader 21.1%

Mass adoption of Edge AI for 5G/6G network optimization and MEC services.

MEC (Multi-access Edge Computing) for ultra-low latency in mission-critical applications.

Health — 86% AI Usage

Connected medical devices and real-time diagnostics with patient privacy.

Advanced telemedicine and continuous patient monitoring with certified local AI.

Industry 4.0 — Factory Floor

Edge AI industrial PCs for quality control and autonomous predictive maintenance.

Autonomous collaborative robotics and real-time energy optimization.

Automotive — ADAS/V2X

Critical inference for L3+ autonomous driving and V2X safety.

Intelligent fleet management and predictive diagnostics for connected vehicles.

Smart Cities — Intel Mgmt.

Traffic and urban energy optimization via distributed edge sensor networks.

Enhanced public safety through distributed intelligent surveillance.

Retail — Auto-Checkout

Frictionless customer experience and loss prevention through computer vision.

Customer behavioral analysis and dynamic inventory management by Edge AI.

Energy & Utilities — Smart Grid

Smart microgrids and anomaly detection for critical energy infrastructure.

Real-time demand prediction and network balancing.

Agriculture — AgriTech

Edge sensors for precision agriculture and optimized resource management.

Crop monitoring by AI drones and autonomous smart irrigation.

Financial Value Levers

Projected Economic Impact (2025-2035)

$551 Md
Global AI Market Value 2035
(inc. Edge AI, Cloud AI, Agentic AI & Swarm Intelligence)

$357 Md
Edge AI 2035

27.7%
Average Edge AI CAGR
(2025-2035)

Acceleration 2026

Peak growth for Edge AI at 34% in 2029, in line with the annual chart.

Industrial ROI

Major productivity gains via Edge AI factory floor PCs.

✓ Adoption: 86% AI Healthcare

CAGR Edge AI Evolution (2020-2035)

Post-2025 acceleration
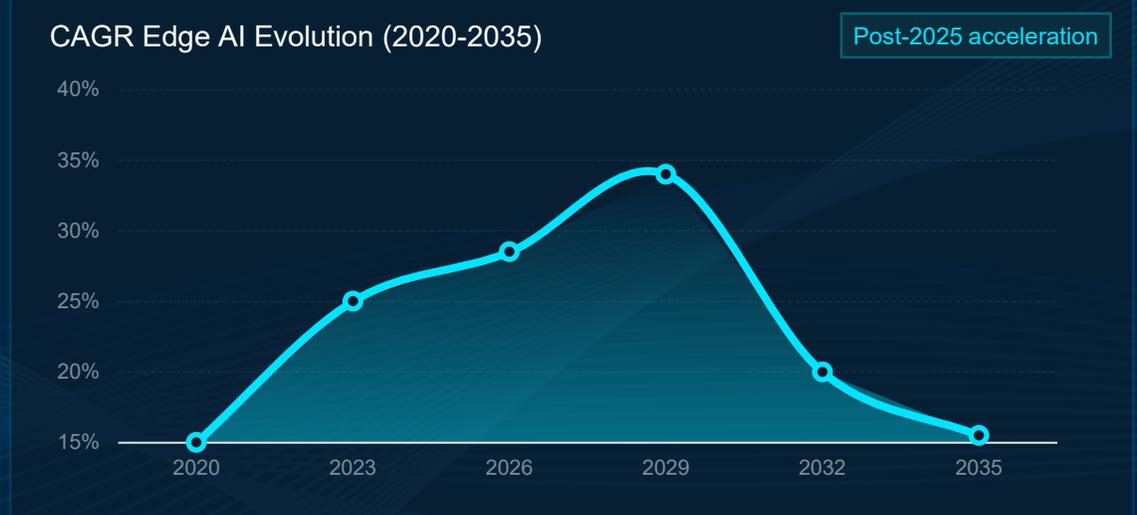
ROI Edge vs Cloud : Why Edge outperforms by 2x per sector

Cloud AI vs Edge AI: Financial and Operational Performance (2025)

Average ROI Edge AI (Global)	ROI Medium Cloud AI (Global)	Average Return Time (Edge)	Favorable Edge Sectors
285% ↑ Vs Cloud	145% stable	9.5 Months fast	7 / 9 dominance

Industrial Sector	Best use cases	Advantage	ROI Cloud AI	ROI Edge AI	Return Time
Industry 4.0	Real-time quality control, Zero latency	★ Heavy Edge	120%	320%	6 months
Automotive	Embedded ADAS, Local Vehicle Data Processing	✓ Edge	90%	280%	12 Months
Smart Cities	Traffic management, Video protection, Smart lighting	✓ Light Edge	180%	210%	18 months
Health	Patient Privacy, Medical Devices	✓ Edge	200%	250%	14 months
Retail	CRM Personalization, Global Trend Analysis	☁ Cloud	220%	190%	10 Months
IT & Telecom	Optimization RAN, MEC (Mobile Edge Compute)	★ Heavy Edge	150%	290%	8 months
Energy & Utilities	Smart Microgrids, Grid Anomaly Detection	★ Heavy Edge	160%	270%	9 months
Agriculture	Precision Agriculture, Autonomous IoT Sensors	✓ Edge	110%	240%	11 Months

💡 **Latency Factor**
Real-time constrained sectors (<10ms) see a 2.5x increase in Edge ROI thanks to the elimination of network delays.

💰 **Egress Savings**
Local processing reduces cloud bandwidth costs, a decisive factor for video (Smart Cities, Industry), by 90%.

🔒 **Compliance & Privacy**
For Healthcare and Automotive, the Edge is the only legally viable option, making the theoretical Cloud ROI unattainable.

ALVAREZ & MARSAL

3 real-world case studies : How Edge AI generates 220-320% ROI

Financial and operational impact measured by sector (Actuals 2024-2025)

Manufacturing
Industrie 4.0 & Smart Factory

Visual Quality Control — ROI 320%
Edge AI system detecting micro-defects in real-time on high-speed production line.

$2.4M	6 months	-85%
Savings/year	Back Inv.	Defects

Predictive Maintenance — ROI 280%
Edge vibration sensors analyze machine wear to prevent critical failures.

$1.8M	8 months	-70%
Savings/year	Back Inv.	Downtime

Production Optimization — ROI 220%
Automatic adjustment of production parameters via local AI to maximize yield.

+45%	10 months	Low
Productivity	Back Inv.	Latency

Healthcare
Connected Care & Precision

Local AI Diagnostics — ROI 250%
Medical imaging analysis on edge device without cloud transfer for complete privacy.

$3.2M	14 months	+92%
Savings/year	Back Inv.	Accuracy

Continuous monitoring — ROI 210%
Patient monitoring via Edge wearables with real-time detection of vital abnormalities.

$1.5M	12 months	+80%
Savings/year	Back Inv.	Alerts

Edge Telemedicine — ROI 190%
Standalone health kiosks with AI pre-diagnosis for rural or remote areas.

$900K	16 months	+300%
Savings/year	Back Inv.	Consults

Retail
Customer Experience & Operations

Standalone checkout — ROI 220%
Checkout-free stores using sensor fusion and Edge computer vision.

$1.2M	10 months	-60%
Savings/year	Back Inv.	Losses

Behavior Analysis — ROI 190%
Understanding the customer journey in stores for layout and marketing optimization.

+$2.8M	11 months	+35%
Revenue/year	Back Inv.	Conversion

Stock Management — ROI 180%
Real-time shelf tracking by Edge cameras for dynamic replenishment.

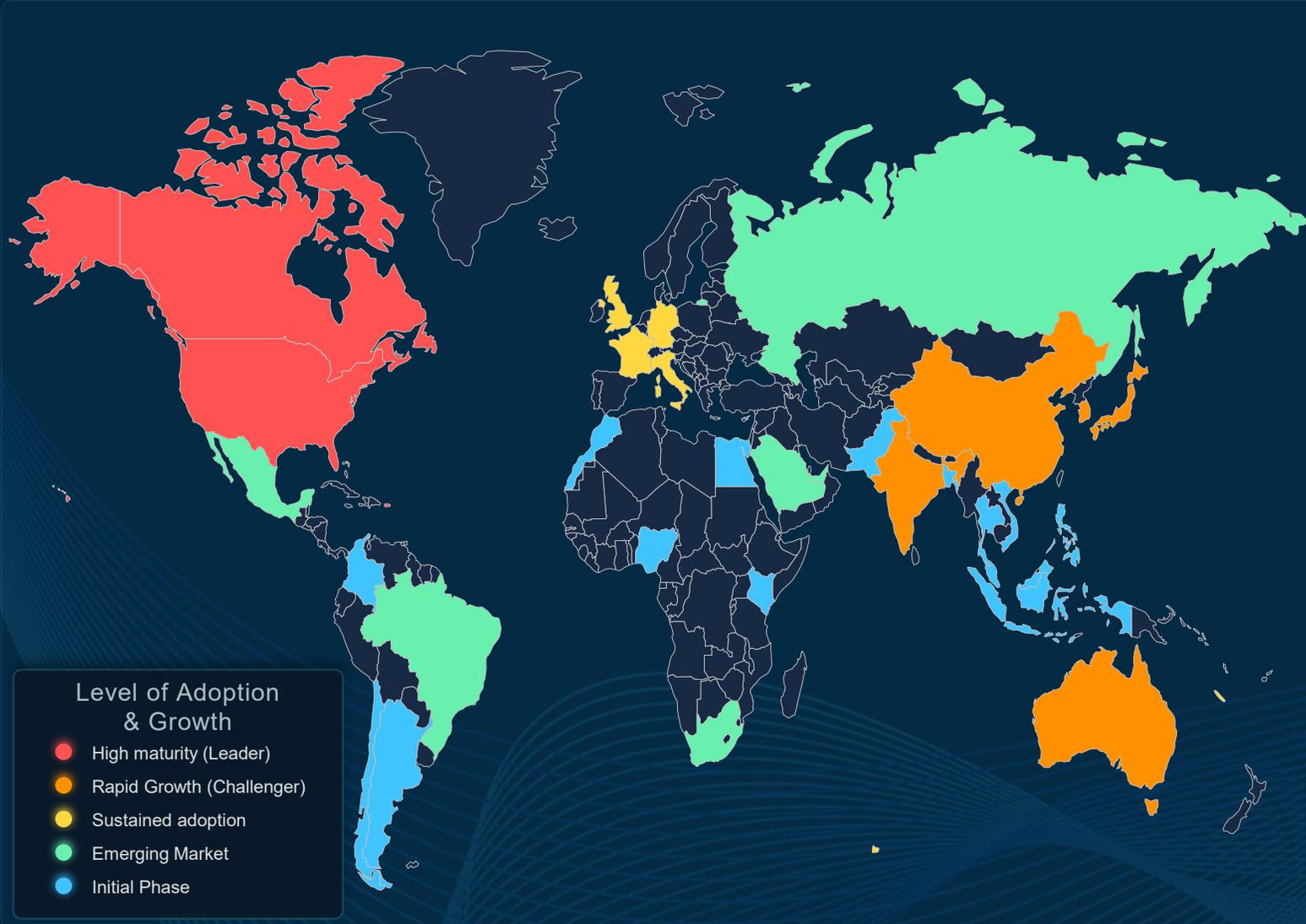| $800K	13 months	-75%
Savings/year	Back Inv.	Breakouts

SECTION 3 –
ADOPTION

35 countries, 5 paces : The Edge AI global adoption map

Regional dynamics: Market maturity and growth poles (2025)

Level of Adoption & Growth
- 🔴 High maturity (Leader)
- 🟠 Rapid Growth (Challenger)
- 🟡 Sustained adoption
- 🟢 Emerging Market
- 🔵 Initial Phase

🌎 North America — 36% Share
CAGR (25-30)	Maturity
22.5%	Advanced

Drivers: Hyperscalers, Autonomous Vehicles, Defense, Smart Retail.

🌏 Asia Pacific — 32% Share
CAGR (25-30)	Status
28.4%	Top Growth

Drivers: Smart Cities (China/Korea), Industrial Robotics, Massive 5G.

🌍 Europe — 20% Share
CAGR (25-30)	Focus
24.1%	Regulation

Drivers: Industry 4.0 (DACH), Healthcare, GDPR/AI Act Compliance.

🌎 Latin America — 5% Share
CAGR (25-30)	Key Sector
18.5%	AgriTech

Drivers: Precision Agriculture, Mining Monitoring.

🌍 MEA — 3% Share
CAGR (25-30)	Potential
16.2%	Energy

Drivers: Smart Cities (Gulf), oil management, infrastructure.

ALVAREZ & MARSAL

6 major obstacles to Edge AI adoption (and how to overcome them)

Analysis of adoption challenges and recommended mitigation strategies

Mitigation Roadmap: Recommended phased approach over 18-24 months

High CAPEX upfront costs

Impact: 40-60% Delays

ⓘ Root Causes

Expensive specialized hardware (NPU, TPU), Need for large-scale multi-site deployments, Legacy migration costs and R&D investments

✓ Recommended Solutions

- Progressive hybrid approach (Cloud→Edge)
- Models as-a-Service / Hardware Leasing
- Targeted POCs with fast ROI (<12 months)

Technical Complexity & Integration

Impact: 55% Lead time>6 months

ⓘ Root Causes

Hardware heterogeneity, Fragmented ML Ops pipelines, OT/IT integration difficulty, Complex fleet management

✓ Recommended Solutions

- Unified ML Ops Edge Platforms
- Key Technology Partnerships (SI/OEM)
- Continuous training for IT/OT teams

Security & Distributed Governance

Impact: 68% Main Brake

ⓘ Root Causes

Expanded attack surface, Physical access to devices, Remote patching challenges, Local data confidentiality constraints

✓ Recommended Solutions

- Zero Trust Architecture Edge-native
- Hardware-based end-to-end encryption
- Regular automated security audits

Lifecycle Management (Scale)

Impact: 5x Maintenance (>100 nodes)

ⓘ Root Causes

Manual, non-scalable deployments, Local model drift (data drift), Intermittent connectivity, Risky OTA updates

✓ Recommended Solutions

- Centralized Orchestration (Kubernetes Edge)
- Automated & secure OTA updates
- Monitoring proactif & Self-healing IA

Interoperability & Standards

Impact: +45% Integration Costs

ⓘ Root Causes

Fragmented IoT protocols, Lack of unified standards, Proprietary lock-in, Multiple embedded operating systems

✓ Recommended Solutions

- Open standards adoption (ONNX, MLflow)
- API standardisées Edge (Containerization)
- Industrial consortiums (Edge Native)

Shortage of Specialized Skills

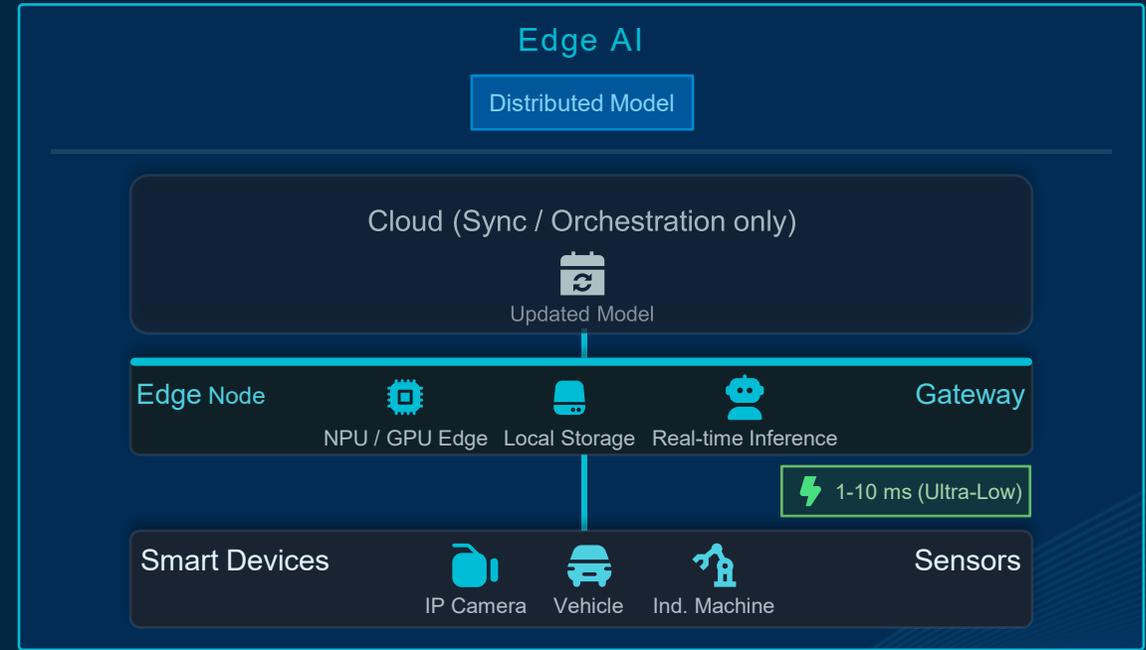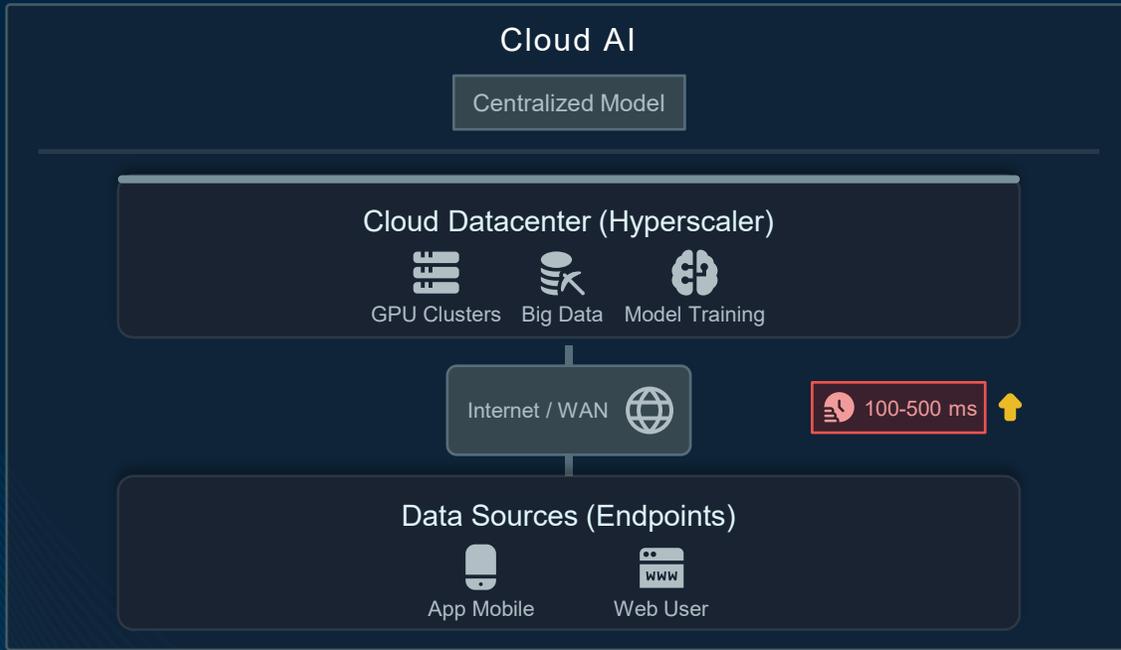Impact: Gap 2.3M Pros (2027)

ⓘ Root Causes

Dual expertise required (Data Science + Embedded systems), Rapid technology evolution, Global AI talent war

✓ Recommended Solutions

- Internal requalification programs
- Academic & R&D partnerships
- Low-Code/No-Code Edge AI Tools

Cloud vs. Edge : 8 fundamental differences showing the shift in paradigm

Structural divergence: Massive centralization vs. real-time distributed processing

Cloud AI

Centralized Model

Cloud Datacenter (Hyperscaler)

GPU Clusters | Big Data | Model Training

Internet / WAN

100-500 ms

Data Sources (Endpoints)

App Mobile | Web User

Edge AI

Distributed Model

Cloud (Sync / Orchestration only)

Updated Model

Edge Node

NPU / GPU Edge | Local Storage | Real-time Inference

Gateway

1-10 ms (Ultra-Low)

Smart Devices

IP Camera | Vehicle | Ind. Machine

Sensors

Feature	Cloud AI (Training & Massive Inference)	Edge AI (Real-Time Inference & Privacy)
Latency	Variable, depends on the network (100ms+)	Deterministic, Real-Time (< 10ms)
Bandwidth	High consumption (Upload Data + Download Result)	Efficient (Local processing, only insights come out)
Security	Transmission of sensitive data off-site	Data Residency Guaranteed (Data Remains Local)
Costs (TCO)	High OPEX (Cost per API call + Storage)	Initial CAPEX, Reduced OPEX (No egress fees)
Maintenance	Centralized, instant update for everyone	Distributed, requires fleet management (MDM/OTA)
Scalability	Near-infinite horizontal scalability (elasticity)	Scalability limited by local hardware (addition of nodes)
Energetic Constraint	Massive consumption (energy-hungry data centers)	Optimized for low consumption (battery, IoT)
Offline Operation	Complete dependence on network connectivity	Autonomous offline operation (resilience)

ALVAREZ & MARSAL

SECTION 4 –
FINANCE & M&A

ALVAREZ & MARSAL

Edge AI : From $24 Billion to $357 Billion in 10 years (CAGR 27.7%)

Latest 2025-2026 Projections: Massive Edge & Cloud Acceleration

Edge AI CAGR (2025-2035)
27.7%
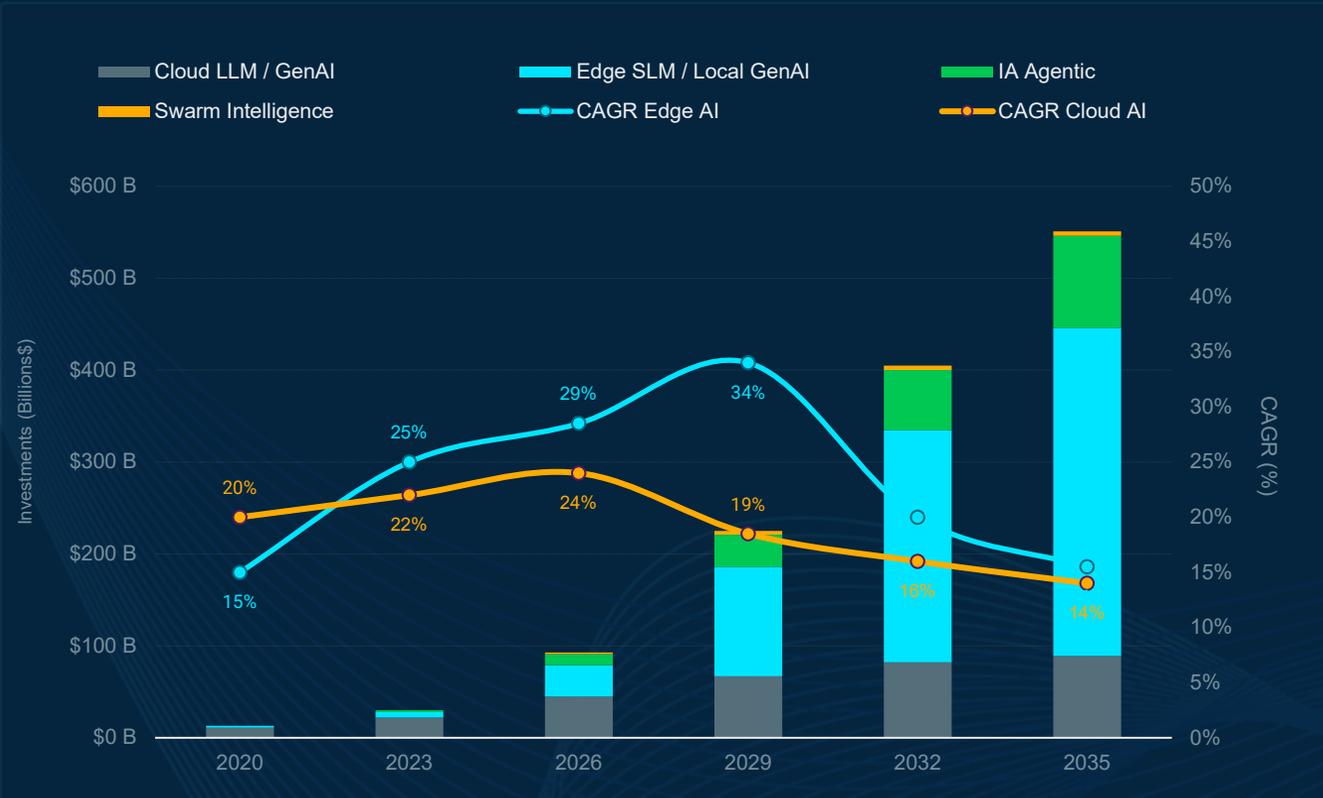2035 target: $240 Mds

Cloud AI CAGR (2025-2035)
18.2%
Sustained but moderate growth

2026 projections confirmed

Analyses confirm a peak CAGR Edge of 34% in 2029 before stabilizing at 24% in 2035 (validated sources: BCC Research, Roots Analysis, Precedence Research). This accelerated growth validates the $357 billion target.

Edge CAGR approx. 28% (peak approx. 34%)

Edge Hardware on Boom

The Edge AI hardware market alone is expected to reach ~$59 billion by 2030, supported by the explosion of embedded SLMs and NPUs.

Cloud AI Massive Growth

Despite the rise of Edge AI, Cloud AI aims for stable growth, remaining the backbone for training and massive foundational models.

Legend:
- Cloud LLM / GenAI
- Edge SLM / Local GenAI
- IA Agentic
- Swarm Intelligence
- CAGR Edge AI
- CAGR Cloud AI

Chart — Investments (Billions$) vs CAGR (%):

CAGR Edge AI: 2020: 15%, 2023: 25%, 2026: 29%, 2029: 34%
CAGR Cloud AI: 2020: 20%, 2023: 22%, 2026: 24%, 2029: 19%, 2032: 16%, 2035: 14%

Y-axis left: $0 B – $600 B
Y-axis right: 0% – 50%
X-axis: 2020, 2023, 2026, 2029, 2032, 2035

CAGR means validated by consensus from 9 external sources (Roots Analysis, BCC Research, Precedence Research).
Note: AI Agentic: explosive growth confirmed (CAGR 40-45%, sources: Fortune Business Insights, Acumen Research, MarketsandMarkets). Swarm Intelligence: niche segment (<2% of the market).

ALVAREZ & MARSAL

$265 Billion at stake : The 10 biggest AI M&A deals

Strategic Divergence: Cloud Consolidation vs. Edge Ecosystem Explosion

☁ Cloud AI (Centralized)

Deals '26: 120

LLM Training | SaaS AI | Foundation Models

Val: $75B

Deals (#) | Val. ($B) | CAGR (%)

Year	Deals (#)	Val. ($B)	CAGR (%)
2020	65	$10B	20%
2021	75	$15B	21%
2022	85	$22B	21%
2023	78	$18B	22%
2024	90	$40B	23%
2025 (e)	105	$58B	24%
2026 (p)	120	$75B	2...

Multiple EBITDA: 15x (2020) → 28x (2026)

Massive consolidation around hyperscalers. Record EBITDA multiple of 28x in 2026 driven by the race for sovereign LLMs.
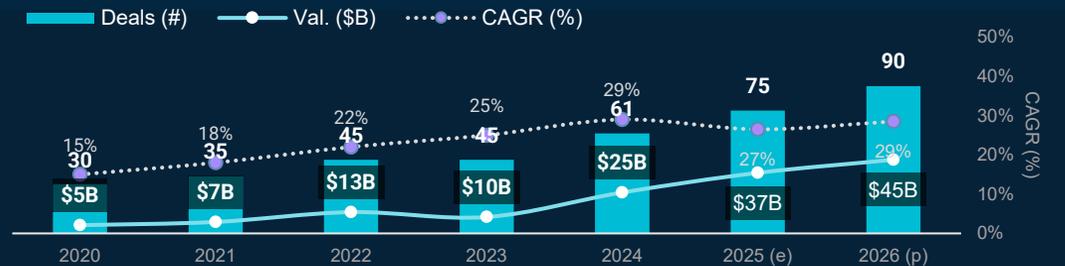
🛒 AI Cloud Buyers

G GOOGLE | ▦ MICROSOFT | a AMAZON
SALESFORCE | ORACLE | IBM

▣ Edge AI (Distributed)

Deals '26: 90

Hybrid | Native | Pervasive | On-Device

Val: $45B

Deals (#) | Val. ($B) | CAGR (%)

Year	Deals (#)	Val. ($B)	CAGR (%)
2020	30	$5B	15%
2021	35	$7B	18%
2022	45	$13B	22%
2023	45	$10B	25%
2024	61	$25B	29%
2025 (e)	75	$37B	27%
2026 (p)	90	$45B	29%

Multiple EBITDA: 10x (2020) → 24.5x (2026)

Acceleration of the Pervasive AI segment. Deal flow growth +200% (2020-2026) with focus on specialized hardware.

🛒 Edge AI Buyers

⊞ NVIDIA | ▦ INTEL | ⊞ AMD
⊪ QUALCOMM | ⊹ CISCO | ▢ DELL

🏆 Top 10 Strategic M&A AI Deals (2020-2026)

Cumulative Valuation: $>265B

#	Deal	Value	Type
01	Broadcom VMware	$69B	CLOUD
02	Microsoft Activision	$68.7B	CLOUD
03	IBM Red Hat	$34B	CLOUD
04	Google Wiz	$32B	CLOUD
05	Cisco Splunk	$28B	CLOUD
06	HPE Juniper	$13.4B	EDGE
07	IBM Confluent	$11B	EDGE
08	NVIDIA Intel	$5B	EDGE
09	AMD ZT Systems	$4.9B	EDGE
10	AMD Multi-Acq.	$2B	EDGE

2031 : The year Edge AI surpasses Cloud in M&A deals

Crossover point 2031: Edge (152 deals) > Cloud (140 deals)

☁ Cloud AI (Hyperscalers)

Deals '35: 157

| LLM Sovereigns | Vertical SaaS | Centralized Infra |

Val: $31B

Legend: Deals (#) — Val. ($B) — Market CAGR (%)

22% 20% 19% 18% 17% 16% 15% 15% 14%

124 128 132 136 140 144 148 153 157

$9B $11B $13B $15B $18B $20B $24B $27B $31B

2027 (p) 2028 (p) 2029 (p) 2030 (p) 2031 (p) 2032 (p) 2033 (p) 2034 (p) 2035 (p)

M&A CAGR (Avg 2027-35): Deals 3.0% | Val CAGR Var 18.2%

⬈ Multiples EBITDA

15x - 25x (Median 22x)

0x   10x   20x   30x

Strong consolidation limit deals (+3%/year). Valuation adjusted to $31B in 2035 (20% of the market) respecting the maturity and saturation assumption.
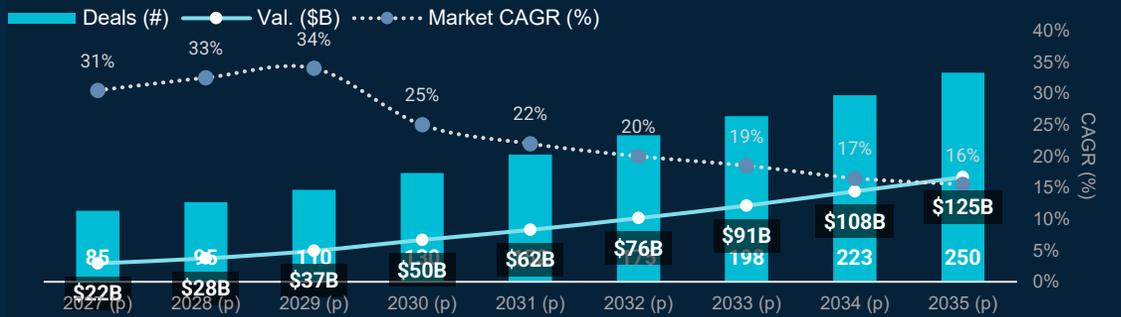
🛒 AI Cloud Buyers

| G GOOGLE | ⊞ MICROSOFT | a AMAZON |
| SALESFORCE | ⊟ ORACLE | ALIBABA |

▣ Edge AI (Distributed)

Deals '35: 250

| Quantum Edge | Swarn | Neuromorphic |

Val: $125B

Legend: Deals (#) — Val. ($B) — Market CAGR (%)

31% 33% 34% 25% 22% 20% 19% 17% 16%

85 95 110 130 198 223 250

$22B $28B $37B $50B $62B $76B $91B $108B $125B

2027 (p) 2028 (p) 2029 (p) 2030 (p) 2031 (p) 2032 (p) 2033 (p) 2034 (p) 2035 (p)

M&A CAGR (Avg 2027-35): Deals 12.0% | Val CAGR Var 24.5%

⬈ Multiples EBITDA

12x - 20x (Median 16x)

0x   10x   20x   30x

Continued expansion generates new deals (+12% per year). Valuation of $125B in 2035 (80%) confirms Edge dominance. Deal crossover point now in 2031 (152 vs. 140).

🛒 Edge Buyers

| ▣ NVIDIA | ▥ INTEL | ⬙ AMD |
| ⌒ QUALCOMM | APPLE | 🚗 TESLA |

Edge AI roadmap : 3 phases to a successful transition

Strategic roadmap for a transition to Edge AI

Trajectory
Transition from cloud-first to edge-first architectures for critical inference, driven by latency and privacy.

Models & Architecture
Generalization of SLMs on constrained devices and the rise of swarms of agents (Swarm Intelligence) for collaborative autonomy.

2020 – 2025
- ✅ Opportunity : First Edge LLM deployments & TCO optimization
- ✅ Opportunity : Critical Latency Reduction (Automotive/IoT)
- ⚠️ Challenge : Limited Hardware Maturity (NPU)
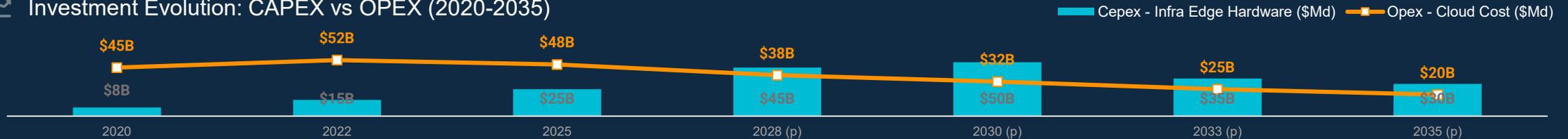- ⚠️ Challenge : Hybrid MLOps Complexity

2025 – 2030
- ✅ Opportunity : Autonomous Agentic AI & E2E Automation
- ✅ Opportunity : New Business Models (Decentralized SaaS)
- ⚠️ Challenge : Governance & Distributed Security
- ⚠️ Challenge : Heterogeneous interoperability

2030 – 2035
- ✅ Opportunity : Swarm Intelligence & Collaboration massive
- ✅ Opportunity : Edge AI pervasive (Smart Cities/BioTech)
- ⚠️ Challenge : Ethics & Control of Autonomy
- ⚠️ Challenge : Overall energy consumption

Investment Evolution: CAPEX vs OPEX (2020-2035)

Legend: ▬ Cepex - Infra Edge Hardware ($Md)   ■—■ Opex - Cloud Cost ($Md)

Year	2020	2022	2025	2028 (p)	2030 (p)	2033 (p)	2035 (p)
Opex - Cloud Cost	$45B	$52B	$48B	$38B	$32B	$25B	$20B
Cepex - Infra Edge Hardware	$8B	$15B	$25B	$45B	$50B	$35B	$30B

⬇️ OPEX (declining after 2022 : -62%)
• Cloud → Edge migration   • Local processing   • Agent Ops automation   • NPU / TPU efficiency   • SLM vs LLM optimization

⬇️ CAPEX (declining after 2030 : -40%)
• Deployed infrastructure   • Economy of scale   • Technology maturity   • Standardization

0 – 6 months
Initiation & POC
- Select 3-5 priority use cases (Latency < 50ms)
- Launch POCs on Edge LLM/SLM (e.g., Llama-3-8B)
- Evaluate Cloud vs Edge Comparative TCO

6 – 18 months
Hybrid Industrialization
- Deploy a Hybrid MLOps Platform (Train Cloud / Infer Edge)
- Integrate AI Act & Security Governance
- Implementation of the first Autonomous Agents (AgentOps)

18 – 36 months
Scale & Autonomy
- Multi-site scaling & Heterogeneous fleets
- Activation of the Agentic Mesh (Swarm)
- Continuous Latency/Energy Optimization

KPIs for Success

< 10 ms	-40%	+25%	Zero
Target Latency	Cost per Inference	Automation rate	Privacy (Data Egress)

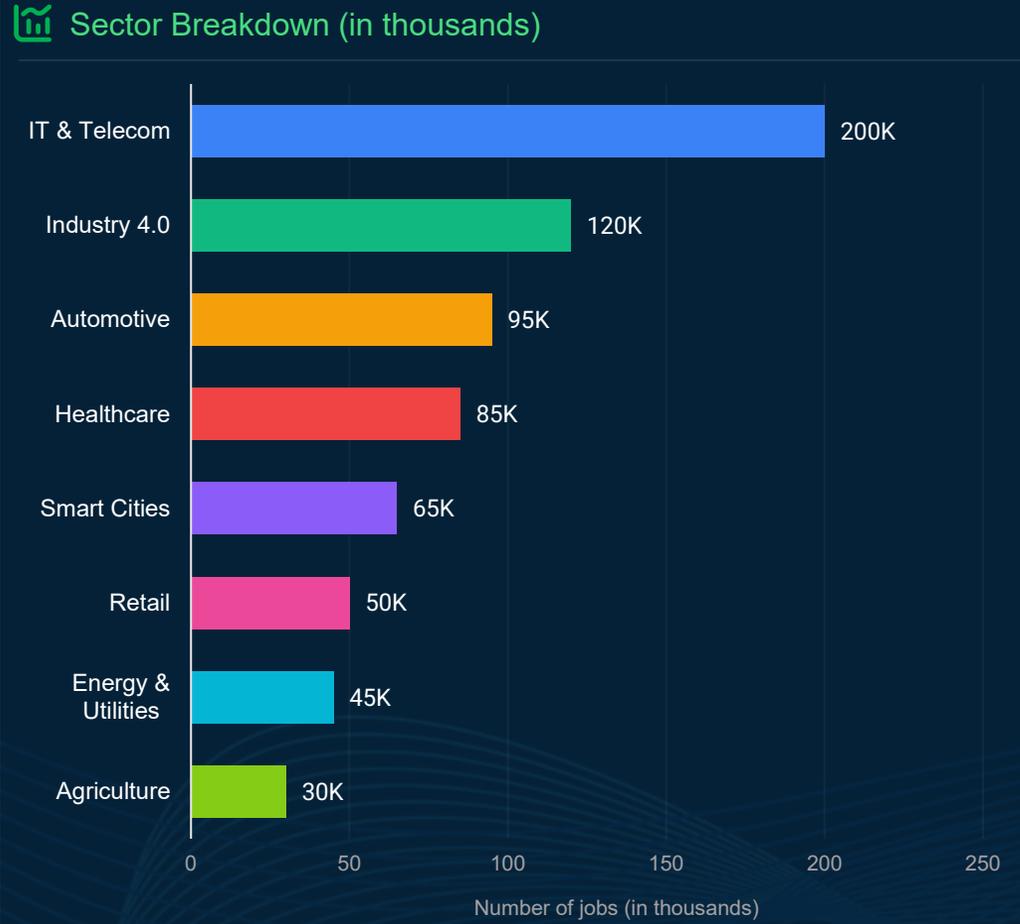ALVAREZ & MARSAL

SECTION 5 –

EMPLOYMENT

690K Edge & Cloud AI jobs : which sectors are hiring the most?

IT/Telecom and Industry 4.0 account for 46% of opportunities – Full sector analysis

690K
Net global job creation (2027–2035)

2.3M
Talent shortage by 2027

+56%
AI salary premium

📊 Sector Breakdown (in thousands)

Sector	Jobs
IT & Telecom	200K
Industry 4.0	120K
Automotive	95K
Healthcare	85K
Smart Cities	65K
Retail	50K
Energy & Utilities	45K
Agriculture	30K

Number of jobs (in thousands)
0   50   100   150   200   250

ℹ️ IT &Telecom and Industry 4.0 concentrate **46%** of new Edge AI jobs

📡 IT & Telecom — Top Sector
Trend: Massive deployment of 5G, distributed architectures
Skills: Edge Orchestration, Kubernetes, Low-latency networking

🦾 Industry 4.0 — Strong Growth
Trend: Autonomous factories, real-time predictive maintenance
Challenges: IT/OT convergence, industrial cybersecurity

🚗 Automotive — High Value
Trend: Software-defined vehicles (SDV), autonomous driving
Outlook: Explosion in demand for embedded AI

⊕ Healthcare — Critical
Trend: On-device diagnostics, robotic surgery
Skills: Ethical AI, patient data privacy

🏙 Smart Cities
Trend: Intelligent traffic management, public safety
Challenges: Large-scale system interoperability

🛒 Retail
Trend: Autonomous stores, in-store personalization
Skills: Computer vision, behavioral analytics

⚡ Energy & Utilities
Outlook: Key role in the energy transition
Trend: Decentralized smart grids, renewable optimization

🧑‍🌾 Agriculture
Trend: Precision agriculture, autonomous robots
Challenges: Connectivity in remote rural areas

ALVAREZ & MARSAL

Cloud AI & Edge AI talent geography : Where are the 690K jobs being created?

North America (40%), Europe (30%), Asia-Pacific (25%), Rest of the World (5%)

🌐 North America — 275K Jobs (40% of the total)

IT & Telecom 80K	Industry 4.0 50K	Automotive 40K	Healthcare 35K	Smart Cities 25K	Retail 20K	Energy & Util. 18K	Agriculture 12K
5G Network Architect Edge Computing Eng. AI Systems Designer	Industrial IoT Eng. Predictive Maint. Spec. Smart Factory Des.	ADAS Systems Eng. V2X Comm. Spec. Autonomous Vehicle AI	Medical AI Diag. Health Data Analyst Telemedicine Eng.	Urban IoT Architect Smart Infra. Eng. City Data Analyst	Retail Edge Analytics Customer Behavior AI Auto. Store Des.	Smart Grid Engineer Energy AI Analyst Renewable Opt.	Precision Agri. Eng. Farm AI Developer Crop Monitoring

🌐 Europe — 205K Jobs (30% of the total)

IT & Telecom 65K	Industry 4.0 45K	Automotive 35K	Healthcare 60K	Smart Cities 25K	Retail 17K	Energy & Util. 18K	Agriculture 10K
Edge AI Platform Dev. Telco AI Spec. Network Opt. Eng.	Ind. 4.0 Integration AI Quality Control Digital Twin Arch.	Embedded Auto. AI Vehicle Safety Des. Connected Car Arch.	Clinical AI Spec. Medical Imaging AI Healthcare IoT Dev.	Smart Mobility Eng. Urban Planning AI Public Safety AI	Omnichannel AI Dev. Retail IoT Eng. Customer Exp. Opt.	Grid Optimization Energy Storage AI Sustainability AI	AgriTech AI Eng. Sustainable Farming Agri. IoT Developer

🌐 Asia - Pacific — 170K Jobs (25% of the total)

IT & Telecom 65K	Industry 4.0 45K	Automotive 35K	Healthcare 60K	Smart Cities 25K	Retail 17K	Energy & Util. 18K	Agriculture 10K
IoT Edge Engineer Mobile AI Developer Smart Infra. Arch.	Mfg. Edge AI Quality AI Spec. Supply Chain Opt.	EV Battery AI Auto. Driving Sys. Smart Vehicle Eng.	Medical Device AI Patient Monitor AI Health Data Sec.	Smart City Platform Traffic AI Eng. Public Service AI	E-commerce Edge Retail Analytics Customer Insight	Renewable Energy AI Grid Stability Energy Trading AI	Smart Farming AI Crop Yield Opt. Livestock Monitor

🌐 Rest of the World — 40K Jobs (5% of the total)

IT & Telecom 65K	Industry 4.0 45K	Automotive 35K	Healthcare 60K	Smart Cities 25K	Retail 17K	Energy & Util. 18K	Agriculture 10K
Remote Network Eng. Satellite AI Spec. Rural Conn. Arch.	Emerging Mkt Mfg. Low-Cost Auto. Spec. Process Eff. Eng.	Local Mobility AI Vehicle Retrofit AI Transport Fleet Opt.	Remote Diag. AI Public Health Data Mobile Clinic Tech.	Basic Infra. AI Water Mgmt. AI Traffic Flow Spec.	Mobile Pay. AI Supply Chain Track. Local Market Anal.	Solar Grid AI Off-grid Power Sys. Resource Mgmt. AI	Small Farm AI Drought Pred. AI Soil Health Analyst

Cloud AI vs Edge AI new Jobs: 72 Emerging Roles

Transformation of professional profiles with a critical need for hybrid skills

☁ Cloud AI Roles

Cloud AI Architect	ML Platform Engi.
Data Pipeline Eng.	Cloud AI Security
Dist. Systems Eng.	Cloud MLOps Eng.
AI Product Manager	Cloud AI Ethics

🖐 Required Skills

Cloud AI Skills
Python & PyTorch | Cloud Arch. | Big Data | API Design | Dist. Compute

Edge AI Skills
C++/Rust | IoT Protocols | Embedded ML | Hardware Opt. | RTOS
Low-power

Transversal Skills
Data Science | MLOps | Cybersec | AI Ethics

🖥 Edge AI Roles

Edge AI Eng.	Embedded ML Eng.
IoT AI Developer	Edge Security Arch
Real-time Syst. Eng.	Edge MLOps Spec.
Hardware AI Opt.	Edge Privacy Officer

🌐 Geographic Distribution: Cloud AI vs Edge AI

■ Cloud AI ■ Edge AI

Number of jobs (in thousand)

Region	Cloud AI	Edge AI
North America	110K	165K
Europe	80K	125K
Asia - Pacific	65K	105K
RoW	15K	25K
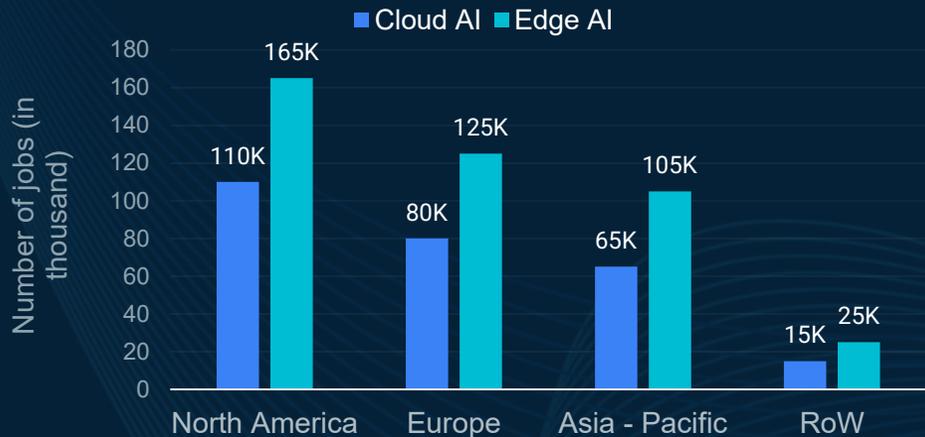
💡 Global Synthesis

Edge AI dominates job creation across all regions, with an average ratio of 1.5 to 1 compared to Cloud AI. North America remains the absolute leader in volume (40% of the global total), but Asia-Pacific shows the fastest growth rate, driven by widespread adoption in manufacturing and smart cities.

🌍 North America — Total: 275K

Leader in software innovation and R&D. High demand for hybrid architects and edge security engineers.

🌍 Europe — Total: 205K

Focus on Industry 4.0 and the automotive sector (Germany, France). Regulation (AI Act) boosts compliance

🌍 Asia - Pacific — Total: 170K

Explosive growth in consumer electronics and robotics. China and Japan leading the way in edge hardware.

🌐 Rest of the World — Total: 40K

Emerging adoption in agriculture (LATAM) and energy infrastructure (Middle East).

ALVAREZ & MARSAL

SECTION 6 –

OPERATING MODEL

ALVAREZ & MARSAL

2035 : 4 Players, 4 Revolutions - The New Edge AI Value Chain

Structural transformation of the 4 key players in the Edge AI / Cloud AI value chain

Industries

Current 2025

Cloud-first, OT/IT silos. High latency, long ROI.

Target 2035

Edge-first, local agentic AI, ROI <6 months.

Organization
OT/IT Silos → CoE Edge AI Convergence

Processus
Reactive maintenance → CI/CD MLOps Edge

Tools
SCADA/Cloud → Unified Platforms

- Decentralized MLOps "at the foot of the machine"
- Data Sovereignty & Zero Trust

Connectivity

Current 2025

Centralized NSA 5G. Limited MEC, best-effort.

Target 2035

5G SA/6G distributed. On-demand slicing, guaranteed SLAs.

Organization
Net/IT Silos → DevNetOps Teams

Processus
Manual provisioning → Zero-touch auto

Tools
Legacy OSS → Cloud-native Orchestration

- Scaled MEC & Compute-Network Conv.
- B2B2X Revenue-Share Models

Cloud AI

Current 2025

Centralized. High egress costs, variable latency.

Target 2035

Hybrid Cloud-Edge. Federated Learning, orchestration dist.

Organization
Centralized → Dist. Edge Teams

Processus
Monolith deployment → Federated Learning

Tools
IaaS/PaaS → Edge Extensions (Arc/Outposts)

- Sovereign "Cloud-to-Edge" Extension
- AI/Agent Model Marketplace

Edge AI

Current 2025

Silicon-centric. Fragmented SDKs, pilots, one-off revenues.

Target 2035

Full-Stack Platform. Silicon + Runtime + OTA. Recurring Rev.

Organization
Silicon focus → Full-stack teams

Processus
Custom development → Unified SDKs & OTA

Tools
Fragmented → Unified Toolchains (ONNX)

- Standardization & Portability Models
- Hardware/software "as-a-Service" model

Cross-Functional KPIs Targets 2035

5 – 10ms
Target Latency

↓ 40 – 70%
Cost per Inference

> 70%
Part Edge Inference

100%
Zero Trust Native

Industries : ROI < 6 Months or Failure - Edge AI Becomes Non-Negotiable

Transforming the model : From cloud centralization to distributed, edge-first intelligence

2025 **Cloud-Centric Model**

2035 **Edge-First Model**

Architecture & Infra

Cloud-first approach. Raw data sent to the cloud for analysis. Rigid silos between OT (Operations) and IT (Information).

Architecture & Infra

Edge-first approach. Local NPUs/IPCs, Embedded Digital Twins. Decentralized local MLOps.

Value Creation

Occasional efficiency gains. Basic preventive maintenance. Few monetized data-driven services.

Value Creation

X-as-a-Service models (Quality, Safety). Monetization of industrial data. Autonomous operations.

Organization / Processes / Tools

Organization : Separate OT/IT silos. Small, centralized IT data science teams.

Processus : Reactive maintenance. Long deployment cycles (months). Dispersed POCs.

Tools : Legacy SCADA/MES. Cloud ML (SageMaker, Azure ML). Manual integration.

Organization / Processes / Tools

Organization : OT/IT convergence. Integrated MLOps teams. Edge AI Center of Exc.

Processus : Predictive maintenance. CI/CD templates. Continuous OTA deployment.

Tools : Unified Edge Platforms (Jetson/OpenVINO). Kubeflow Edge. Private 5G.

- IT/OT Convergence
- MLOps 'At the Edge'
- Zero-Trust Native
- Data Governance

Costs & CAPEX

High cloud OPEX (storage, egress). CAPEX limited to pilot projects (POC). Hidden integration costs.

Costs & CAPEX

Overall TCO ↓ 50% (less cloud/network). CAPEX modernization of lines & Edge Nodes.

Ecosystem

Dependence on Hyper scalers (AWS, Azure) and traditional IT Integrators.

Ecosystem

OEM Edge (NVIDIA, Qualcomm), Telcos (Private 5G), Hyperscalers (Hybrid).

As Is KPIS	80 – 200 ms	Silos	12 – 18 months	< 10%
	Average Latency	OT Security	Average ROI	Local Processing

Target KPIS	< 10 ms	Unified	< 6 months	> 80%
	Target Latency	OT Security	Average ROI	Local Processing

Telcos 2035 : From Silent Pipes to Edge AI Orchestrators (+30% ARPU)

Transforming the model : From pure connectivity to monetized Edge & API services

2025 "Dumb Pipe" model

▤ Architecture & Infra
5G NSA (Non-Standalone), Cloud-centric Backhaul. Very limited MEC (Multi-Access Edge). Network slicing exists but is poorly monetized.

ⅲ Value Creation
B2B ARPU under pressure. Price competition on data. Basic IoT offerings with low margins.

⟳ Organization / Processes / Tools
Organization : Silos Network/IT, OSS/BSS legacy
Processus : Manual provisioning, best-effort SLA
Tools : RAN/Core trad. (Ericsson/Nokia)

◐ Costs & CAPEX
High network OPEX. Heavy 5G investments. Complex slicing management. Expensive energy/data transport.

⊛ Ecosystem
Hyperscalers (limited area partnerships), traditional RAN equip. manufacturers.

Current KPIS
20 – 50 ms 5G Latency
< 10% MEC Attachment

2035 Edge-Native Service Model

▤ Architecture & Infra
5G SA / 6G. Massively distributed MEC, local UPF. Nationwide Edge POPs. Exposed and standardized network APIs.

ⅲ Value Creation
API monetization (on-demand QoS). Vertical slicing (NPN factories/automotive). Edge PaaS. B2B ARPU +20-30%.

⟳ Organization / Processes / Tools
Organization : Network-Cloud convergence, API products.
Processus : Zero-touch provisioning, real-time SLA
Tools : O-RAN, K8s cloud-native, NWDAF

◐ Costs & CAPEX
Automation (AIOps). Energy efficiency. CAPEX targeted at local MEC/Cores rather than transportation.

⊛ Ecosystem
Hyperscalers (Wavelength, Outposts), Vertical ISVs, OT Integrators.

Target KPIS
5 – 10 ms Target Latency
30 – 40% MEC Attachment

Center connectors:
- Marketplace APIs
- Edge Co-investments
- Revenue-Share Models
- Network-as-a-Service

Hyperscalers 2035 : Why AWS, Azure and Google are investing heavily in the Edge

Transforming the model : From massive centralization to distributed Cloud-Edge hybridization

2025 Centralized Model

⊟ Architecture & Infra

Centralized training and inference. Massive GPU clusters. Latency >50ms. Sovereignty and lock-in challenges.

📈 Value Creation

High IaaS/PaaS/MLaaS consumption. High egress fees. Margins under pressure (GPU/energy cost).

⟳ Organization / Processes / Tools

Organization : Centralized teams, IaaS/PaaS focus, regional silos.

Processus : Centralized deployment, egress fees, monolithic models.

Tools : TensorFlow, PyTorch, SageMaker, Azure ML, Vertex AI.

💰 Costs & CAPEX

CAPEX for massive data centers. OPEX for energy and cooling that are constantly increasing.

⊛ Ecosystem

Nvidia (GPU), Intel (CPU), Databricks (ML Ops). Vendor lock-in.

→

- ⊘ **Sovereign Offers**
- ⊟ **Federated Learning**
- ⊙ **Co-managed SLA**
- 🖥 **Marketplace Agents**

2035 Distributed Hybrid Model

⊟ Architecture & Infra

Hybrid cloud-edge. Low-latency gateways, regional caches. Serving on-premises/sovereign.

📈 Value Creation

Inference token-based billing. Vertical platforms (Industrial / Automotive / Healthcare). Model governance services.

⟳ Organization / Processes / Tools

Organization : Distributed edge teams, focus on vertical platforms, geo-distributed pods.

Processus : Hybrid deployment, federated learning, distributed models, multi-site orchestration.

Tools : Edge extensions (AWS Wavelength, Azure Arc, GCP Distributed Cloud), multi-cluster Kubeflow, ONNX Runtime.

💰 Costs & CAPEX

Cost/inference ↓ 40%. Optimized egress (↓ 30-50%). Energy efficiency (liquid cooling).

⊛ Ecosystem

Open and co-managed ecosystem : Telcos (MEC), Edge silicon vendors

---

⊙ As Is KPIS	> 50 ms Average Latency	IaaS / PaaS Billing	High Egress Fees	Complex Sovereignty

⊙ Target KPIS	< 20 ms Edge Bridge SLO	Token Billing	Native Sovereignty	↓ 30-50% Egress Fees

ALVAREZ & MARSAL

From Silicon to Software : How Edge AI is Reinventing Chipmakers

Transforming the model: From Silicon-Centric to Full-Stack Edge Platform

2025 Silicon-Centric Model

Architecture & Infra

Focused on **hardware (silicon)**. Fragmented SDKs and compilers. Focus on demos and technical drivers.

Value Creation

Transactional hardware sales (chips/SoCs). Limited SDK licenses. Ad-hoc professional services for integration.

Organization / Processes / Tools

Organization : Silicon-centric teams, vendor-fragmented SDKs, responsive support.

Processus : Custom development, manual integrations, long release cycles.

Tools : CUDA, OpenVINO, TensorRT (siloed), proprietary compilers.

Costs & CAPEX

CAPEX : Silicon R&D 15-20% of revenue, High BOM (fabs, tapeouts). OPEX: Technical support, certifications (ISO 26262, ASIL).

Ecosystem

OEM device partners, niche integrators, open-source developer communities.

Toolchain Standard.
OEM Co-design
Secure Supply Chain
Compliance (ISO26262)

2035 Full-Stack Platform Model

Architecture & Infra

Full-Stack approach (Silicon + Runtime + Unified SDK + MLOps + OTA). Certified vertical references (Safety/Medical).

Value Creation

Recurring Software Mix >40% (Licenses, Support, Marketplaces). Managed Edge Services.

Organization / Processes / Tools

Organization : Full-stack teams (HW+SW), unified platform, proactive Customer Success.

Processus : Standardized SDKs (ONNX), OTA deployment, native CI/CD, marketplaces

Tools : ONNX Unified Runtime, standardized toolchains, native MLOps, TEE/SE.

Costs & CAPEX

CAPEX: Full-Stack R&D 12-18% of revenue. Optimized BOM ↓15-20% (adv. nodes, co-design). OPEX: Cloud platforms, Cust. Success, exp.certifications.

Ecosystem

Hyperscalers (Compilers/Backends), Telcos (MEC), Vertical ISVs, Indust. OEMs.

As Is KPIS	20 – 40 ms	< 15%	Variable	Complex
	Average Latency	Soft. Part	Security	Portability

Target KPIS	< 10 ms	> 30 – 40%	TEE / SE	> 80%
	Target Latency	Soft. Part	Security	Portability

ALVAREZ & MARSAL

SECTION 7 –
KEY PROCESSES & EDGE AI TCO

Monitor the Edge AI : 50x More Complex, 10x More Expensive

Comparative analysis of observability : From a unified centralized view to distributed blind spots
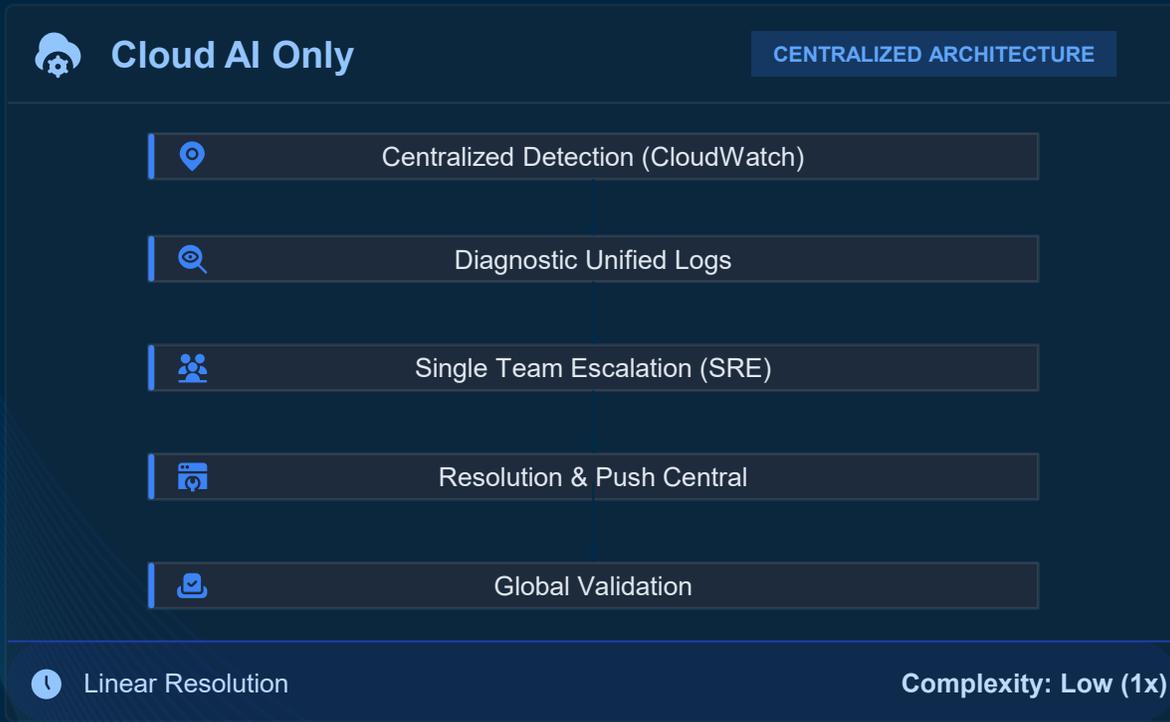
Cloud AI Only — CENTRALIZED MONITORING

- Centralized Collection
- Unified Aggregation
- Real-Time Analysis
- Unified Alarms
- Global Dashboards

👁 100% Visibility — **Complexity : Low (1x)**

Cloud + Edge AI — DISTRIBUTED MONITORING

- Local Collection (1000s Nodes)
- Pre Aggregation & Edge Filtering
- **Disconnections & Buffer Storage**
- Selective Transmission (Costs)
- Distributed Correlation (Time)
- Alarms Prioritization
- Dashboards

👁 Partial Visibility — **Complexity : High (50x)**

📊 8 Dimensions of Complexification

📍 Collection Point	x1000	🔀 Data Volume	x100	📸 Collection Latency	x10	📈 Correlation	x5
1 Data Centre ➡ **1000s Nodes**		GB / Day ➡ **TB / Day (Dist.)**		Real Time ➡ **Differed / Buffered**		Direct ➡ **Multi Sources**	

🚨 Alarms	x3	☰ Storage	x5	💲 Costs	x3	👁 Visibility	x2
Single Source ➡ **Multi Levels**		Centralized ➡ **Dist. & Aggregated**		Fixed ➡ **Variable (Trans.)**		100% ➡ **Blind Zones**	

ALVAREZ & MARSAL

Edge AI Incidents : Why 1000 Sites = Complexity × 5

Comparative analysis of the resolution chain : From centralized simplicity to distributed complexity

Cloud AI Only — CENTRALIZED ARCHITECTURE

- Centralized Detection (CloudWatch)
- Diagnostic Unified Logs
- Single Team Escalation (SRE)
- Resolution & Push Central
- Global Validation

Linear Resolution — **Complexity: Low (1x)**

Cloud + Edge AI — DISTRIBUTED ARCHITECTURE

- Local Alert (Edge) | Central Alert
- Localization & Correlation (1000s nodes)
- Hybrid Diagnostics (Network ? Device ? Cloud ?)
- Multi-team escalation (Cloud / Edge / Site Ops)
- Local Fix | Global OTA
- Complex Rollback (Dependency Management)

Multi-level resolution — **Complexity : Critical (5x)**

8 Dimensions of Complexification

Topology	**x50**	**Detection**	**x3**	**Diagnostic**	**x5**	**Teams**	**x5**
1 Data Centre → **1000s Nodes**		Centralized → **Distributed**		Unified Logs → **Correlation**		Central → **Cloud / Edge / Site**	
Tools	**x2**	**Deployment**	**x4**	**Rollback**	**x5**	**Governance**	**x2**
Single Stack → **Multi-Stack**		Direct Push → **OTA Cond.**		Global → **Granular**		Simple SLA → **E2E SLA**	

Change Management Edge AI : Why 1 Team Becomes 1000

Comparative analysis of change management : From uniform adoption to multi-site transformation

Cloud AI Only
CENTRALIZED AND LINEAR

- Single Planning
- Centralized Training
- Global Testing & Validation
- "Big Bang" deployment
- Post-Deployment Support

Uniform Adoption — **Complexity : Low (1x)**

Cloud + Edge AI
MULTI-SITES & WAVES

- Strategic Planning
  - Cascade Communications
  - Distributed Training
- Local Pilots (POCs)
- Conditional Wave Deployment
  - Location Validation
  - Site Adjustment
- Multi-level support

Heterogeneous Adoption — **Complexity : High (10x)**

8 Dimensions of Complexification

Teams Perimeter	x50	Communication	x5	Training	x4	Adoption	x3
1 Team ➡ 1000s Dist.		Direct ➡ Multi Level Casc.		Centralized ➡ Dist. / Cultural		Uniform ➡ Heterogenous / Site	

Resistance	x5	Timeline	x3	Governance	x2	Success Measurement	x2
Centralized ➡ Geographically Dist.		Linear ➡ Cond. Waves		Centralized ➡ Local Autonomy		Central KPIs ➡ Multi Level KPIs	

ALVAREZ & MARSAL

AI Edge Security: Attack Surface × 100, Compliance × 10 Jurisdictions

Comparison of security challenges : From the centralized model to distributed multi-site governance

Cloud AI Only

CENTRALIZED PERIMETER

- Threat Detection
- Centralized Analysis
- Unified IAM
- Synchronous Global Patch
- Conformity Validation

Single Jurisdiction   **Complexity : Low (1x)**

Cloud + Edge AI

SURFACE x 100

- Local / Central Detection
  - Correlation
  - Isolation Node
- **Physical Access / Model Poisoning**
- Zero-Trust Authentication / KMS Edge
- Conditional OTA Patch
- Multi Jurisdictions Validation

Multi Jurisdictions   **Complexity : Critical (100x)**

8 Dimensions of Complexification

Attack Surface	x100	Authentication	x5	Encryption	x5	Compliance	x10
1 Data Centre ➡ 1000s Nodes		IAM Central ➡ Zero Trust		Centralized Keys ➡ KMS Edge		Unique ➡ Multi Jurisdictions	
Audits	x5	Patching	x3	Isolation	x5	Governance	x3
Centralized ➡ Distributed		Global Sync. ➡ OTA Cond.		Network ➡ Micro Segment		Central Policy ➡ Multi Level	

CAPEX x 50, OPEX -47% : The Economic Paradox of Edge AI

Comparative Financial Analysis : From pure OPEX predictability to profitable CAPEX/OPEX hybridization

Cloud AI Only

PREDICTABLE COSTS

- Unique Estimate
- Cloud Provisioning
- Usage (Pay-As-You-Go)
- Monthly Billing
- Simple Optimization

Linear & Predictable   **Complexity : Low (1x)**

Cloud + Edge AI

HYBRIDE & VARIABLE

- Multi Components Estimate
- Initial Edge CAPEX (High)

High CAPEX & Obsolescence

- Distributed Deployment
- Variable Transmission Costs
  - Sites Maintenance
  - Hybrid Billing

Variable & Complex   **Complexity : High (10x)**

8 Dimensions of Complexification

CAPEX Structure	x50	Compute OPEX	x5	Transmission	x3	Maintenance	x10
1 Data Centre ➡ **1000s Nodes + Infra**		Centralized ➡ **Hybrid Distributed**		Egress Fees ➡ **Bidirect. Variable**		Centralized ➡ **Local Multi Sites**	

Energy	x2	Vendors	x5	Predictability	x3	Optimization	x5
Opt. Data Centre ➡ **Distributed Non-Opt.**		1 / 2 Vendors ➡ **Multi-Vendors**		Linear ➡ **Variable + Peaks**		Simple (Resource) ➡ **Complex (Cache)**	

€360 Million in Savings Over 10 Years: A Business Case for Edge AI

Comparative Economic Model: The Winning Bet of the Initial Edge Investment

ⓘ Assumptions (Reference Basis)

🏭 Scope: 1000 Industrial Sites

🔄 Load: Compute Intensive AI

📅 Period: 10 Years (2025-2035)

€ Unit: Millions of Euros (€M)

📈 Comparative Cost Structure

Cost Item	Cloud AI Only	Cloud + Edge AI	Delta
CAPEX (Initial Investment)			
Infra & Devices	0 M€	120 M€	+120 M€
OPEX (Annual Costs)			
Compute & Storage	48 M€	23 M€	-52%
Transmission (Egress)	20 M€	4 M€	-80%
Maintenance & Energy	0 M€	8 M€	N/A
Licences Soft	5 M€	4 M€	-20%
Total OPEX / Year	**73 M€**	**39 M€**	**-47%**
FTE (Human Resources)			
Ops/Support Teams	50 FTE	80 FTE	+60%
Annual FTE Cost	**4 M€**	**8 M€**	**+100%**
TOTAL ANNUAL	**77 M€**	**47 M€**	**-39%**

Cumulative TCO Evolution (€M)

Break-even point at 4 years (CAPEX amortization)

Legend: — · — Cloud AI Only (OPEX)   - - ● - - Cloud AI + Edge AO (Hybrid)
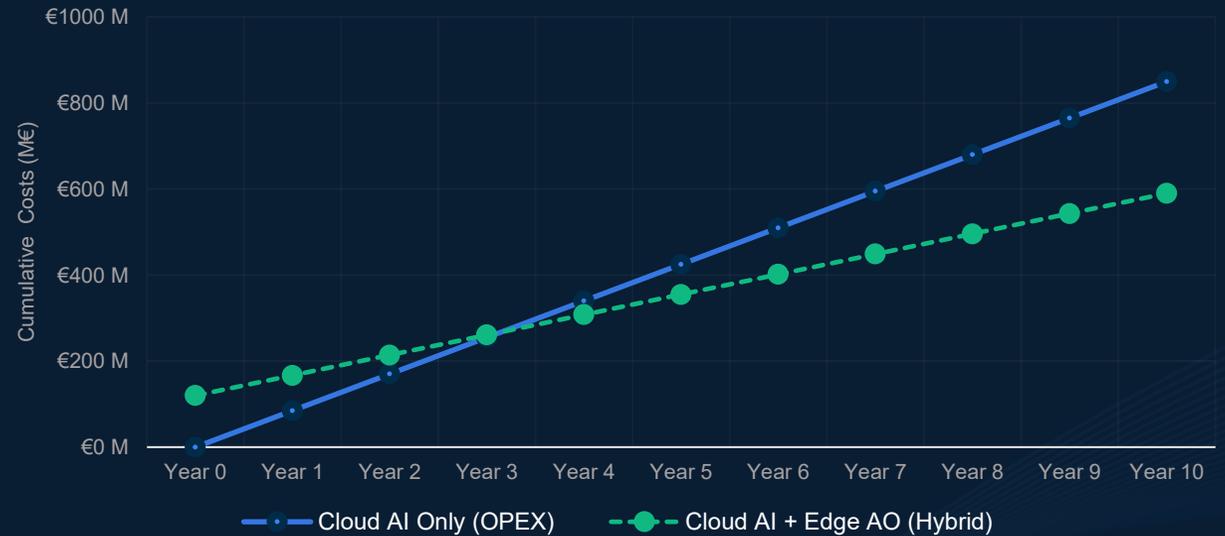
🐷 **€300 M**
Savings over 10 years

⚖️ **3.2 years**
Break-even point

% **-39%**
Annual Cost Reduction

💡 **Strategic Insight:** The hybrid model requires a high entry ticket (€120M) and increased HR complexity, but generates massive efficiency gains from the 4th year onwards thanks to the collapse of transmission and cloud compute costs.

ALVAREZ & MARSAL

SECTION 8 –
EXECUTIVE SUMMARY

Edge AI : $357 Billion (80% of the Market by 2035), 8 Sectors transformed

Strategic framework for the evolution from Cloud AI to Edge AI (2020–2035)

Timeline 2020-2035

- **2020-2022 : Cloud Dominant**
  Massive centralization, LLM training

- **2023-2025 : Edge Emergence**
  SLM <10B parameters, NPU, first deployments

- **2026-2028 : Hybrid**
  Cloud-Edge orchestration, 50% adoption

- **2029-2031 : Agentic AI**
  Autonomous multi-agent systems

- **2032-2035 : Pervasive AI**
  Swarm Intelligence, ubiquitous deployment

5	15
Key Phases	Years of Analysis

Sector Impact

- **Industry 4.0**
  Predictive maintenance & real-time quality

- **Automotive**
  Autonomous vehicles & ADAS

- **Healthcare**
  Instant AI diagnostic IA & telemedicine

- **Smart Cities**
  Intelligent management & public safety

- **Retail**
  Autonomous checkout & personalization

- **Energy & Utilities**
  Grid optimization & consumption forecasting

- **Agriculture**
  Precision irrigation & crop monitoring

- **IT & Telecom**
  Edge computing & distributed 5G

285%	2.0x
Edge Average ROI	vs Cloud ROI

Economic Impact

- **Edge AI Market Growth**
  $24 Md (2025) → $357 Md (2035), CAGR 27.7%. Market share 20% → 80% vs Cloud.

- **Edge AI & Cloud AI M&A Consolidation**
  210 deals (2026) → 407 deals (2035). Valuation $45 Md → $156 Md (inc. Edge $125 billion, Cloud $31 billion)

- **CAPEX/OPEX Transformation**
  CAPEX peak $50 Md (2030) then -40%. OPEX reduction -62% (2022-2035). Savings : $32 Md/an.

- **Revenue & Employment Impact**
  Agentic AI +$450-650 Md in revenues by 2030. 2.3M specialized jobs created by 2027.

- **Operational & Environmental Cost Reduction**
  Inference cost : -85% (NPU vs GPU Cloud). Energy : 0.1W vs 250W. TCO -50% over 3 years.

- **Innovation & Business Models**
  Edge-as-a-Service $40 Md (2030). Decentralized SaaS, privacy-first & sovereign revenues.

$156 Md	-62%
2035 M&A Valuation	OPEX Savings

ALVAREZ & MARSAL

5 Reasons why Edge AI will dominate the Cloud by 2035

80% of workloads will migrate to the edge: 5 Strategic Insights

Cloud Edge Transition →

80% Edge / 20% Cloud

Major paradigm shift for real-time workloads by 2035. The Edge becomes the center of gravity of critical inference.

2035 HORIZON

Edge AI Market Growth

$357 billion in 2035 (80% of the AI market)

↑ Average CAGR 27.7% (vs $24.0 billion in 2025)

Sustained growth over the decade 2025-2035, peaking at 34% in 2029 (BCC Research). Reaches 80% of the total AI market share by 2035.

HYPER-GROWTH

ROI Outperformance

ROI 2.0x vs Cloud

285% (Edge) vs 145% (Cloud) • Return 4.2 months

Edge AI delivers superior immediate business value, particularly in Industry 4.0 (320%) and Automotive (280%).

OPERATIONAL EFFICIENCY

Explosion M&A Edge AI

250+ Deals in 2035

Valuation $125 billion • Edge overtakes Cloud in 2031

The volume and value of Edge AI transactions will surpass those of Cloud AI, marking the maturity and consolidation of the industry.
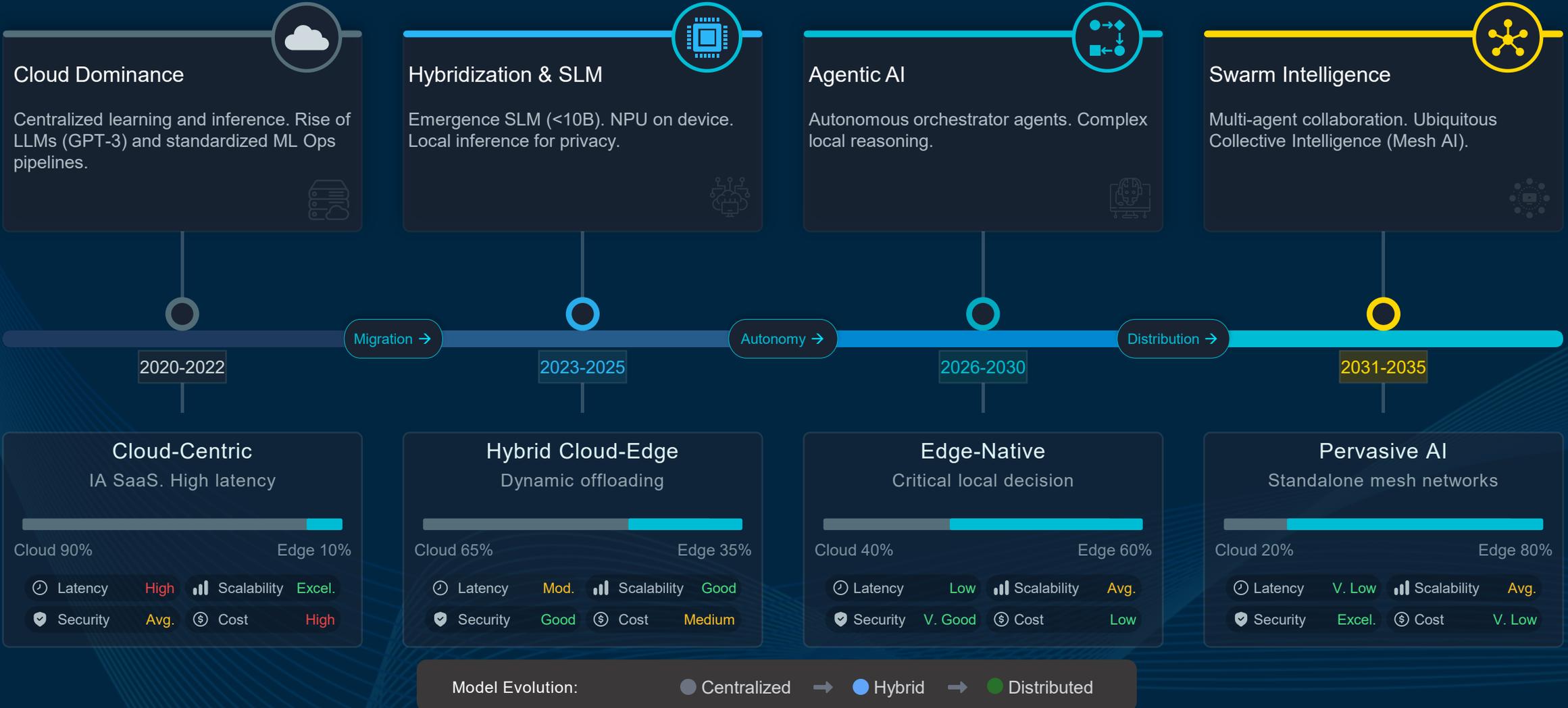
MARKET CONSOLIDATION

Agentic AI Revolution

+$450-650 billion

2030 Total economic impact generated, separate from the technology investment • -50% Ops costs

The emergence of Swarm Intelligence and **Edge autonomous agents will create massive economic value** via cognitive automation.

TECHNOLOGICAL FUTURE

ALVAREZ & MARSAL

From centralization to omnipresence : 15 years of global transformation

Evolution of architectures: from centralization to distributed and pervasive intelligence

Cloud Dominance
Centralized learning and inference. Rise of LLMs (GPT-3) and standardized ML Ops pipelines.

Hybridization & SLM
Emergence SLM (<10B). NPU on device. Local inference for privacy.

Agentic AI
Autonomous orchestrator agents. Complex local reasoning.

Swarm Intelligence
Multi-agent collaboration. Ubiquitous Collective Intelligence (Mesh AI).

Migration →
Autonomy →
Distribution →

2020-2022
2023-2025
2026-2030
2031-2035

Cloud-Centric
IA SaaS. High latency

Cloud 90%   Edge 10%

Latency	High	Scalability	Excel.
Security	Avg.	Cost	High

Hybrid Cloud-Edge
Dynamic offloading

Cloud 65%   Edge 35%

Latency	Mod.	Scalability	Good
Security	Good	Cost	Medium

Edge-Native
Critical local decision

Cloud 40%   Edge 60%

Latency	Low	Scalability	Avg.
Security	V. Good	Cost	Low

Pervasive AI
Standalone mesh networks

Cloud 20%   Edge 80%

Latency	V. Low	Scalability	Avg.
Security	Excel.	Cost	V. Low

Model Evolution: ● Centralized ➡ ● Hybrid ➡ ● Distributed

ALVAREZ & MARSAL

2025-2026 data : sources and methodology of the analysis

Consolidated market data 2025-2026 and bibliographic references

Market Indicators 2025-2026

$19.0 billion
Edge AI Market Size
Estimation 2025 (Global)

30.48%
CAGR 2025-2034
High scenarios up to 31%

36%
NA Market Share
Source: Bayelsawatch 2025

2.0x
ROI Edge vs Cloud
Real-Time Industries

690k
New Cloud AI & Edge AI jobs
Net addition by 2035

-50%
Operational Costs
Via Offloading Edge

Main Sources & References

Market Research
- Precedence Research (2024) Edge AI Market Size & Growth Forecast.
- IDC (2024) Worldwide Edge Spending Guide.
- Spherical Insights (2024) Edge AI Market Analysis 2033.
- Grand View Research (2025) Edge Computing Outlook.
- The Business Research Co. (2025) AI Infrastructure Report.

Strategic Consulting
- McKinsey & Company (2025) "Empowering Industries with Agentic AI".
- McKinsey Insights (2024) The Next Decade of AI (2025-2035).
- Deloitte (2025) Tech Trends: The Spatial Web & Edge.
- Gartner (2024) Hype Cycle for Edge Computing.

M&A & Valuations
- PWC (2025) "Global M&A Trends in AI".
- BCG (2026) "M&A Outlook: High Expectations".
- Morgan Stanley (2026) "5 Forces Driving M&A".
- Finerva (2026) "Robotics & AI Valuation Multiples".
- Lazard (2025) "M&A Review & Outlook".

Government
- NIST (2024) AI Risk Management Framework.
- US Dept. of Transportation (2023) Smart City Data.
- US Dept. of Energy (2025) Smart Grid Report.
- European Commission (2024) EU AI Act Guidelines.

Organizations Int.
- ITU (2024) AI for Good: Edge in Developing Nations.
- IEA (2024) Digitalization & Energy Efficiency.
- WHO (2024) Ethics & Governance of AI.
- World Econ. Forum (2025) Future of Compute.

Tech Industry
- Premio Inc. (2024) Edge LLMs vs Cloud LLMs.
- Clarifai (2024) Edge vs Cloud AI: Hybrid Future.
- Siemens (2025) Industrial AI & Agentic Future.
- NVIDIA (2024) Edge Computing Solutions.

Jobs & Talents
- PwC (2025) "Global AI Jobs Barometer".
- LinkedIn (2025) "AI Talent Insights".
- Gartner (2024) "AI Workforce Upskilling".
- JP Morgan(2025) "AI Impact on Jobs".
- BLS (2025) "AI impacts in projections".
- Deloitte(2025) "Workforce Evolution".

ALVAREZ & MARSAL

LEADERSHIP. ACTION. **RESULTS.**ᴿᴹ

Alvarez & Marsal

CONFIDENTIAL – NOT FOR DISTRIBUTION