



# 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

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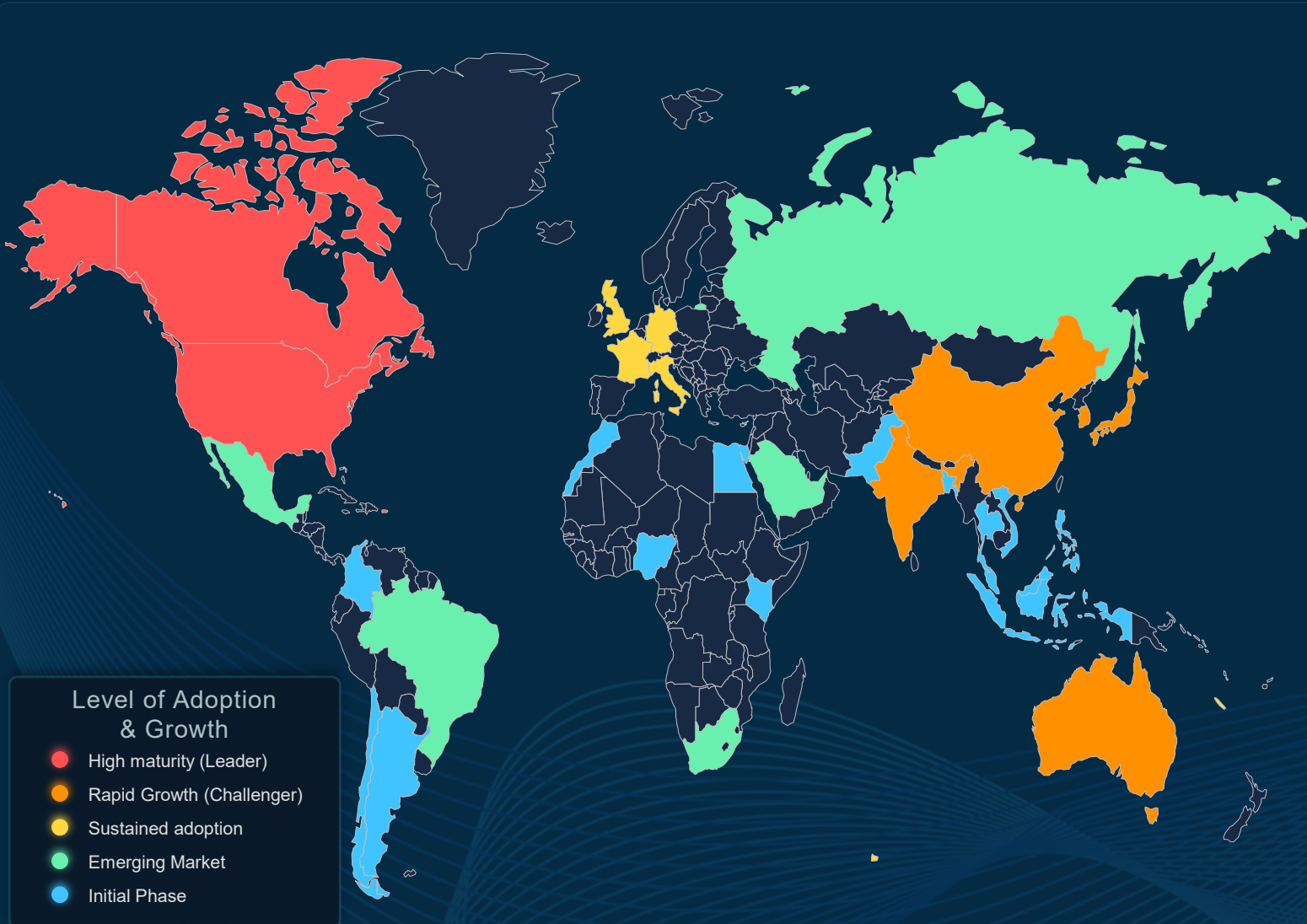
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The background is a deep blue gradient with a perspective view of a grid of lines that recede into the distance. Scattered throughout are small, glowing particles in shades of cyan and yellow, some appearing as streaks or clusters. A vertical white bar is positioned to the left of the text.

# 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

<b>North America</b> <span>36% Share</span>	
CAGR (25-30) <b>22.5%</b>	Maturity <b>Advanced</b>
Drivers: Hyperscalers, Autonomous Vehicles, Defense, Smart Retail.	
<b>Asia Pacific</b> <span>32% Share</span>	
CAGR (25-30) <b>28.4%</b>	Status <b>Top Growth</b>
Drivers: Smart Cities (China/Korea), Industrial Robotics, Massive 5G.	
<b>Europe</b> <span>20% Share</span>	
CAGR (25-30) <b>24.1%</b>	Focus <b>Regulation</b>
Drivers: Industry 4.0 (DACH), Healthcare, GDPR/AI Act Compliance.	
<b>Latin America</b> <span>5% Share</span>	
CAGR (25-30) <b>18.5%</b>	Key Sector <b>AgriTech</b>
Drivers: Precision Agriculture, Mining Monitoring.	
<b>MEA</b> <span>3% Share</span>	
CAGR (25-30) <b>16.2%</b>	Potential <b>Energy</b>
Drivers: Smart Cities (Gulf), oil management, infrastructure.	

# 5G Maturity $\geq 4$ + Ecosystem $\geq 4$ = Guaranteed Adoption: The Regional Formula

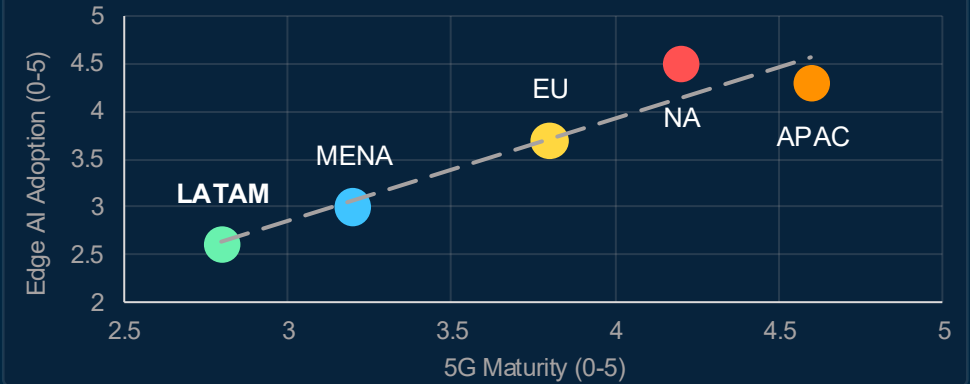
6 Decisive Factors – Why APAC and North America Are 3-5 Years Ahead of Europe

## Matrice Comparative des Drivers (Échelle 1-5)

REGION	Regulatory	Infra & 5G	R&D / Innov.	Ecosystem	Talents	Competition	Profile (Radar)
Am. du Nord	4	4	5	5	5	4	
Asie-Pacifique	3	5	5	5	3	4	
Europe	5	4	4	3	4	3	
Moyen-Orient	3	4	3	2	2	3	
Am. Latine	2	3	2	2	2	3	

● Leader ● Advanced ● Average ● Low ● Very Low

## Correlation : 5G Maturity vs Edge AI Adoption



### Strategic Insights

- Adoption accelerates significantly when 5G Maturity ( $\geq 4$ ), Ecosystem ( $\geq 4$ ) and Talent ( $\geq 4$ ) are combined (NA, APAC).
- In Europe, strong public policies and regulations (GDPR, AI Act) partially compensate for the shortcomings of the startup ecosystem/

## Scale-out Adoption Timeline

2025 - 2027



**Leaders**

United States, China, South Korea

Driven by Hyperscalers, massive R&D investments and an already mature 5G infrastructure.

2027 - 2029



**Fast Followers**

Europe, Japan, Singapore

Structured adoption through regulation, focused on Industry 4.0 and autonomous vehicles.

2029 - 2032



**Strategic Followers**

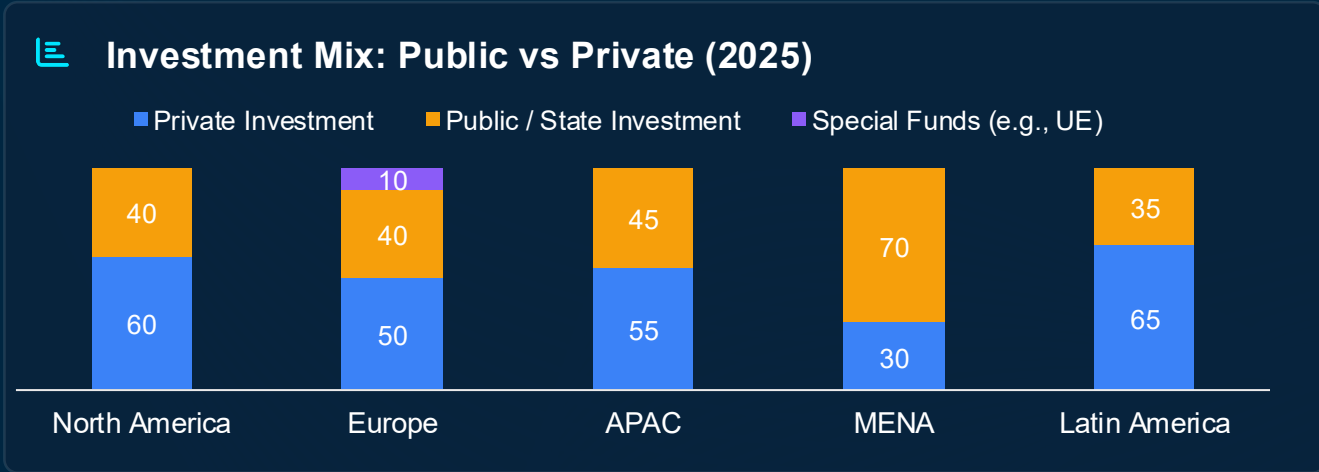
Middle East, Latin America

Adoption driven by sovereign wealth funds (MENA) and specific industrial needs (Agri/Mining LATAM).

# Indus. 40% APAC, Ret. 30% US, Energy 35% MENA: 5 Regions, 5 Winning Bets

Radical sector specialization + 70% public funding in the MENA region: Where to invest based on your sector

Region	Top Sector	Percentage
<b>North America</b>	Smart Retail	30%
	Health & Telemedicine	25%
	Smart Cities	20%
	Manufacturing	15%
	Others	10%
<b>Drivers</b> : Strong private equity, Hyperscaler ecosystem. <b>Focus</b> : Auton. retail (Amazon), Embedded edge (Auto).		
<b>Europe</b>	Industry 4.0	35%
	Automotive	25%
	Energy / Utilities	20%
	Smart Cities	12%
	Healthcare	8%
<b>Drivers</b> : Sovereignty (GDPR, AI Act), green transition. <b>Focus</b> : Industry 4.0 (DACH), local power grids.		
<b>Asia - Pacific</b>	Electronics / Manufacturing	40%
	Smart City & 5G	25%
	Telecom Edge	15%
	E-commerce	12%
	Healthcare	8%
<b>Drivers</b> : Absolute 5G SA maturity, government support. <b>Focus</b> : Automation (Ports, Logistics), Edge Telecom.		
<b>Middle East</b>	Energy / Utilities	35%
	Smart Cities	30%
	Transport / Logistic	20%
	Security	15%
<b>Drivers</b> : Post-oil plans (Vision 2030), sovereign wealth funds. <b>Focus</b> : Smart Cities (NEOM), infrastructure monitoring.		
<b>Latin America</b>	AgriTech	30%
	Mines and Resources	25%
	Retail & Banking	20%
	Smart Cities	15%
	Healthcare	10%
<b>Drivers</b> : Primary efficiency, pragmatic investment. <b>Focus</b> : Agriculture (drones), mining security (Brazil/Chile).		



### Strategic Insights

- Strong Sector Specialization**  
Industry dominates in **EU / APAC** (35-40%), Energy structures **MENA** (35%), while Retail and Healthcare drive **North America** (55% combined).
- The Driver of Public Investment**  
Public money is the main trigger in emerging regions (**MENA 70%**) and catalyzes **APAC** (45%).
- 5G Depth & Ecosystem**  
The maturity of the 5G infrastructure dictates the complexity of deployments (e.g., massive Edge Telecom cases in **APAC**, absent elsewhere).

# 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




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