# The Artificial Intelligence Readiness Index (AIRI) and the IndoAI Platform: A Novel Framework for Standardizing and Architecting Complete Vision AI Solutions

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Abstract—The convergence of artificial intelligence, edge computing and IoT, has created a new generation of intelligent cameras, Intelligent Vision Systems, capable of real-time perception and decision-making. IVS's procurement remains confusing because of opaque hardware metrics, obscuring true AI capability and fueling deployment risk, project failure and continuous innovation drag. This paper introduces the IndoAI Marketplace, featuring two breakthrough innovations: (1) the Artificial Intelligence Readiness Index (AIRI) a standardized metric quantifying practical edge device intelligence and (2) an AI-assisted Solution Architecture Engine automating complete system design, IndoAI automatically architects complete, optimized solutions tailored to specific use cases, transforming a fragmented hardware commodity market into a cohesive, intelligence-driven ecosystem, thereby substantially accelerating the ethical and effective adoption of industrial and enterprise AI vision solutions. Analyzed through the theoretical lenses of market failure and Marketing Mix 3.0(3Ps) **Platforms** emphasizing Personalization. and Performance Analytics this platform establishes objective intelligence as the primary unit of commerce. The Vision AI market (\$60B by 2029) suffers from a critical information asymmetry: AI capabilities remain opaque while procurement relies on obsolete hardware specifications. The IndoAI Marketplace is a comprehensive solution not as a traditional e-commerce platform, but as a Vision Intelligence Platform that dynamically aligns hardware capability, software intelligence and specific use-case requirements.

Index Terms—Vision AI, Edge Computing, AI Readiness Index, Solution Architecture, Platform Economics, AI Governance, Indoai, AI Camera, 3Ps

#### I. INTRODUCTION

From Commodity Retail to AI-Assisted System Design

Edge deep learning (Edge DL) uses edge computing resources to perform deep learning inference and training tasks closer to data sources[1]. Edge video analytics systems can execute computer vision and deep-learning algorithms through Edge AI chips embedded directly into cameras. Edge analytics receives the video from the edge devices and executes deep learning object detection algorithms[2]. The deployment of deep learning models onto sensor hardware has redefined camera capability, transforming devices into active, real-time inferential processors [3][58][59]. However, the procurement ecosystem remains constrained by the traditional 4Ps (Product, Price, Place, Promotion) model, treating sophisticated AI devices as interchangeable commodities[4]. This market architecture is fundamentally insufficient in an "AIfirst, platform-dominated economy".

This research argues that the market's inefficiency stems from a failure to enact Platformization the strategic transition to an ecosystem-based business model that facilitates value co-creation ([5])[6]. We utilize the Marketing Mix 3.0 framework [7] to structure our solution, defining the IndoAI Marketplace through its three digitally-native pillars: Personalization, Platforms and Performance Analytics[7]. The IndoAI Marketplace is engineered as a Vision Intelligence Platform dedicated to delivering complete vision solutions, thereby shifting

focus from selling hardware to architecting measurable business outcomes.

Despite these advances, the procurement ecosystem for vision AI systems remains anchored to legacy frameworks designed for passive closed-circuit television (CCTV) equipment. Current market mechanisms evaluate AI-enabled cameras primarily through traditional specifications megapixel resolution, sensor size, compression standards while treating AI capabilities as undifferentiated marketing claims rather than measurable, comparable attributes. This misalignment between technological capability and market structure creates what we term the "Intelligence Gap": a systematic undervaluation and misallocation of AI functionality in edge vision systems.

# II. DECONSTRUCTING THE PROBLEM – AN OPAQUE MARKET IN AN AGE OF INTELLIGENCE

The foundational premise of the IndoAI initiative rests on diagnosing and rectifying the systemic inefficiencies within the current Vision AI procurement market, which are rooted in critical information asymmetry [8].

# 2.1 Market Failure Theory and Information Asymmetry

Akerlof's [8]seminal work on information asymmetry demonstrates how quality uncertainty leads to market failure[9], with buyers unable to distinguish high-quality from low-quality products, ultimately driving high-quality offerings from the market. In Vision AI procurement, this changes as vendors making unverifiable claims about AI capabilities ("AI-enabled," "deep learning powered") without standardized benchmarks, creating a classic "lemons problem"[8] where buyers cannot rationally evaluate true capability, and as a solution Information asymmetry proposed a screening mechanism.

Traditional quality signaling mechanisms warranties, certifications, brand reputation (Spence, 1973)[10] prove insufficient for AI systems due to the context-dependent nature of algorithmic performance. A camera may perform quite well in one lighting condition or use case while failing in another, making aggregate quality signals unreliable [11].

# 2.2 Platform Economics and Ecosystem Orchestration

Modern platform theory emphasizes the role of digital intermediaries in reducing transaction costs[12], facilitating matching and enabling network effects [57][13]. Hang Liu[14] study fundamentally shape how diverse smart entities are coordinated on the platform to impact resource allocation efficiency and market stability. Successful platforms create value not merely through aggregation but through intelligent curation, standardization, and quality assurance [15]. Data-centric B2B platforms create value by allowing users to relate for acquiring and manipulating data[16]. Where there are element of complexity, uncertainty, information asymmetry, mistrust or increases in transaction costs arise, new entrants get a chance to enter into the market[56].

The IndoAI framework aligns with platform orchestration[17][18] principles by: (1) establishing standards that reduce search and verification costs[19], (2) automating complementarity between hardware, software, and services[20] and (3) enabling multi-sided network effects between manufacturers, developers, integrators, and end-users[21] [22][60].

2.3 Value Co-Creation and Service-Dominant Logic Vargo and Lusch's ([23]) Service-Dominant Logic posits that value is always co-created through the integration of resources and capabilities between providers and beneficiaries[24]. Rather than exchanging discrete products, firms engage in continuous service provision and collaborative value realization. This framework has been extended to technology markets through concepts of solution-based selling and customer co-creation[25].

Kotler's evolution of the Marketing Mix to version 3.0 emphasizes human-centric value, collaborative consumption and solutions over products[26]. The IndoAI approach operationalizes these principles by shifting from product catalogs to solution architectures, from specifications to outcomes, and from vendor-customer transactions to ecosystem partnerships.[27][28]

# 2.4 AI Governance, Standardization, and Ethical Deployment

The rapid advancement of AI technologies has outpaced regulatory frameworks and industry standards[29], creating governance gaps around

accountability, transparency, and fairness (Cath et al., 2018; [31])[30]. Emerging initiatives IEEE's Ethically Aligned Design (IEEE, 2019), EU AI Act, NIST AI Risk Management Framework[33] emphasize the need for measurable, auditable AI system characteristics[32].

Standards play a particularly important role in the field of ICT as the core function of ICT is to enable data, information, and idea flows over the interfaces[34] Standardization plays a crucial role in technology diffusion[35] by reducing uncertainty, enabling interoperability, and facilitating regulatory compliance (Blind, 2004; Tassey, 2000). Adoption of international digital standards reduces regulatory uncertainty and compliance costs for businesses, productivity[36]. enhances However, standardization faces unique challenges due to the probabilistic nature of machine learning [37], context-dependent performance and rapid algorithmic evolution (Brundage et al., 2020).

This creates what we term the Intelligence Gap: systematic undervaluation and misallocation of AI functionality forming

Core Problem: Markets cannot efficiently transact on intelligence when:

- AI capabilities are obscured behind generic "AIenabled" claims
- No standardized benchmarks verify vendor performance assertions
- Customers must self-assemble complex systems without expertise
- Hidden operational costs (subscriptions, storage, bandwidth) remain undisclosed until postpurchase
- No standardization

This information asymmetry generates classic market failure[8]: adverse selection drives quality degradation, procurement risk stifles adoption, and innovation investment focuses on easily marketed features rather than genuine capability improvements.

# III. THE INDOAI MARKETPLACE: A PARADIGM SHIFT IN PLATFORM ECONOMICS FOR VISION AI

The platformization introduced in Gujar's "3Ps" (Personalization, Platform, Performance Analytics)[7] finds its ultimate expression in this

model, moving far beyond a transactional ecommerce site to become a centralized, value-cocreating ecosystem[38]. This represents a paradigm shift from a linear, product-centric "pipeline" business to a non-linear, intelligence-centric platform economy[39][40], where the core asset is not the camera itself, but the network of interactions it enables. Earlier, IndoAI proposed how AI camera ecosystem to foster a developer-driven economy akin to the mobile app market- here paper describes evolution of AI cameras as a platform for AI model deployment and rise of customized AI models for enterprise applications is going to be[61]. In the Platform businesses instead of shoring resources and the participants(stakeholders) capabilities, encouraged to think at ecosystem level[41].

Data Bridge Market Research analyses that the computer vision AI camera market which was growing at a value of 11.22 billion in 2021 may reach USD 60.33 billion by 2029, at a CAGR of 23.40% during the forecast period of 2022-2029 [42].

The traditional market for AI cameras is a fragmented, high-friction pipeline: manufacturers sell hardware, separate vendors sell analytics software and integrators assemble bespoke solutions at great cost and complexity. This model has obscures value and limits scalability. The IndoAI Marketplace dismantles this pipeline by establishing itself as the indispensable intermediary the platform that connects and orchestrates all sides: hardware OEMs, AI model developers, system integrators and end-customers (from SMEs to government agencies), which has dominant network effects and hallmark of dominant platform economics. Each new camera manufacturer onboarded increases the choice for buyers, making the platform more attractive. Each new AI developer uploading a model enriches the ecosystem's intelligence, attracting more customers[55]. Each new solution deployed generates performance data refines the **AIRI** benchmarks recommendations, making the platform smarter and more indispensable for the next buyer. This creates a classic virtuous cycle of value co-creation[43], where growth in one user group fuels growth in another, leading to increasing returns to scale. The virtuous demonstrates that the principles co-production go beyond sharing power responsibility[44]. This platform model achieves

what traditional channels cannot: it democratizes access and monetizes intelligence at the edge[45]. For a small AI developer in Pune, the marketplace provides instant, global distribution to a pre-qualified customer base, bypassing years of enterprise sales cycles. For a school administrator, it offers a turnkey, trustworthy solution that was previously the domain of expensive consultants. The platform captures value not just from the sale of hardware (a one-time, lowmargin transaction), but from the recurring, highmargin software subscriptions, developer revenue shares, and premium services that flow through its ecosystem[46]. The AIRI (AI Readiness Index) is the platform's critical governance and mechanism—a standardized "currency" that reduces information asymmetry, builds trust and ensures quality across a heterogeneous supply base, which is essential for multi-sided platforms to function efficiently[47].

In essence, the IndoAI Marketplace operationalizes the "Platform" pillar of the 10Ps framework[7] as a strategic moat and growth engine. It doesn't just sell a product; it owns the ecosystem where the product's value is realized, updated and expanded. This shifts competition from features and price to ecosystem strength and data network effects. By controlling the platform where intelligence is traded, IndoAI positions itself not as a camera vendor fighting for margin, but as the essential infrastructure for the future of vision AI—a fact that has propelled companies like Amazon, Apple, and Airbnb to industry dominance. This is the true power of platform economics: building a market so efficient and valuable that it becomes the market itself[48].

#### IV. MARKET FAILURE ANALYSIS: FOUR DIMENSIONS OF DYSFUNCTION

Current procurement for AI-enabled products[49] or cameras is characterized by four interrelated failures that create significant economic inefficiency:

Market Failure	Core Issue	Empirical Evidence & Consequence
Opacity of AI	Functional intelligence obscured	67% of enterprise buyers report difficulty comparing AI
Capability	behind generic hardware	capabilities(1,000 business leaders surveyed said AI integration
	specifications	either remains limited or is non-existent[50]; More than 50%
		experience significant gaps between marketed and delivered
		functionality (Gartner, 2023), 54% of respondents agree they
		have the 'technology needed to deliver great customer
		experiences [51]
Misleading	Traditional metrics (resolution, frame	Most of procurement RFPs prioritize resolution while only very
Specifications	rate) bear minimal relationship to AI	few specify AI performance requirements
	inference quality	
Absence of	No vendor-agnostic methodology	Existing benchmarks measure isolated computational
Standardized	verifies "AI readiness" claims	performance but ignore deployment readiness; according to a
Benchmarks		2023 Accenture report on AI, companies stuck in the proof-of-
		concept (PoC) stage face a significant "ROI gap" of \$110 million
		on average in AI investments compared to those who
		successfully scale their projects[52]
Missing	Customers receive component	40% project failure rates for first-time deployments and 2.3x
Solution	catalogs, forcing non-experts to	budget overruns [54]
Architecture[53]	architect complex systems	

These failures create substantial economic consequences:

- Significant Total Cost of Ownership (TCO)
   Inflation versus properly architected solutions
- Long Term Year Adoption Delays as market opacity slows technology diffusion
- Innovation Suppression as inability to monetize algorithmic advances discourages R&D investment
- Resource Misallocation through overprovisioned hardware or under-deployed AI functionality

The fundamental gap is dual: no standardized intelligence metric exists and no automated mechanism translates requirements into validated

architectures. This creates classic information asymmetry (Akerlof, 1970) where buyers cannot distinguish between genuinely capable devices and "AI-washed" products, leading to adverse selection and market inefficiency.

# V. CORE INNOVATION: THE ARTIFICIAL INTELLIGENCE READINESS INDEX (AIRI)

To address informational void, we introduce the Artificial Intelligence Readiness Index (AIRI), a standardized, multi-dimensional metric (0-100) that quantifies a device's practical capacity to deliver intelligent outcomes across four weighted dimensions:

5.1 The Four Dimensions of AIRI Dimension 1: Compute and Performance (30% Weight)

Parameter	Weight	Evaluation Metrics	Benchmark Focus
On-Device Compute Capability	12%	NPU/TPU/GPU class, precision support, sustained vs peak TOPS	Raw and consistent inference power
Latency Performance	10%	End-to-end inference latency at target resolution	Real-time feasibility for time- sensitive applications
Power Efficiency	8%	Performance-per-watt (TOPS/W), thermal constraints	Scalability and sustainability

Measurement Methodology: Devices undergo standardized benchmark testing using industry-standard models (YOLOv8, ResNet-50, EfficientDet) across varying scene complexities, with sustained performance measured over 72-hour continuous operation periods.

Scoring Formula: ComputeScore =  $0.35 \times InferenceRate + 0.25 \times LatencyConsistency + 0.20 \times MultiModelCapacity + 0.10 \times ThermalStability + 0.10 \times PowerEfficiency$ 

Dimension 2: Architecture and Flexibility(25% Weight)

Parameter	Weight	Evaluation Metrics	Benchmark Focus
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Edge AI	9%	Local inference capability, offline	Reduced cloud dependency
Compatibility		operation robustness	
Model	10%	Custom/third-party model support,	Future-proofing against algorithm evolution
Flexibility		OTA update mechanisms	
Scalability &	6%	Multi-camera coordination, fleet	Enterprise deployment readiness
Orchestration		management APIs	

Measurement Methodology: Structured testing of model deployment workflows, OTA update reliability (success rate across 100 devices), and compatibility verification across 15 representative model architectures.

Scoring Formula: ArchitectureScore =  $0.30 \times ModelCompatibility + 0.25 \times OTAReliability + 0.25 \times CustomizationSupport + 0.20 \times ScalabilityDesign$ 

### Dimension 3: Integration and Openness (25% Weight)

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Parameter	Wt	Evaluation Metrics	Benchmark Focus
API & SDK	10%	REST/gRPC API completeness, documentation quality	Ease of integration and customization
Openness			
Standards Compatibility	8%	ONVIF Profile T, RTSP, MQTT, GB/T 28181 support	Interoperability in heterogeneous environments
Ecosystem Connectivity	7%	Native integrations (AWS Panorama, Azure Percept)	Reduced vendor lock-in risk
Measurement Methodology: Technical audit of API documentation, integration testing with 10 major VMS platforms, SDK			

completeness review, and assessment of proprietary restrictions.

Scoring Formula: IntegrationScore = 0.30×StandardsCompliance + 0.25×SDKQuality + 0.20×DataExportability + 0.15×VMSCompatibility + 0.10×(1-LockInRisk)

## Dimension4: Governance and Trust (20% Weight)

Parameter	Wt	Evaluation Metrics	Benchmark Focus
Data Ownership & Privacy	8%	Data sovereignty provisions, privacy- by-design features	Compliance and ethical deployment
Cybersecurity & Certification	7%	IEC 62443/UL 2900 certification, secure boot implementation	Security for critical infrastructure
Auditability & Compliance 5% Inference audit trails, bias detection reporting Transparency and accountability			
Measurement Methodology: Third-party security audits, penetration testing, regulatory compliance verification, privacy			

impact assessments, and supply chain transparency documentation review.

Scoring Formula: GovernanceScore = 0.30×SecurityCompliance + 0.25×PrivacyProtection + 0.20×RegulatoryAlignment + 0.15×Transparency + 0.10×SupplyChainSecurity

#### 5.2 AIRI Certification Tiers

Tier	Score Range	Suitable For	Key Characteristics	
AIRI Platinum	85-100	Critical infrastructure, government, defense	Enterprise-ready, highest security and performance	
AIRI Gold	70-84	Commercial deployments, enterprise security	Business-ready, robust features and compliance	
AIRI Silver	55-69	Pilot projects, development environments	Development-ready, basic AI capability	
AIRI Certified	40-54 L limited production non-critical applications L Basic functionality limited scalability			
	The composite AIRI score aggregates dimensional performance:			
	AIRI = 0.30×ComputeScore + 0.25×ArchitectureScore + 0.25×IntegrationScore + 0.20×GovernanceScore			

The AIRI serves as the objective unit of intelligence exchange within the IndoAI Marketplace, transforming abstract capabilities into measurable, comparable metrics that enable informed procurement decisions.

### VI. THE PARADIGM SHIFT: FROM PRODUCT BROWSING TO SOLUTION ARCHITECTURE

The IndoAI Marketplace represents a fundamental reimagining of procurement, shifting from component transactions to complete solution architecture:

### 6.1 The Solution Architecture Engine

Traditional Approach	IndoAl Platform Approach	Customer Benefit
Customer browses individual products	Customer selects industry/use case	Saves hours of research and confusion
Self-assembles components	Platform auto-generates complete system design	Professional-grade architecture without expert fees
Uncertain about compatibility	Guaranteed component interoperability	Eliminates integration headaches

Hidden total project costs	Transparent TCO with all components	No budget surprises, better financial planning
Security-focused only	Holistic vision intelligence for multiple	Maximizes ROI across operations, safety,
	outcomes	analytics

# 6.2 Industry-Specific Solution Packs

Industry	Core Components	Key AI Analytics	Typical Use Cases
Pack			
Smart	Entry/exit cameras, corridor	Attendance automation,	Security, operational efficiency, safety
School Pack	cams, classroom monitoring	visitor management, distress	compliance
		detection	
Factory	High-risk zone cameras,	PPE detection, intrusion	Worker safety, asset protection,
Safety Pack	perimeter monitoring, thermal	alerts, fall detection	regulatory compliance
	imaging		
Retail	Entrance cameras, point-of-sale	Footfall analysis, queue	Loss prevention, customer experience
Intelligence	monitoring, aisle analytics	monitoring, shoplifting	optimization
Pack		detection	
Hospital	Reception monitoring, corridor	Fall detection, occupancy	Patient safety, regulatory compliance,
Compliance	cameras, restricted area access	monitoring, PPE compliance	efficiency
Pack			
Warehouse	Loading dock monitoring,	Vehicle ANPR, inventory	Operational visibility, theft prevention,
Operations	storage aisle cameras, perimeter	monitoring, intrusion	safety
Pack	security	detection	

# 6.3 AI-Assisted System Design Features Use-Case Based Architecture Builder:

Input Method	Process	Output
Industry Selection	Customer selects from 15+ industries	Auto-generated camera layout blueprint with placement recommendations
Floor Plan Upload	AI analyzes PDF/image, detects dimensions and	Camera count, field of view simulation, blind
	high-risk areas	spot identification
Budget-Based	Customer inputs budget range	Good/Better/Best options with camera counts
Configuration		and AI features
Priority Optimization	Customer selects optimization priority	Custom-optimized system matching specific
		business objectives

### 6.4 Complete Solution Components:

or recomplete solution components.			
Component Category	Specific Items	Selection Logic	
Vision Devices	AI cameras, non-AI IP cameras, drones, thermal cameras	Based on AIRI score, placement requirements, use case needs	
Compute & Storage	Edge AI boxes, NVRs, cloud storage options	Calculated based on camera count, retention period, AI needs	
Networking	PoE switches, cables, poles, fiber optics	Auto-calculated based on layout, distances, bandwidth	
AI Analytics	Face recognition, ANPR, fire detection, PPE detection	Industry-specific recommendation with customization	
Services	Installation, AMC, consulting, integration	Partner marketplace with verified ratings	

# 6.5 AI-Powered Post-Sale Ecosystem

Feature	Functionality	Business Impact
Vision AI	WhatsApp-based LLM for natural language	Transforms support from reactive tickets to proactive
Assistant	queries about footage	intelligence access

Semantic Search	Text-based search across uploaded footage (Phase 2/3)	Dramatically reduces investigation time for security and operational teams	
Automated Workflows	Alert triggers, report generation, system automations	Reduces manual monitoring effort by up to 70%	
Predictive Maintenance	System health monitoring, component failure prediction	Minimizes downtime, extends system lifecycle	
Agentic AI Orchestration	Autonomous AI agents that monitor, analyze, and act based on live video streams initiating workflows, adjusting system parameters, or engaging other APIs without human intervention.	Enables fully autonomous site management, dynamic response to incidents, and self-optimizing vision systems that improve over time.	

## 6.6 Total Cost of Ownership Transparency:

	•	
Cost Category	Components Included	Transparency Features
Capital Expenditure	Cameras, NVR, switches, cables, Edge AI box	Itemized pricing, industry benchmark comparison
Operational Expenditure	AI subscriptions, cloud storage, internet, AMC	Monthly/yearly breakdown, ROI calculator
Installation Costs	Labor, mounting accessories, conduits, testing	Transparent breakup, regional pricing variations
Hidden Costs Revealed	Storage retention, bandwidth, maintenance	Calculators for storage, bandwidth, lifecycle

#### VII. PLATFORM ECONOMICS AND VALUE CREATION

#### 7.1 Multi-Sided Value Proposition

1				
Stake holder	Primary Value	Secondary Benefits	Quantifiable Impact	
Enterprise Customers	Complete turnkey solutions with guaranteed performance	Reduced project risk, professional design without consulting fees	Ffaster deployment and better performance	
Government Agencies	Transparent, compliant procurement with auditable trail	Policy implementation, standardization across departments	50% faster procurement, 30% cost savings	
System Integrators	Certified installer program with guaranteed leads	Higher project success, premium service positioning	100% more qualified leads, 40% higher margins	
AI Developers	Direct marketplace for models with compatibility guarantee	Reduced customer acquisition costs, simplified deployment	80% faster time-to-market, 3x larger market	
Camera Manufacturer s	AIRI certification as competitive differentiation	Direct feedback on product gaps, premium positioning	30% increase in premium sales	

### 7.2 Platform Network Effects

IndoAI creates positive feedback loops characteristic of successful platforms (Parker et al., 2016):

- Supply-Side Effects: More certified devices Greater customer choice Higher adoption
- Demand-Side Effects: More deployments better performance data Improved AIRI accuracy Stronger certification value
- Developer Ecosystem: More AI models Enhanced solution capabilities Increased platform utility

• Data Network Effects: Aggregated benchmarks improve optimization algorithms and solution quality

# VIII. CRITICAL CHALLENGES AND FUTURE RESEARCH

### 8.1 AIRI Governance and Bias

Challenge: Maintaining objectivity against vendor capture, criteria gaming, and inadvertent bias. Solutions: Independent non-profit governance;

open-source testing methodologies; annual criteria review; explicit algorithmic fairness dimensions.

Research Needed: Dynamic weighting systems:

Research Needed: Dynamic weighting systems; adversarial testing resistant to gaming; comparative governance models.

#### 8.2 Model Interoperability

Challenge: Format proliferation creates integration friction despite hardware standardization.

Solutions: Platform-maintained model zoo; automated testing verifying accuracy equivalence; vendor incentives for comprehensive format support. Research Needed: Universal model translation preserving performance; lightweight edge-optimized containerization.

#### 8.3 Adoption Resistance

Challenge: Transparent automation disrupts integrator business models built on information asymmetry.

Solutions: Premium certification tracks; transparent value-based compensation; transition support programs.

Research Needed: Change management frameworks; economic impact studies; new value-creation opportunity identification.

### 8.4 Regulatory Heterogeneity

Challenge: Global scaling confronts diverse data protection regimes.

Solutions: Regional AIRI profiles; modular platform architecture; automated compliance documentation.

Research Needed: Adaptive compliance frameworks; federated platform architectures; RegTech integration.

# IX. CONCLUSION: ARCHITECTING INTELLIGENCE-NATIVE MARKETS

The IndoAI framework addresses fundamental Vision AI market failure through integrated innovation spanning standardization (AIRI), automation (Solution Architecture Engine), and orchestration (ecosystem platform). This achieves three transformative shifts:

From Opacity to Transparency: AIRI establishes objective intelligence as the primary exchange unit, enabling informed decisions and reducing search costs.

- 2. From Components to Solutions: Automated architecture engines translate business objectives into guaranteed, interoperable systems with holistic cost visibility.
- 3. From Transactions to Ecosystems: Platform orchestration creates continuous value through post-deployment tools, collaborative innovation, and knowledge accumulation.

### **Broader Implications**

- For AI Governance: AIRI demonstrates feasibility of standardizing complex AI systems through practical readiness assessment
- For Industry Standardization: The methodology extends to language models, robotics, autonomous vehicles
- For Policy Development: Market-based certification incentivizes ethical AI without innovation-stifling mandates

#### **Economic Impact**

The transition to a more intelligent and integrated approach delivers profound financial and competitive advantages. By fundamentally improving how solutions are created and deployed, organizations can unlock massive efficiency gains. This shift moves beyond incremental cost control to generate substantial, recurring savings across the total lifecycle of technology investments. Furthermore, it dramatically accelerates the pace at which transformative capabilities can be operationalized, allowing enterprises to realize benefits years ahead of conventional timelines and secure a powerful first-mover advantage in their markets.

Vision for 2030

#### An intelligence-native market where:

- AIRI certification is ubiquitous, making AI as comparable as processor specifications
- Automated solution architecture is default; manual component assembly is obsolete
- AI models deploy seamlessly across certified hardware
- Agentic AI systems autonomously manage facilities, with human oversight rather than manual operation

- Systems are evaluated on business outcomes (incidents reduced, efficiency improved) not technical specs
- Privacy, security and fairness are foundational, verified requirements

IndoAI is not merely a procurement platform but the cornerstone of this transformation—architecting intelligent ecosystems through standardized metrics, automated design and collaborative value creation. By solving foundational information asymmetry and translating AI capabilities into measurable intelligence, IndoAI establishes infrastructure for ubiquitous, accessible, trusted vision intelligence.

#### REFERENCES

- [1] Xu, Y., Khan, T.M., Song, Y. et al., "Edge Deep learning in Computer Vision and Medical Diagnostics: A Comprehensive Survey", Artif Intell Rev 58, 93 (2025). https://doi.org/10.1007/s10462-024-11033-5
- [2] Sabuzima Nayak, Ripon Patgiri, Lilapati Waikhom, Arif Ahmed, "A review on edge analytics: Issues, challenges, opportunities, promises, future directions, and applications", Digital Communications and Networks, Volume 10, Issue 3,2024, https://doi.org/10.1016/j.dcan.2022.10.016
- [3] Baek, Y., Bae, B., Shin, H. et al., "Edge intelligence through in-sensor and near-sensor computing for the artificial intelligence of things". npj Unconv. Comput. 2, 25(2025). https://doi.org/10.1038/s44335-025-00040-6
- [4] Kotler, P., Keller, K. L., & Chernev, A. (2021). Marketing Management (16th ed.). Pearson Education.
- [5] Sebastian Hermes Simon Pfab, Andreas Hein, Helmut Krcma, "Digital Platforms and Market Dominance: Insights from a Systematic Literature Review and Avenues for Future Research", May 2020, Conference: 24th Pacific Asia Conference on Information Systems, United Arab Emirates
- [6] Zhiwen Liu a, Xinguo Ming , Wenyan Song, Siqi Qiu , Yuanju Qu, "A perspective on value co-creation-oriented framework for smart product-service system", Procedia CIRP Volume 73, 2018, Pages 155-160, https://doi.org/10.1016/j.procir.2018.04.021

- [7] Vivek Gujar, "Marketing Mix 3.0: Personalization, Platforms and Performance Analytics in the Algorithmic Era of Growth Hacking- A Review". International Advanced Research Journal in Science, Engineering and Technology, 12(12),
- [8] Akerlof, George A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." The Quarterly Journal of Economics, vol. 84, no. 3, 1970, pp. 488–500. JSTOR, https://doi.org/10.2307/1879431
- [9] Segismundo Izquierdo, Luis R. Izquierdo, José Manuel Galán, Cesareo Hernandez Iglesias, "Market Failure Caused by Quality Uncertainty", January 2006, Lecture Notes in Economics and Mathematical Systems 564:203-213, DOI: 10.1007/3-540-28547-4 17, In book: Artificial Economics,
- [10] Soo Jiuan Tan, Khai S. Lee, Guan H. Lim, "Warranty and Warrantor Reputations as Signals of Hybrid Product quality", February 2001, European Journal of Marketing 35(1/2):110-132, DOI: 10.1108/03090560110363373
- [11] Dario Amodei, Chris Olah, Jacob Steinhardt, Paul Christiano, John Schulman, Dan Mané, "Concrete Problems in AI Safety", arXiv:1606.06565, https://doi.org/10.48550/arXiv.1606.06565
- [12] Hang Liu, Xuan Liu, Baowen Sun, Jiayu Wang, "On the Determinants of Platform Boundary: A Study from the Perspective of Transaction Cost Theory", JO International Journal of Crowd Science, https://doi.org/10.26599/IJCS.2025.9100005
- [13] Nedo Bartels, Anna Schmitt, "Developing Network effects for digital platforms in two-sided markets The NfX construction guide", Digital Business, Vol 2, Issue 2, 2022, https://doi.org/10.1016/j.digbus.2022.100044
- [14] H. Liu, X. Liu, B. Sun and J. Wang, "On the Determinants of Platform Boundary: A Study from the Perspective of Transaction Cost Theory," in International Journal of Crowd Science, vol. 9, no. 3, pp. 175-180, August 2025, doi: 10.26599/IJCS.2025.9100005.
- [15] Kevin J. Boudreau & Andrei Hagiu, 2009."Platform Rules: Multi-Sided Platforms as Regulators," Chapters, in: Annabelle Gawer

- (ed.), Platforms, Markets and Innovation, chapter 7, Edward Elgar Publishing.
- [16] Ilaria Mancuso, Antonio Messeni Petruzzelli, Umberto Panniello, "Value creation in datacentric B2B platforms: A model based on multiple case studies Industrial Marketing Management", Volume 119, May 2024, , https://doi.org/10.1016/j.indmarman.2024.04.0 01
- [17] A. Smedlund, H. Faghankhani, "Platform Orchestration for Efficiency, Development, and Innovation," 2015 48th Hawaii International Conference on System Sciences, Kauai, HI, USA, 2015, pp. 1380-1388, doi: 10.1109/HICSS.2015.169.
- [18] EPRS, Online Platforms: Economic and societal effects, STUDY Panel for the Future of Science and Technology, European Parliamentary Research Service, Scientific Foresight Unit (STOA)PE 656.336 Mar2021
- [19] Chen Xue, Wuxu Tian, Xiaotao Zhao, "The Literature Review of Platform Economy", 2020, Scientific Programming Towards a Smart World 2020, https://doi.org/10.1155/2020/8877128
- [20] Thomas, L. D. W., Ritala, P., Karhu, K., & Heiskala, M. (2025). "Vertical and horizontal complementarities in platform ecosystems". Innovation 27(3), 369–393. https://doi.org/10.1080/14479338.2024.23035 93
- [21] Andrea Stefano Patrucco et al , "Technologyenabled multi-sided platforms in B2B relationships: A critical analysis and directions for future research", September 2024, Industrial Marketing Management 122(3), DOI: 10.1016/j.indmarman.2024.08.012,
- [22] Schüler, F., Petrik, D., "Measuring network effects of digital industrial platforms: towards a balanced platform performance management". Inf Syst E-Bus Manage 21, 863–911 (2023). https://doi.org/10.1007/s10257-023-00655-x
- [23] Robert Lusch, Stephen L. Vargo, "Service-Dominant Logic: Premises, Perspectives, Possibilities", June 2014, DOI: 10.1017/CBO9781139043120, Cambridge University Press

- [24] Anne Vorre Hansen, "Value co-creation in service marketing: A critical (re)view", International Journal of Innovation Studies, Volume 3, Issue 4, December 2019, Pages 73-83, https://doi.org/10.1016/j.ijis.2019.12.001
- [25] Dariusz Siemieniako, Hannu Makkonen, Piotr Kwiatek, Heikki Karjaluoto, "Empowering value co-creation: Product and technology development in power asymmetric buyersupplier relationships from the perspective of a weaker supplier", Industrial Marketing Management, Volume 124, January 2025, Pages 128-149
- [26] Kotler, P., & Armstrong, G. (2010). Principles of Marketing. Prentice Hall.
- [27] Rusthollkarhu S, Hautamaki P, Aarikka-Stenroos L (2021), "Value (co-)creation in B2B sales ecosystems". Journal of Business & Industrial Marketing, Vol. 36 No. 4 pp. 590–598, doi: https://doi.org/10.1108/JBIM-03-2020-0130
- [28] Tan, C., Dhakal, S., & Ghale, B. (2020). "Conceptualising Capabilities and Value Co-Creation in a Digital Business Ecosystem (DBE): A Systematic Literature Review". Journal of Information Systems Engineering and Management, 5(1), em0112. https://doi.org/10.29333/jisem/7826
- [29] AIGN, The Operating System for AI Governance, https://aign.global/ai-governance/regulatory-frameworks-in-artificial-intelligence-ai/
- [30] Rawas, S. AI: "The Future of Humanity". Discov Artif Intell 4, 25 (2024)., https://doi.org/10.1007/s44163-024-00118-3
- [31] Jess Whittlestone, Rune Nyrup, Anna Alexandrova, Stephen Cave, "The Role and Limits of Principles in AI Ethics: Towards a Focus on Tensions", AIES '19: Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society, https://doi.org/10.1145/3306618.3314289
- [32] Pericles Asher Rospigliosi, "AI Ethics and Regulations: Ensuring Trustworthy AI, July 2025", International Journal of Artificial Intelligence for Science (IJAI4S) 1(2), DOI: 10.63619/ijai4s.v1i2.004
- [33] NIST, https://www.nist.gov/itl/ai-risk-management-framework

- [34] Jussi Heikkilä, Julius Rissanen, Timo Ali-Vehmas, "Coopetition, standardization and general-purpose technologies: A framework and an application", 2022, https://doi.org/10.1016/j.telpol.2022.102488
- [35] Kevin A. Bryana and Heidi L. Williams, "Innovation: market failures and public policies", Handbook of Industrial Organization, Volume 5, ISSN 1573-448X. https://doi.org/10.1016/bs.hesind.2021.11.013
- [36] Jane Drake-Brockman, et al, "The Case for International Digital Standards for Interoperability of Trade in Digital Services", July 2023, https://www.gatewayhouse.in/wp-content/uploads/2023/08/
- [37] Ghahramani, Z., "Probabilistic machine learning and artificial intelligence." Nature 521, 452–459 (2015). https://doi.org/10.1038/nature14541
- [38] Wulfert T, Woroch R, Strobel G, Seufert S, Möller F., "Developing design principles to standardize e-commerce ecosystems: A systematic literature review and multi-case study of boundary resources". Electron Mark. 2022;32(4):1813-1842. doi: 10.1007/s12525-022-00558-8
- [39] Yang Zhao, Stephan von Delft, Anna Morgan-Thomas, Trevor Buck, "The evolution of platform business models: Exploring competitive battles in the world of platforms", Long Range Planning, Volume 53, Issue 4,2020,
  - https://doi.org/10.1016/j.lrp.2019.101892
- [40] Davis Adedayo Eisape, "Transforming Digital **Pipelines** into Platforms: Illustrative Case Study Transforming a Traditional Pipeline Business Model in the Standardization Industry into a Digital Platform", J. Open Innov. Technol. Mark. Complex. 2022, 8(4), 183; https://doi.org/10.3390/joitmc8040183
- [41] Loonam, J., & O'Regan, N. (2022). "Global value chains and digital platforms: Implications for strategy. Strategic Change", 31(1), 161 177. https://doi.org/10.1002/jsc.2485
- [42] https://www.databridgemarketresearch.com/re ports/global-computer-vision-ai-artificial-intelligence-camera-market

- [43] Feng-Shang Wu, Chia-Chang Tsai, "A Framework of the Value Co-Creation Cycle in Platform Businesses: An Exploratory Case Study", Sustainability 2022, 14(9), 5612; https://doi.org/10.3390/su14095612
- [44] Ikhile D, Glass D, Frere-Smith K, Fraser S, Turner K, Ramji H, Gremesty G, Ford E, van Marwijk H., A virtuous cycle of coproduction: Reflections from a community priority-setting exercise. Health Expect. 2023 Dec;26(6):2514-2524. doi: 10.1111/hex.13851.
- [45] Vivek Gujar, "Edge of Innovation: Technology Democratization", International Journal of Science and Research (IJSR), july 2025, 7(14):411-413, DOI: 10.21275/SR25704124228
- [46] Annabelle Gawer, "Digital platforms' boundaries: The interplay of firm scope, platform sides, and digital interfaces", Long Range Planning, Volume 54, Issue 5, October 2021, https://doi.org/10.1016/j.lrp.2020.102045
- [47] Eleni Panagopoulou, "Multi-Sided Platform Ecosystems: Symbiotic interactions between platform owners, complementors and users", Master Thesis, 2022, Copenhagen Business
- [48] Volker Brühl, "Big Tech, the Platform Economy and the European Digital Markets", Volume 58, 2023 · Number 5 · pp. 274–282, DOI: 10.2478/ie-2023-0056 InterEconomics, 2023, 58(5), 274-282
- [49] Handa SS, Banerjee DN., "Omission and commission errors underlying AI failures". AI Soc. 2022 Nov 17:1-24. doi: 10.1007/s00146-022-01585-x
- [50] https://www.cfo.com/news/67-of-companies-continue-to-adopt-ai-slowly-report/707456/
- [51] https://www.cognizant.com/en\_us/services/doc uments/bridging-the-customer-experience-gapreport.pdf
- [52] Accenture Report, AI: A Declaration of Autonomy, https://www.accenture.com/content/dam/accenture/final/accenture-com/document-3/Accenture-Tech-Vision-2025.pdf
- [53] Antoine Proulx, Francis Raymond, Bruno Roy, Fabio Petrillo, "Problems and Solutions of

- Continuous Deployment: A Systematic Review", December 2018, DOI: 10.48550/arXiv.1812.08939,
- [54] Ali Nizam, "Software Project Failure Process Definition", DOI 10.1109/ACCESS.2022.3162878, IEEEAccess , VOLUME 10, 2022
- [55] Vivek Gujar, Ashwani Kumar, "Appization<sup>TM</sup>
  @ Neurahub<sup>TM</sup>: Leveraging The App Store
  Model For AI Functions On Edge Devices\_
  Case Study Of Indoai AI Camera", OSR
  Journal of Computer Engineering (IOSR-JCE)
  Volume 26, Issue 6, Ser. 2 (Nov. Dec. 2024),
  DOI: 10.9790/0661-2606021825
- [56] Cennamo, Carmelo; Diaferia, Lorenzo; Gaur, Aasha; Salviotti, Gianluca, "Platform Disruption: How Digital Platforms Re-Architect Existing Markets (Jan 19, 2022). MIS Quarterly Executive, March 2022, https://ssrn.com/abstract=4013054
- [57] Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). "Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You". W. W. Norton & Company., 2016
- [58] Dat Ngo, Hyun-Cheol Park, Bongsoon Kang, "Edge Intelligence: A Review of Deep Neural Network Inference in Resource-Limited Environments", Electronics 2025, 14(12), 2495;
  - https://doi.org/10.3390/electronics14122495
- [59] Vivek Gujar, "Smarter at the Edge: Evaluating Decentralized AI Deployment Models in Federated, Hierarchical, Microservices and Serverless edge AI Architectures", June 2025, Scientific Computing and Instrumentation 14(6):1-16
- [60] Jacobides, Cennamo, Gawer (2018), "Towards a theory of ecosystems". Strategic Management Journal, 39: 2255-76
- [61] Vivek Gujar, Ashwani Rathod, "The Rise of Custom AI Solutions: IndoAI 's Strategic Position in the AI Camera and AI Model Development Ecosystem", March 2025, IARJSET 12(3):280-285, DOI: 10.17148/IARJSET.2025.12338