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PROJECT ChangAR

*A Public–Private Model for Inclusive
Work Transitions in the Age of AI*

*Democratizing the AI transition through territorial innovation
in the Buenos Aires Metropolitan Area*

INCLUSIVE AI TRANSITIONS • ARGENTINA

Presented by

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EXECUTIVE ABSTRACT

This paper addresses the socio-economic polarization driven by generative artificial intelligence within middle-income urban landscapes, specifically analyzing the Buenos Aires Conurbation in Argentina. While past digital inclusion policies successfully compressed the first digital divide (physical hardware access), generative automation directly threatens entry-level clerical and transactional service roles, threatening to trap marginalized youth in a low-productivity subsistence trap. This systemic bottleneck represents a public economics collective action failure, as individual firms lack market incentives to independently internalize the high costs of long-term human capital remediation. To resolve this governance void, this proposal introduces a novel institutional architecture: The Tripartite Future Skills Co-Investment Fund (Project ChangAR). Financed through mandatory corporate contributions (0.5% of gross revenues) offset by a conditional 75% state fiscal credit, and leveraging underutilized public university infrastructure, the fund deploys a network of physical Decentralized Technological Hubs. These spaces provide a high-intensity, 9-month "Skills-First" pedagogical track in Python-based AI supervision, paired with monthly material stabilization stipends and on-site childcare to actively neutralize gender and socio-economic attrition gaps. By anchoring corporate capital to public territorial infrastructure, the model turns the technological transition into a permanent, democratic engine of sustainable human development and inclusive macroeconomic growth.

TEAM BIOGRAPHIES

The core of this proposal stems from an interdisciplinary and collaborative alignment born within the Master's program in Public Policy Administration at the University of San Andrés (UdeSA), where the authors re-engineered their diverse territorial, legal, and corporate fields into a unified development model.

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1. Introduction	3
2. The Future of Work and the Second Digital Divide: A Task-Based Disruption	3
2.1. The Latin American Context: Structural Heterogeneity and Subsistence Informality	4
2.2. Market Failure: Labor Turnover and Free-Riding Constraints	4
2.3. Future Trends: From Learning Gaps to Earning Gaps	4
3. Why This Problem Matters for Development: An Interdisciplinary Perspective	4
4. Territorial Analysis: The Buenos Aires Conurbation Matrix	5
4.1. Income Distribution and the Structural Matrix of Unmet Basic Needs (NBI)	6
5. Review of Existing Solutions: Advantages and Structural Limitations	7
5.1. Market-Driven Upskilling and Philanthropy	7
5.2. Multilateral Piloting and Regional Programs	7
5.3. State-Led Digital Inclusion and Vocational Networks	7
6. The Proposed Innovation: The Tripartite Trust and the Matrix of Decentralized Technological Hubs	7
6.1. Strategic Objectives and Tripartite Governance	8
6.2. Operational Mechanics and Financial Architecture	8
6.3. Infrastructure Justification via INDEC Empirical Data	9
6.4. The "Skills-First" Pedagogical Framework and Hourly Intensity	10
The Technical Mandate for Python in AI Supervision	10
6.5. Logistical Feasibility, Infrastructure Saturation, and Faculty Matrix	11
The Multiplier Role of the Socratic AI Tutor	11
6.6. Standardized Financial Blueprint (Per-Hub Model)	12
6.6.1. Hardware Feasibility and Compute Architecture Notes	14
6.7. Risk Management and Structural Mitigations	14
6.8. Global Empirical Validation and Operational Precedents	15
6.9. Key Performance Indicators (KPIs) and Evaluation Metrics	15
7. Expected Impact: Macroeconomic Development and SDG Alignment	16
7.1. Alignment with United Nations Sustainable Development Goals (SDGs)	16
7.2. Temporal Horizon of Expected Impacts	17
8. Conclusion, Limitations, and Future Research Pathways	18
8.1. Limitations of the Proposed Institutional Design	18

8.2. Horizons for Future Research	18
Statement on the Use of Generative Artificial Intelligence	19
Bibliography	21

1. Introduction

Artificial intelligence (AI), automation, and digital technologies are rapidly transforming labor markets. While promising productivity gains, they risk widening structural socio-economic inequalities. Unlike previous technological revolutions, the contemporary challenge shifts from physical access to hardware to the capacity to effectively deploy these tools within complex labor environments.

In middle-income laboratories like Argentina, persistent educational and income disparities constrain equitable labor participation. Past public efforts compressed the first digital divide—physical access to connectivity and computers—but largely neglected the second digital divide: the unequal capacity to develop, adapt, and update the higher-order cognitive capabilities demanded by automated labor markets. As generative AI automates routine cognitive tasks, labor demand pivots toward non-routine problem solving, computational logic, and human-machine co-piloting. Without intervention, technological change reinforces intergenerational poverty patterns, particularly among marginalized youth.

This systemic bottleneck represents a classic public economics collective action failure. While the aggregate technology sector benefits from an inclusive talent pool, individual firms face insufficient market incentives to independently internalize the high sunk costs of long-term human capital remediation. Consequently, a market-driven approach perpetuates a sub-optimal equilibrium where firms compete for a narrow, privileged talent pool, leaving the base of the socio-economic pyramid permanently excluded. Concurrently, short-term, online-based Corporate Social Responsibility (CSR) programs inherently filter out vulnerable populations lacking baseline connectivity, housing stability, or socio-emotional security.

Bridging the second digital divide requires moving past fragmented philanthropy toward a binding institutional architecture that embeds corporate responsibility into the digital commons. This paper addresses a central research question:

How can public policy prevent technological change from deepening labor-market exclusion among vulnerable youth while creating sustainable incentives for private-sector participation in workforce development?

We propose a Public-Private Future Skills Transition Fund financed through mandatory corporate contributions offset by targeted fiscal credits. This fund supports locally implemented, physical training ecosystems that combine technical fluency, socio-emotional scaffolding, and direct pathways into formal employment.

2. The Future of Work and the Second Digital Divide: A Task-Based Disruption

Macroeconomic evaluations of contemporary automation must pivot from industry-level paradigms to a task-based approach. Algorithms do not eradicate entire occupations instantly; they unbundle occupations, automating routine cognitive tasks while augmenting non-routine capabilities. Generative AI directly targets routine cognitive processes, displacing entry-level clerical, administrative, and customer-service roles. These transitions disproportionately disrupt young workers and women, who traditionally rely on transactional service roles as their primary formal labor market entry point.

A recent Argentine case illustrates this dynamic directly: in 2025, Mercado Libre reportedly dismissed roughly 119 workers who had been employed to label interactions and correct AI system outputs, once the underlying model reached acceptable accuracy (AGC, 2026).

2.1. The Latin American Context: Structural Heterogeneity and Subsistence Informality

In developing economies, technological disruption collides with structural heterogeneity. Latin American labor markets feature a persistent low-productivity trap characterized by a deep economic dualism (ECLAC & ILO, 2024) : a highly sophisticated, globally integrated tech enclave coexists alongside a vast, fragmented informal sector operating at subsistence levels.

The contraction of entry-level clerical roles pushes displaced youth directly into subsistence informality rather than frictional unemployment. Lacking robust social safety nets, marginalized youth are absorbed by unregulated gig-economy digital platforms. This platform labor triggers an extractive cycle: extended, unpredictable working hours consume the "cognitive bandwidth" and physical time of young workers. This acute time poverty deprives them of the stability required to acquire higher-order digital skills, transforming technological progress into a structural catalyst for polarization.

2.2. Market Failure: Labor Turnover and Free-Riding Constraints

Private investment in workforce development is paralyzed by chronic labor turnover and the structural threat of free-riding. In volatile macroeconomic environments, individual enterprises face a clear disincentive to independently finance human capital remediation in vulnerable communities, fearing competing firms will poach stabilized junior talent without internalizing the initial training costs.

Concurrently, contemporary multilateral interventions, such as IDB-funded digital literacy pilots (IDB, 2026), remain structurally constrained by a lack of institutional scale and permanent funding. Without a national, binding public-private governance architecture capable of pooling corporate resources and mutualizing investment risks through robust fiscal frameworks, the digital labor market remains trapped in a sub-optimal equilibrium.

2.3. Future Trends: From Learning Gaps to Earning Gaps

Initial disparities in cognitive and digital literacy compound exponentially over an individual's lifecycle, crystallizing into permanent social exclusion. This structural stagnation is empirically evidenced by rising NEET (Not in Education, Employment, or Training) rates across middle-income regions (ILO, 2024; OECD, 2025), signaling long-term economic inactivity and detachment from formal institutional frameworks. This trend remains heavily gendered; young women in vulnerable territories are systematically absorbed into unpaid domestic care work, entirely removing them from the digital economy.

3. Why This Problem Matters for Development: An Interdisciplinary Perspective

As emphasized by domestic labor forums (AGC, 2026), the future of work is institutionalized through political, macroeconomic, and regulatory choices. When AI diffusion lacks systemic governance, the second digital divide morphs into a multidimensional developmental bottleneck across six core dimensions:

- ❖ **Economic Dimension:** Localized wage polarization is validated by domestic metrics (CESSI-OPSSI, 2025; OTI, 2025, 2026), showing that median knowledge-economy salaries completely decouple from the domestic market, doubling or tripling the national formal wage index (RIPTE) and the official poverty line. This severe disparity

traps the untrained youth majority in low-productivity sectors, stifling aggregate macroeconomic diversification.

- ❖ **Social Dimension:** The automation of introductory administrative roles severs the historical pipeline linking public secondary education to formal employment, hardening learning gaps into lifelong earning gaps. Crucially, poverty and youth labor vulnerability within the Buenos Aires Conurbation exceed 50% (INDEC, 2026; ODSA-UCA, 2025), disproportionately pushing young women into unpaid domestic care work due to deficient public care infrastructure.
- ❖ **Institutional Dimension:** Unregulated platform capitalism and automated management erode the historical architecture of industrial relations. As highlighted by computing professionals (AGC, 2026), trade unions face severe operational challenges in representing isolated digital gig-workers. Concurrently, INDEC's (2026) metrics reveal that over 45% of young workers are trapped in unregulated employment, shrinking the state's tax base at the exact moment public resources are required to mitigate technological externalities.
- ❖ **Educational Dimension:** Rigid, analog public secondary curricula fail to cultivate algorithmic logic and technical fluency, shifting human capital formation toward a "Skills-First" model. Crucially, secondary schools face a chronic inability to guarantee functional literacy and foundational logical-mathematical reasoning, exponentially accelerating an absolute chasm of technological exclusion. In unequal societies, the market-driven acquisition of these skills via private bootcamps remains highly regressive, requiring coordinated public frameworks to prevent affluent demographics from monopolizing technical evolution.
- ❖ **Psychological Dimension:** Systemic exclusion from formal employment prospects triggers acute psychological scarring among vulnerable youth. Facing automated barriers to entry, individuals experience severe structural economic anxiety and a corrosive sense of systemic futility, dissolving personal agency and driving social alienation.
- ❖ **Ethical Dimension:** Outsourcing hiring matrices and operational evaluation systems to opaque AI algorithms without collective oversight drives systemic algorithmic discrimination. These automated models inadvertently replicate socioeconomic biases, creating digital redlining mechanisms that penalize applicants residing in low-income postal codes.

4. Territorial Analysis: The Buenos Aires Conurbation Matrix

Comprising 24 dense municipal districts, the Buenos Aires Conurbation functions as the definitive Argentine epicenter of structural socioeconomic vulnerability. To ground the task-based polarization framework, the local matrix is disaggregated into four specific occupational archetypes colliding with automation:

- ❖ **Youth Informal Platform Labor:** According to INDEC (EPH 2026), regional unemployment reached 8.7%, skyrocketing within the 18-to-24 demographic. The lack of formal opportunities forces systemic reliance on the informal platform economy (Rappi, PedidosYa). Over 45% of employed Conurbation youth are trapped in non-registered employment, locked into time poverty that blocks traditional retraining pipelines (AGC, 2026).
- ❖ **Feminized Call Centers:** The mass deployment of autonomous virtual assistants is liquidating transactional clerical roles within outsourced customer service. Cross-referencing INDEC data (2026) with OECD datasets reveals a regressive intersectional crisis: displaced female youth face higher barriers in the informal physical market, systematically pushing them into inactive NEET status and unpaid domestic care.
- ❖ **Clerical Public Employment:** Administrative state employment at municipal and provincial levels historically functioned as a macroeconomic labor buffer. Today, low-complexity clerical roles (data entry, physical filing) face immediate algorithmic replacement, requiring aggressive upskilling to transform analog clerks into public data auditors before the administrative floor collapses (AGC, 2026).
- ❖ **High-Productivity Young Professionals:** In stark contrast, a concentrated technological elite resides within the same metropolitan boundaries. According to CESSI (OPSSI 2025), median wages within the knowledge economy sector systematically double or triple the national urban average (RIPTE), operating within globalized, USD-denominated remote pipelines.

Consider Milagros, a 22-year-old from La Matanza. She completed public secondary school and works 10-hour shifts as a delivery rider for a platform app, earning below the poverty line with no registration, while caring for her two-year-old daughter. She owns a smartphone but no computer; her data plan expires mid-month. Every existing upskilling pathway — paid bootcamps, online CSR courses, university enrollment — is structurally closed to her by

cost, connectivity, childcare, or time poverty. Milagros is the median beneficiary this proposal is engineered around: each Hub module — the workstation, the nursery, the stipend, the nutrition station — removes one of the specific barriers standing between her and a formal Human-in-the-Loop occupation.

4.1. Income Distribution and the Structural Matrix of Unmet Basic Needs (NBI)

Following INDEC's framework, household vulnerability is determined by crossing family income against the Total Basic Basket (Canasta Básica Total, CBT). Poverty encompasses 32.6% of Conurbation individuals, with extreme poverty at 8%, rising exponentially within the youth demographic. INDEC's structural tracking datasets (INDEC, 2023) isolate three core dimensions reinforcing the digital divide:

1. **Critical Overcrowding (NBI 3):** Households with more than three persons per room, lacking the physical space and acoustic privacy necessary for intensive cognitive upskilling.
2. **Sanitary Deficiencies (NBI 2):** Households lacking basic indoor plumbing, where immediate material deprivations supersede long-term skill acquisition.
3. **School Non-Attendance (NBI 4):** Households with children decoupled from formal education, cementing primary cognitive gaps and linguistic deficits that prevent interaction with AI architectures.

Across the 24 municipal districts of the Buenos Aires Conurbation, 6.96% of households presented at least one NBI in 2022, with 2.86% affected by critical overcrowding (NBI 3), 0.80% by school non-attendance (NBI 4), and 0.62% by sanitary deficiencies (NBI 2) (INDEC, 2023).

FROM CONNECTIVITY TO CAPABILITY

Digital connectivity does not equal learning capability.

While internet access appears nearly universal, each successive infrastructure requirement drastically reduces the number of young people who can realistically participate in advanced AI training.



INTERNET ACCESS

93.7%

Urban households with Internet access
(mostly mobile connections)

- Smartphones provide connectivity, but not productive computing environments.



COMPUTER ACCESS

60.3%

Households with access to a computer

- Four out of every ten households still lack the hardware required for programming or AI development.



AI-READY LEARNING ENVIRONMENT

≈20–30%

Estimated households combining:

- Dedicated computer
- Reliable broadband
- Quiet workspace
- Unlimited data
- Stable electricity

- Access to the Internet does not guarantee the conditions needed to learn Python, work with APIs, or develop AI skills.

As requirements increase, the number of young people able to participate in advanced AI training shrinks dramatically.

THE INFRASTRUCTURE GAP



The bottleneck is not connectivity—it is productive digital infrastructure.



SOLUTION

DECENTRALIZED TECHNOLOGICAL HUB



AI-ready workstations & GPUs



Fiber connectivity



High-speed compute infrastructure



Childcare support



Nutritional support



Quiet collaborative environment

Figure 4.1. From connectivity to capability: the digital capability funnel in the Buenos Aires Metropolitan Area.

Source: Authors' elaboration based on INDEC MAUTIC 2025 (Internet access and computer ownership) and the infrastructure rationale developed in Section 6.3. The final stage represents a conceptual estimate of households with conditions **suitable for advanced AI training**.

5. Review of Existing Solutions: Advantages and Structural Limitations

5.1. Market-Driven Upskilling and Philanthropy

The private software market relies on short-term technical modules, private bootcamps, or CSR alliances.

- ❖ **Advantages:** These initiatives offer high operational agility and precise market synchronization, updating curricula at a velocity that matches the evolving AI frontier.
- ❖ **Limitations:** This model exhibits a regressive socioeconomic bias. High upfront costs or income-share agreements (ISAs) exclude marginalized youth. Lacking material stabilization stipends, they trigger catastrophic attrition rates.

5.2. Multilateral Piloting and Regional Programs

International financial institutions fund targeted innovation ecosystems, such as IDB-backed digital skills pilots (IDB, 2026) and large-scale regional scholarship initiatives.

- ❖ **Advantages:** These programs are insulated from local political clientelism and enforce rigorous, data-driven methodologies. Regional scholarship initiatives have deployed tens of thousands of digital scholarships across Latin America.
- ❖ **Limitations:** These interventions suffer from structural insularity and scale constraints, operating as closed experimental enclaves detached from public university networks and lacking a domestic institutional architecture that guarantees material stabilization stipends for precarized youth.

5.3. State-Led Digital Inclusion and Vocational Networks

Historical responses rely on massive macro-policies: universal hardware distribution models—exemplified by Argentina's Conectar Igualdad and Uruguay's Plan Ceibal—and centralized school connectivity networks deployed by Chile's Enlaces and Colombia's Computadores para Educar.

- ❖ **Advantages:** This paradigm possesses unmatched territorial scale and democratic legitimacy. Programs like Conectar Igualdad successfully compressed the primary digital divide by turning computers into household utilities for millions of low-income

families. Plan Ceibal built a resilient infrastructure of public school connectivity and adaptive software, while Enlaces and Computadores para Educar established sustainable models of localized institutional capacity and teacher upskilling.

- ❖ **Limitations:** Microeconomic and structural evaluations show that universal hardware delivery models operated under an analog institutional velocity that decoupled device distribution from market-aligned pedagogical retraining. While the primary divide (access to hardware) was compressed, the second digital divide (high-order logical-mathematical reasoning and computational fluency) remained static.

6. The Proposed Innovation: The Tripartite Trust and the Matrix of Decentralized Technological Hubs

To resolve the diagnosed governance void, this paper proposes a novel, binding institutional architecture: **The Tripartite Future Skills Co-Investment Fund**, operationally deployed through a territorial network of physical, **Decentralized Technological Hubs**.

This intervention explicitly rejects the structural restructuring of the formal school agenda, which requires multi-year political consensus and bureaucratic delays. Conversely, cognitive automation advances at an exponential velocity. Attempting to mitigate immediate labor displacement through traditional public school adjustments guarantees that several cohorts of precarized youth will be permanently excluded before a single curriculum is approved. Consequently, this proposal introduces an agile, parallel, and extra-educational institutional framework designed to intercept vulnerable youth and transition them directly into high-productivity tracks within a strict twelve-month operational horizon.

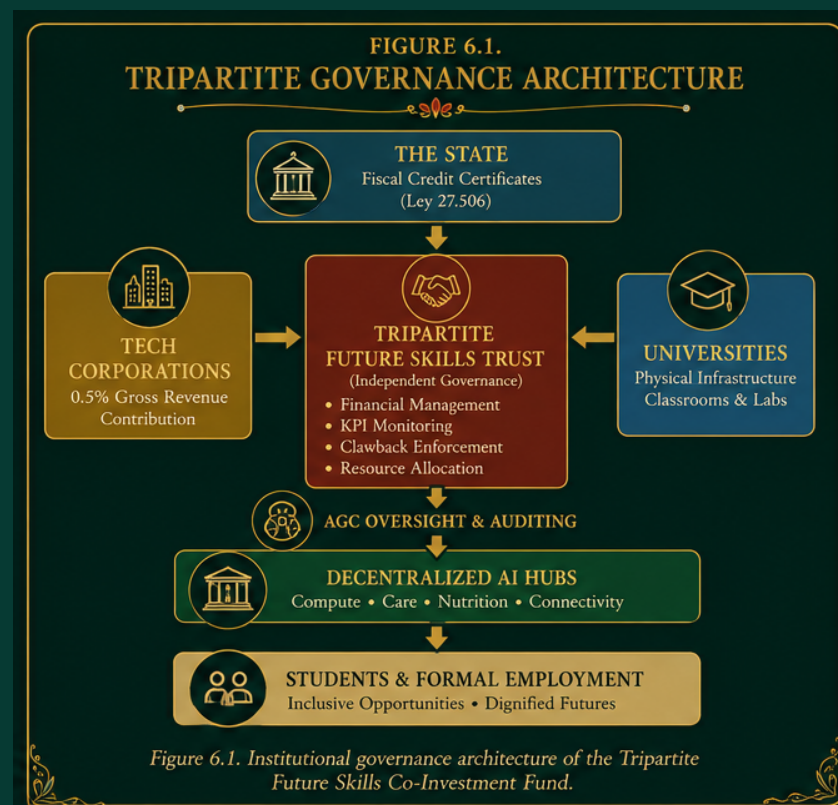
6.1. Strategic Objectives and Tripartite Governance

The primary objective of the Co-Investment Fund is to democratize high-level cognitive training by establishing a permanent, binding, and data-driven bridge between private corporate surplus, public university infrastructure, and organized labor oversight. The innovation is legally structured as a permanent **Tripartite Financial Trust**, governed by an executive board with equal representation from three core macroeconomic actors:

1. **The Private Technological Sector:** Represented by domestic and multinational knowledge economy chambers (CESSI).

2. **The State and Public Higher Education:** Represented by the national government authorities responsible for economic and labor policies, alongside the network of public national universities anchored within the municipalities of the Buenos Aires Conurbation.
3. **Organized Labor:** Represented by specialized IT and service trade unions (AGC).

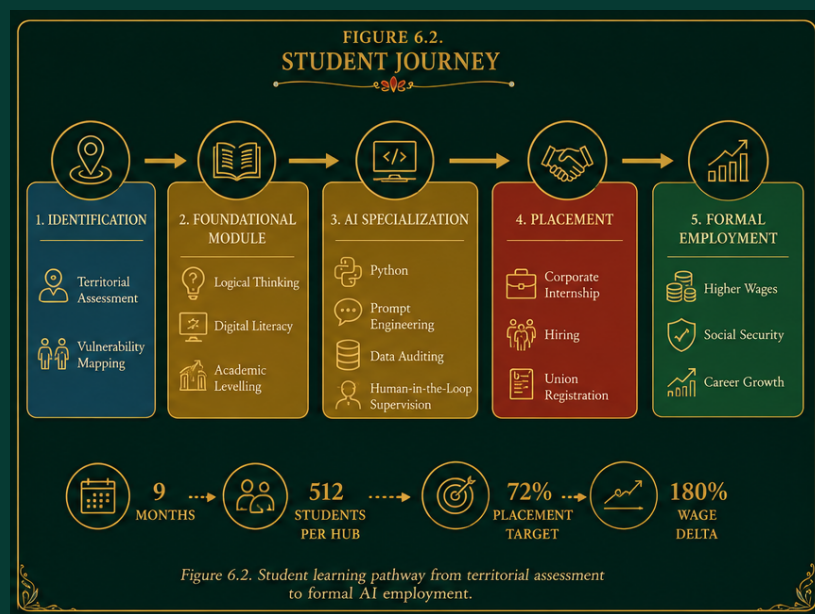
By shifting digital training governance to a binding financial trust, the innovation internalizes the negative externalities of technological change. It forces high-productivity corporations to co-finance the remediation of the exact workforce their software architectures are displacing, effectively resolving the historical *free-rider* dilemma. Furthermore, integrating the AGC trade union into the executive board secures institutional stability and regulatory peace, enforcing corporate compliance with junior placement quotas through collective bargaining agreements.



6.2. Operational Mechanics and Financial Architecture

The financial architecture of the Trust operates via a dual-stream capital mobilization mechanism, structured as a transparent, performance-contingent tax expenditure rather than a direct budgetary appropriation:

- ❖ **Private Sector Capital Injection (0.5%):** Technology corporations and enterprises deploying cognitive automation frameworks in the domestic market contribute a mandatory 0.5% of their gross regional revenues to the Trust. This allocation is strictly calibrated against existing fiscal frameworks within the Argentine regulatory ecosystem, specifically the National Knowledge Economy Law (Ley 27.506). In return, the state issues Fiscal Credit Certificates equivalent to **75% of the total contribution**, which corporations apply directly to offset corporate income tax liabilities. The economic incidence of this design is balanced: while the fiscal credit mitigates the vast majority of the corporate expenditure, **firms directly absorb the remaining 25% of the contribution as a structural co-investment in the digital commons**. This non-reimbursable private allocation is justified on three grounds. First, it forces the private sector to actively internalize the negative externalities of cognitive displacement rather than externalizing the costs of technological transitions onto the state. Second, it resolves the classic free-rider dilemma by ensuring all major market competitors contribute equitably to the regional talent ecosystem. Third, the public share of the expenditure is performance-contingent: the clawback mechanism (Section 6.7) revokes certificates from firms that fail placement quotas, converting an otherwise unconditional subsidy into results-based public spending. For platform firms within the gig economy facing heavy judicial scrutiny and union pressures over uncompensated precarious work, co-financing this trust functions as a regulatory shield and an institutional valve, proving far more cost-effective than facing aggressive state regularizations or employment misclassification penalties.
- ❖ **Public In-Kind Capital Contributions:** Public universities and municipal governments cede physical assets rather than liquid capital: underutilized facilities, urban land plots, and direct access to state-funded dark-fiber telecommunications networks, entirely eliminating real estate acquisition and infrastructure leasing costs.



6.3. Infrastructure Justification via INDEC Empirical Data

The critical decision to establish physical territorial Hubs instead of deploying remote online learning platforms is mathematically justified by contemporary infrastructure data from the **INDEC (2025, MAUTIC module)**. While aggregate metrics indicate that 93.7% of urban households have access to internet connections, a severe structural bottleneck emerges when isolating hardware equipment: **only 60.3% of urban households possess access to a computer**. Furthermore, INDEC's Internet Access Report confirms that the overwhelming majority of national connections are mobile residential accesses (smartphones relying on volatile cellular data plans).

This statistical divergence reveals that marginalized youth in peripheral contexts are digitally connected exclusively through mobile smartphones. Because advanced cognitive training—such as Python scripting, API architecture manipulation, and vector database auditing—cannot be executed on a smartphone screen under volatile cellular data plans that expire mid-month, the vulnerable household remains structurally disqualified as a learning environment. The Decentralized Hub functions as a vital hardware-democratization ecosystem, directly injecting the high-velocity compute infrastructure that 40% of the peripheral population lacks at home, turning a statistical data deficit into a localized point of high-productivity integration.

Each physical Hub is situated within the existing infrastructure of the **Public National University Network in the Conurbation** (e.g., UNLaM, UNQ, UNSAM). Through binding institutional covenants, these universities execute their contributions by ceding underutilized campus facilities averaging a highly feasible **230 square meters**. This layout comfortably fits 150 modular workstations, avoiding greenfield construction costs while leveraging the heavy-duty industrial electrical configurations and active campus security layers already in place.

Within this space, three non-negotiable modules are integrated:

1. **The High-Velocity Compute Lab:** Workstations equipped with dedicated local graphics processing units (GPUs) and low-latency cloud infrastructure nodes.
2. **The Community Care Ecosystem:** An on-site, 50-square-meter professional childcare nursery. This module directly neutralizes the intersectional gender gap, allowing young women trapped in structural inactivity due to uncompensated domestic care burdens to participate in the intensive training.

3. **The Nutritional Support Station:** Provision of high-protein nutritional cycles during laboratory hours, ensuring that acute material deprivations and caloric deficits do not impair the cognitive development and attention spans of the students.

The strategic integration of these non-negotiable modules—the high-velocity compute lab, the community care ecosystem, and the nutritional support station—directly materializes the structural response to the infrastructure gap previously outlined in the digital capability funnel (see Figure 4.1). By deploying these physical assets, the Hub explicitly converts each diagnosed territorial vulnerability into a localized point of high-productivity macroeconomic integration.

6.4. The "Skills-First" Pedagogical Framework and Hourly Intensity

The intensive Advanced Cognitive Training Program spans exactly 9 months. This temporal horizon is precisely aligned with the biological and pedagogical standards of the modern commercial edtech market, establishing that 6 to 9 months is the optimal timeframe to take a student from zero baseline knowledge to a functional junior profile. However, this framework explicitly rejects the self-selection bias of commercial bootcamps. Instead, it re-engineers the environment into a compressed runway of **720 net laboratory hours** (4 daily hours × 5 days per week × 36 weeks) entirely stripped of non-essential academic noise and divided into three progressive tranches:

- ❖ **Tranche 1: Logical and Linguistic Scaffolding (Months 1–2):** Engineered specifically to remediate functional illiteracy and primary learning deficits from degraded public schooling. For the first 60 days, raw textual coding is strictly prohibited. Students are trained in formal predicate logic, linguistic textual decompilation, and visual block-based programming (graphical interfaces where logical structures are manipulated as interlocking pieces). This isolates the learning curve, ensuring that foundational cognitive competencies—such as conditional reasoning and sequential loops—are deeply consolidated before introducing the mechanical rigidity of textual syntax.
- ❖ **Tranche 2: Applied Technical Fluency (Months 3–6):** Full immersion into Python programming, relational database management (SQL), API integration, and natural language processing (NLP). The structural shift from the smartphone to the physical QWERTY keyboard is eased by directly translating the visual logical blocks mastered in Tranche 1 into structured code.

- ❖ **Tranche 3: Cognitive Co-Piloting and LLM Tuning (Months 7–9):** Training focused entirely on the modern frontier. Students master advanced prompt engineering, vector database indexing, and Retrieval-Augmented Generation (RAG) fine-tuning.

The Technical Mandate for Python in AI Supervision

Students are instructed in Python not to compete in raw code generation against automated systems, but because Python operates as the native language of the entire artificial intelligence ecosystem (powering libraries such as LangChain and PyTorch). An AI supervisor operating strictly through natural language interfaces (Spanish or English) is structurally superficial. They require Python to govern the system's operational dashboard: to interface directly with software APIs, ingest and clean corporate text documents into vector databases, eliminate algorithmic biases within training datasets, and audit the raw source code generated by automated frameworks. Hub graduates do not target traditional software engineering roles; they are funneled directly into the critical **Human-in-the-Loop** layer of the cognitive economy:

- ❖ **Data Auditors and Algorithmic Bias Cleaners:** Standardizing, filtering, and labeling raw corporate input datasets before model ingestion.
- ❖ **AI Outputs Supervisors and Hallucination Controllers:** Real-time evaluation of generative outputs and programmatic re-engineering of algorithmic constraints to prevent corporate system failures.
- ❖ **AI Process Integrators:** Connecting autonomous agents with pre-existing corporate database infrastructures through automated code pipelines.

To completely eliminate the opportunity costs that force marginalized youth to abandon training in order to execute survival strategies in the informal gig economy, the Trust liquidates a monthly **Material Stabilization Stipend** equivalent to 75% of a minimum wage. This stipend operates as a material de-stressor: by guaranteeing household predictability, it mitigates the chronic stress associated with extreme income volatility, freeing up the cognitive bandwidth required to process complex logical abstractions (Mullainathan & Shafir, 2013).

6.5. Logistical Feasibility, Infrastructure Saturation, and Faculty Matrix

To guarantee that the project is operationally viable and rejects utopian over-scaling, the capacity of 512 annual students per Hub is mathematically modeled using an infrastructure saturation strategy, distributing the student body across optimized daily shifts:

- ❖ **Physical Lab Capacity:** Each Hub features 150 physical workstations equipped with local dedicated GPUs.
- ❖ **Shift Schedule Configuration:** Laboratory attendance is organized into 3 distinct daily shifts of 4 hours each (Morning: 08:00–12:00; Afternoon: 13:00–17:00; Night: 18:00–22:00).
- ❖ **Maximum Active Capacity:** The layout accommodates 450 simultaneously seated students per day (150 stations × 3 shifts). Annual enrollment is deliberately calibrated at 512 students (approximately 170 per shift) — a controlled over-enrollment of roughly 14% against the projected early attrition (AAC target below 12%), so that effective attendance converges toward the 450-seat installed capacity within the first weeks. During the initial overlap, station rotation absorbs the margin; as attrition materializes, vacated stations are cycled into a rolling maintenance reserve.
- ❖ **Faculty Allocation:** The budget allocates 15 Technical Instructors per Hub. Distributed across the schedule, 5 professors deploy simultaneously during each 4-hour shift.
- ❖ **Student-to-Teacher Ratio:** With 150 students seated per shift across 5 active instructors, the ratio balances at 30 students per teacher, an intensity lower than the baseline metrics found in the introductory years of local public universities.

The Multiplier Role of the Socratic AI Tutor

A ratio of 30 students per teacher, which would cause an administrative bottleneck in an analog classroom, becomes highly efficient due to the embedded technology. Every workstation integrates a localized Large Language Model (LLM) configured in "Socratic Tutor Mode." The AI functions as a first-line, real-time individual assistant: it filters and resolves approximately 80% of mechanical bugs, syntax errors, and initial student frustrations by providing inline explanations and everyday analogies. This shifts the 5 human professors away from repetitive syntax debugging, allowing them to act exclusively as high-level facilitators, project coordinators, and guides for deep logical barriers. Within the care module, the 4 specialized educators manage an average of approximately 25 children per shift (estimating that 15% of the vulnerable youth cohort requires childcare simultaneously), adhering to early childhood development safety ratios.

6.6. Standardized Financial Blueprint (Per-Hub Model)

To demonstrate fiscal viability before international development banks and public auditors, the annualized blueprint for a single Hub servicing 512 students is modeled below (expressed in constant USD to neutralize domestic macroeconomic fluctuations):

STANDARDIZED FINANCIAL BLUEPRINT

Per-Hub Model · Year 1 · Constant USD

USD 1.28M

Total First-Year
Investment

512

Students
per Hub

9

Months Intensive
AI Training

BUDGET COMPOSITION



Stabilization Stipends

USD 691,200 · 53.9% of total



Hardware & Infrastructure

USD 265,000 · 20.7% of total



Pedagogical Salaries

USD 144,000 · 11.2% of total



Childcare (Module + Staff)

USD 81,000 · 6.3% of total



Nutritional Support

USD 60,000 · 4.7% of total



Cloud Compute & Tokens

USD 40,000 · 3.1% of total

FUND FINANCING & DEPLOYMENT FLOW



*Clawback: fiscal credits revoked
if placement quotas are unmet*

Figure 6.6 — Tripartite Future Skills Co-Investment Fund: Per-Hub Financial Architecture

Source: authors' elaboration based on Ley 27.506 fiscal framework
and hub operational parameters.

Expense Item	Technical Specification	Annual Cost (USD)
CAPEX (Year 1 Infrastructure)		
Laboratory Hardware	150 AI-Ready workstations equipped with local dedicated GPUs and high-capacity processors.	\$180,000
Networking and Connectivity	Industrial routing, dark-fiber connections, and low-latency switches.	\$35,000
Childcare Nursery Module	Complete infrastructural fit-out and early childhood development equipment for the facility.	\$45,000
Facility Retrofitting	Architectural modification of underutilized spaces ceded in-kind by public universities.	\$50,000
TOTAL CAPEX (Year 1 investment)	Initial hardware and spatial investment per Hub.	\$310,000

OPEX (Annual running costs)		
Pedagogical Salaries	15 Professional Technical Instructors under full-time educational contracts.	\$144,000
Childcare Salaries	4 Specialized early childhood educators for the nursery ecosystem.	\$36,000
Cloud Compute & Tokens	Scalable server allocation, cloud-leasing databases, and API usage tokens.	\$40,000
Nutritional Support & Services	High-protein daily nutrition cycles and core building maintenance/utilities.	\$60,000
Stabilization Stipends	Monthly stipend liquidation (512 students × USD 150 × 9 months).	\$691,200
TOTAL OPEX	<i>Annual running costs, human capital retention, and stipends.</i>	\$971,200
TOTAL FIRST-YEAR CAPITAL	Total capital required to launch and operate Node 1 during Year 1.	\$1,281,200

Given that the aggregate knowledge economy sector in the metropolitan area generates billions of dollars in annual revenue, the mandatory 0.5% corporate contribution (75% offset via fiscal credits) comfortably funds an initial network of twenty localized Hubs across the high-vulnerability corridors of the Buenos Aires Conurbation.

Fiscal Payback Estimate. The annualized cost of the twenty-Hub network approximates USD 25.6 million in Year 1 (USD 19.4 million from Year 2, once CAPEX is absorbed), equivalent to a cost per graduate of roughly USD 2,800 . Against this expenditure, each of the projected 6,480 annual formal placements (9,000 baseline graduates derived from the 10,240 initial enrolled student pool $\times$ 72% LTR) generates recurring fiscal inflows: employer and employee social security contributions, income tax on salaries that double or triple the RIPTE baseline, and VAT on the consumption multiplier of formalized income — flows that were previously null, as graduates originate from unregistered platform labor contributing zero to the tax base. Under conservative assumptions, the recurring annual fiscal yield per formalized worker offsets the one-time training cost within an estimated two to three years of formal employment, after which each cohort becomes a net fiscal contributor. The tax expenditure is thus best characterized not as foregone revenue but as a deferred fiscal investment with a compounding return, since each annual cohort adds permanently to the contributory base.

6.6.1. Hardware Feasibility and Compute Architecture Notes

To ensure budget transparency, the USD 1,200 asset cost allocation per workstation (factored into the USD 180,000 hardware pool) is strictly modeled after modern enterprise pricing for an AI-Ready Developer Profile, explicitly rejecting the necessity of high-cost industrial server infrastructure required for deep-learning training from scratch.

- ❖ **Local Configuration (CAPEX):** Each physical terminal is configured as a modular tower featuring a minimum specification of 32GB DDR4 RAM, a 1TB NVMe M.2 SSD, and a dedicated NVIDIA GPU architecture with 16GB of VRAM (e.g., RTX 4060 Ti). In the contemporary market environment, this hardware matrix is optimized to execute quantized, open-source localized Large Language Models (such as Llama-3-8B) and run vector database indexing locally without generating external network usage costs.
- ❖ **Hybrid Compute Architecture (OPEX Dynamic):** For advanced, high-order computational workloads required during Tranche 3—specifically intensive Retrieval-Augmented Generation (RAG) adjustments and pipeline integrations—the local workstation functions strictly as an agile control terminal. The underlying heavy processing lift is dynamically shifted to scalable public cloud ecosystems (AWS / Google Colab Enterprise), funded entirely by the Hub's USD 40,000 annual cloud-leasing operational allocation (OPEX). This hybrid architectural design ensures a high-productivity sandbox environment for students while maintaining strict fiscal discipline.

6.7. Risk Management and Structural Mitigations

A project operating within a high-volatility socioeconomic laboratory must structurally anticipate systemic risks through legal protocols embedded inside its trust agreement:

- ❖ **Risk 1: Macroeconomic Shocks and Inflationary Erosion:** Severe currency depreciation could liquefy the purchasing power of the Material Stabilization Stipend, forcing students to abandon the laboratory to return to informal survival activities.
 - *Mitigation:* The liquid assets of the Trust are legally tied to inflation-adjusted sovereign instruments (UVA/CER structures) or stable dual-currency baskets, guaranteeing that the monthly stipend automatically maintains its real purchasing power against the Total Basic Basket (CBT) tracked by INDEC.
- ❖ **Risk 2: Corporate Placement Opportunism (Free-Riding):** Tech corporations could absorb the Fiscal Credit Certificates to offset their taxes while refusing to open formal junior vacancies for Hub graduates.
 - *Mitigation:* The enabling legislation incorporates a conditional fiscal clawback mechanism. Technology firms that fail to fulfill their designated annual placement quotas for junior profiles face an immediate, proportional revocation of their Fiscal Credit Certificates, transforming their voluntary co-investment back into an un-exempted tax penalty.
- ❖ **Risk 3: Credential Inflation and Technical Wage Depreciation:** The rapid, mass output of digital technical certifications could oversaturate the junior labor pool, decompressing real wages across the IT sector.
 - *Mitigation:* The Trust Board utilizes a Skills Dynamic Registry co-supervised by the AGC trade union. Annual student enrollment capacity across the Hub network is mathematically throttled and dynamically paired against real hiring projections verified in collective bargaining parities, preventing credential oversupply and preserving the wage premium of the graduates.

6.8. Global Empirical Validation and Operational Precedents

The operational, temporal, and cost viability of a compressed, 9-month high-intensity cognitive intervention targeted at highly vulnerable populations is structurally validated by successful international precedents in human capital remediation:

- ❖ **The Pedagogical Window via Immersion (*Simplon.co*):** France's network of non-tuition, intensive coding hubs demonstrates that deep educational deficits among

marginalized suburban youth (*banlieues*) can be corrected within a 6-to-9-month active-learning environment, achieving formal placement rates of around 72–75% (All Digital, 2020) by leveraging corporate tax incentives coordinated by the state.

- ❖ **The Socio-Emotional and Gender Scaffold (*Laboratoria*):** This Latin American regional initiative proves that intensive 6-month bootcamps can successfully transition highly vulnerable young women without technical backgrounds into the knowledge economy by directly neutralizing the domestic care gap through an intensive on-site childcare framework and socio-emotional community mentoring (*Laboratoria*, 2024).
- ❖ **The Tripartite Financial Mitigation (*Year Up*):** Deployed across major urban centers in the United States, this framework confirms that when technical training is coupled with monthly material stabilization stipends funded by corporate partners (such as JPMorgan or Amazon), student attrition among low-income minorities drops below 12% (Fein, Dastrup & Burnett, 2021), while providing corporations with a direct pipeline of certified junior talent that eliminates traditional recruitment costs.

The proposed innovation synthesizes these three proven global mechanisms—the active immersion of *Simplon*, the gender-gap scaffolding of *Laboratoria*, and the corporate-funded stipend infrastructure of *Year Up*—scaling their operational lessons into a binding, macroeconomic framework built upon tripartite concertation with the force of law, specifically tailored for the structural heterogeneity of the Buenos Aires Conurbation.

6.9. Key Performance Indicators (KPIs) and Evaluation

Metrics

To guarantee absolute institutional transparency before international auditing bodies and financial partners, the Trust Board evaluates the Hubs through four quantitative Key Performance Indicators:

1. **Labor Transition Rate (LTR):** Calculates the percentage of matriculated students who successfully complete the 9-month track and secure formal, registered, and regulated employment within the knowledge economy within 180 days post-graduation. The minimum institutional target is set at **72%**.
2. **Intersectional Retention Index (IRI):** Measures the retention and graduation rates of young women with dependent children utilizing the on-site childcare module against the male baseline demographic. A target score of **1.0** indicates that the care ecosystem has completely neutralized the gender gap within digital upskilling.

3. **Algorithmic Attrition Compression (AAC):** Tracks the dropout rate of students who were previously full-time informal gig workers or platform riders. The target is to compress historical virtual learning dropout rates from 85% to **less than 12%** via the direct impact of the material stipend.
4. **Wage Delta Indicator (WDI):** Measures the net income divergence between the graduate's earnings 12 months post-placement against their baseline informal or platform wage. The target WDI is a minimum expansion of **180%**, verifying a structural shift from survival strategies to formal capital accumulation.

7. Expected Impact: Macroeconomic Development and SDG Alignment

The deployment of the Tripartite Future Skills Co-Investment Fund and its network of Decentralized Technological Hubs structures a multidimensional paradigm shift in human development. By injecting advanced cognitive compute capital directly into the marginalized geography of the Buenos Aires Conurbation, the intervention transitions the territory away from precarious survival strategies toward high-productivity economic integration.

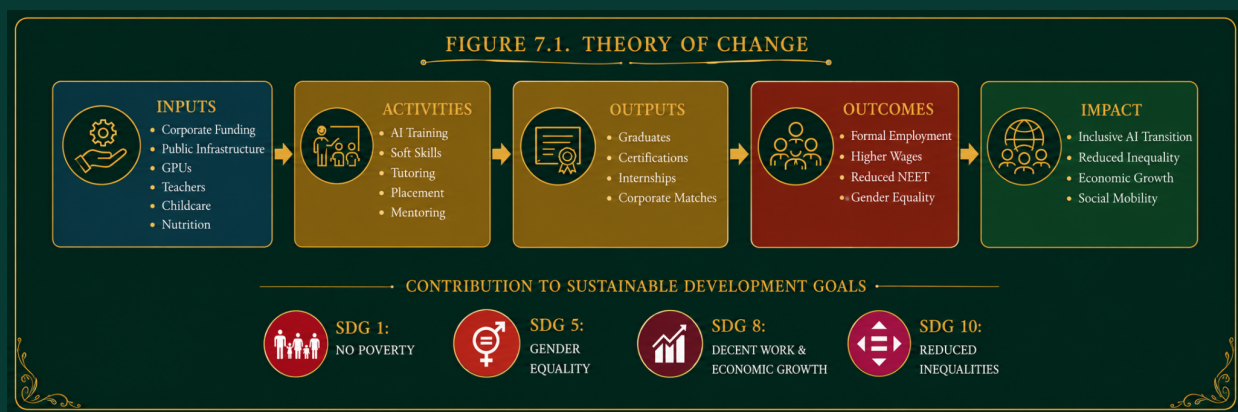
7.1. Alignment with United Nations Sustainable Development Goals (SDGs)

The structural engineering of the proposed innovation directly impacts four interconnected Sustainable Development Goals, transforming localized technological upskilling into a macroeconomic lever:

- ❖ **SDG 1: No Poverty:** Following INDEC's multidimensional vulnerability frameworks, poverty in the Conurbation is intrinsically linked to income volatility and structural deprivations (NBI 2, 3, 4). The Hubs collapse this cycle by providing an inflation-indexed Material Stabilization Stipend during training and facilitating a 72% LTR into formal, registered knowledge economy roles. By securing salaries that systematically outpace the Total Basic Basket (CBT), the project extracts entire family nuclei from structural poverty.
- ❖ **SDG 5: Gender Equality:** Traditional digital upskilling models suffer from regressive gender attrition due to uncompensated domestic care burdens. Incorporating the 50-square-meter Community Care Ecosystem (on-site nursery) directly neutralizes this barrier. The project aims for an IRI of 1.0, verifying that young mothers achieve

identical completion and formal placement rates as their male counterparts, effectively compressing the local gendered wage gap.

- ❖ **SDG 8: Decent Work and Economic Growth:** The current platform economy (Rappi, PedidosYa) traps over 45% of Conurbation youth in sub-optimal, non-registered gig labor characterized by algorithmic precarization and time poverty. By training youth to operate as Human-in-the-Loop supervisors (Data Auditors, Hallucination Controllers), the Hubs shift the labor supply toward formal, union-regulated (AGC) occupations that offer technological health insurance, collective bargaining protection, and exponential productivity gains.
- ❖ **SDG 10: Reduced Inequalities:** The expansion of generative AI threatens to exacerbate task-based polarization, enriching a localized professional elite (CESSI metrics) while permanently displacing lower-order clerical and informal workers. This tripartite mechanism democratizes access to high-velocity compute infrastructure (GPUs) that 40% of the peripheral population lacks at home, transforming a regressive technological disruption into an egalitarian mechanism of wealth redistribution.



7.2. Temporal Horizon of Expected Impacts

Deployment follows three phases: Phase I (Months 0–12) pilots two Hubs in the highest-vulnerability corridors (e.g., La Matanza and Quilmes) to validate the operational model and calibrate KPIs; Phase II (Years 2–3) scales to ten Hubs, incorporating pilot learnings; Phase III (Years 4–5) completes the twenty-Hub network, with expansion throttled by the Skills Dynamic Registry to preserve graduate wage premiums.

The socioeconomic return on investment (ROI) of the financial trust is disaggregated across three progressive phases, converting localized behavioral adjustments into structural macroeconomic stabilization:

- ❖ **Short-Term Impacts (1 to 12 Months: Operational Stabilization):** Within the immediate fiscal year, the short-term impact focuses on establishing the baseline infrastructure to mitigate structural dropout tendencies. By deploying the monthly material stipend and on-site childcare, the program provides immediate socio-emotional stabilization and neurological relief to the initial student cohorts, shifting their daily focus from precarious gig survival to intensive cognitive absorption. Concurrently, the physical retrofitting of underutilized public university halls cedes immediate hardware equity to the territory, establishing the first active AI-ready workstations that democratize high-velocity compute capacities for the community, setting the operational foundation to systematically compress attrition rates toward the target equilibrium.
- ❖ **Medium-Term Impacts (2 to 5 Years: Structural Scaling and Formalization):** Over a five-year horizon, scaling the network to twenty functioning Hubs yields 9,000 certified technical graduates per year within the Conurbation. The aggregate impact triggers a massive formalization wave. Leveraging the Wage Delta Indicator (WDI) target of 180%, the influx of formal, high-tier salaries injects substantial liquidity into the peripheral economy, generating a localized consumption multiplier effect. Informal platform riders and displaced call center operators transition into stable corporate payrolls, triggering full financial inclusion, driving union registration under the AGC, and generating an expanding tax base via formal labor contributions.
- ❖ **Long-Term Impacts (Beyond 5 Years: Macroeconomic Diversification):** In the long term, the innovation structurally alters the socioeconomic matrix of the Buenos Aires Conurbation. By systematically transforming a vast pool of vulnerable youth into an elite corps of AI process integrators and data auditors, the territory shifts from a reservoir of low-skilled, casual labor into a globalized epicenter of high-value cognitive exports. The State progressively amortizes the accumulated tax expenditure through the expanding contributory base described in Section 6.6, transforming the fiscal cost of each cohort into a recurring stream of social security and income tax inflows. Most fundamentally, the model establishes domestic cognitive sovereignty over artificial intelligence workflows, ensuring that Argentina successfully navigates the automation frontier by turning a threat of mass displacement into a coordinated engine of inclusive, sustainable macroeconomic growth.

8. Conclusion, Limitations, and Future Research Pathways

This study has developed a comprehensive institutional framework to address task-based labor polarization driven by the exponential expansion of generative artificial intelligence within the Buenos Aires Conurbation. By executing a strict territorial diagnosis crossing INDEC, CESSI, and AGC data, the research unmasked a critical structural friction: while cognitive automation systematically displaces vulnerable youth from traditional entry-level labor blocks, localized infrastructure deficits prevent these demographics from executing autonomous digital upskilling strategies. To resolve this governance void, the proposed Tripartite Future Skills Co-Investment Fund moves away from short-term public subsidies and rigid academic cycles. Instead, it leverages corporate tax incentives to deploy decentralized physical Hubs that combine high-velocity compute infrastructure, logical-linguistic remediation, and childcare frameworks, converting a profound macroeconomic threat into a coordinated engine of inclusive development.

8.1. Limitations of the Proposed Institutional Design

Despite its structural and fiscal coherence, the operational scalability of the tripartite trust faces three specific boundaries that must be explicitly acknowledged:

1. **Macroeconomic and Fiscal Volatility:** The financial mechanics of the model rely on the continuous stability of the National Knowledge Economy Law (Ley 27.506). Sudden shifts in national fiscal policy, intense devaluations, or arbitrary modifications to corporate tax offset frameworks could erode the corporate appeal of the Fiscal Credit Certificates, creating temporary liquidity crunches inside the trust.
2. **Structural Digital Infrastructure Gaps:** While the physical Hubs successfully democratize hardware access (GPUs) within university boundaries, they do not resolve the broader infrastructure bottlenecks of the territory. Graduated students transitioning into global remote work pipelines may still confront volatile external electricity networks and poor residential connectivity, restricting their ability to sustain high-bandwidth data-auditing workloads from their homes.
3. **Frictional Placement Dynamics:** The target placement rate (72% LTR) assumes that corporate hiring projections within the technological sector will remain constant. A severe global cooling of the knowledge economy or rapid automation of the

Human-in-the-Loop layer itself could throttle junior corporate absorption capacity, creating a temporary oversupply of certified technical labor.

Additionally, the fiscal payback estimate is sensitive to the LTR assumption: placement rates materially below the 72% target would extend the amortization horizon of the tax expenditure, a scenario partially hedged by the clawback mechanism, which returns unearned credits to the treasury precisely when placements underperform.

8.2. Horizons for Future Research

The structural baseline established by this paper unlocks three critical pathways for secondary academic and empirical research:

- ❖ **Algorithmic Labor Value Tracking:** Future studies should execute longitudinal tracking of Hub graduates to quantitatively assess the long-term stability of Human-in-the-Loop occupations, analyzing whether these technical roles function as sustainable career trajectories or act as temporary economic buffers before subsequent automation waves.
- ❖ **Geospatial Optimization Modeling:** Further empirical work should construct a Territory Targeting Index (TTI) — aggregating the NBI, informality, and NEET indicators presented in Section 4 — and integrate its micro-data into machine learning spatial allocation algorithms to dynamically map the ideal geographic nodes for secondary Hub networks, optimizing travel times and minimizing urban transit costs for peripheral students.
- ❖ **Cross-Border Policy Transfers:** Finally, comparative research is required to evaluate the institutional feasibility of transferring this tripartite trust blueprint to other heterogeneous metropolitan settings in Latin America, adjusting the fiscal and union governance layers to different national regulatory matrices.

While calibrated on the empirical matrix of the Buenos Aires Conurbation, the institutional architecture is deliberately modular. Its three load-bearing components — a mandatory corporate contribution offset by conditional fiscal credits, in-kind public infrastructure ceded by university networks, and union-supervised placement quotas — exist in functionally equivalent forms across Latin America's major metropolitan peripheries. The blueprint is therefore transferable to contexts such as São Paulo, Mexico City, or Bogotá, requiring only the recalibration of the fiscal instrument and the labor governance layer to each national regulatory matrix.

Ultimately, navigating the cognitive automation frontier requires abandoning the false dichotomy between market-driven tech isolation and passive state assistance. This paper establishes that by anchoring corporate capital directly to territorial public infrastructure, technological disruption can be institutionalized as a permanent, democratic mechanism of human acceleration and social equity.

Statement on the Use of Generative Artificial Intelligence

In compliance with the rules and regulations of the 2026 Geneva Challenge, the authors declare that Generative Artificial Intelligence (Large Language Models and Neural Diffusion Models) was integrated as a collaborative tool throughout the research, drafting, and asset-design phases of this proposal.

The AI was deployed strictly under a Human-in-the-Loop paradigm across the following specific dimensions:

- ❖ **Chapters 4 & 5 (Data Analysis & Contextualization):** Utilized for the cross-referencing, semantic auditing, and stylistic refinement of public demographic datasets (INDEC) and local institutional parameters.
- ❖ **Chapter 6 (Operational Architecture & Quantitative Modeling):** Employed as a dialogic partner for the mathematical and logistical engineering of the Hubs' shift schedules, and for the technical definition of the local/cloud hybrid compute hardware specifications.
- ❖ **Visual Asset Design & Data Visualization (Figures 4.1 & 6.6):** Generative diffusion and vectorization tools were leveraged to co-create the structural layouts, iconographies, and visual themes of the primary data infographics ("*From Connectivity to Capability*" and the "*Standardized Financial Blueprint*"). These AI-generated conceptual baselines were subsequently refined, verified for mathematical accuracy against text metrics, and typographically finalized by the authors.
- ❖ **Chapters 7 & 8 (Macroeconomic Impact & Synthesis):** Used as a high-velocity cognitive accelerator for English-language academic synthesis, terminology validation, and linguistic harmonization.

The underlying conceptual framework, socioeconomic logic, fiscal engineering, and policy proposals remain entirely the original intellectual property of the authors. The AI's participation empirically mirrors the core thesis of this project: demonstrating how advanced

automated systems, when governed by human oversight, compress development cycles and facilitate high-level cognitive outcomes.

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