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European Sovereignty, Forged in Silicon

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Italcore: A Strategic Plan for European Semiconductor Leadership

Executive Summary

Europe is at a strategic turning point. The chip crisis revealed a critical vulnerability, triggering an unprecedented response: the €43 billion EU Chips Act, a mandate to end technological dependency. Against this backdrop, ItalCore has been established to fill a critical void in the €35 billion defense, infrastructure, industrial, and medical markets: the absence of a commercial European platform for sovereign microprocessors. Our mission is not to chase mass-market performance, but to architect the continent's technological sovereignty by providing trusted, transparent processors for its most strategic applications. ItalCore is not just a semiconductor company; it is a strategic infrastructure for Europe's future. Investing in ItalCore means building enduring European technological leadership while generating exceptional returns in a protected and rapidly growing market.

The ItalCore Solution: A Modular Platform for European Sovereignty

ItalCore introduces a revolutionary platform based on the open and royalty-free RISC-V architecture, engineered to be intrinsically sovereign, secure, and adaptable. Our strategic approach to modularity is founded on a base CPU core combined with a library of verified IP blocks. This architecture allows us to rapidly configure and produce custom solutions, reducing NRE costs by 70-80% and accelerating time-to-market to just 6-12 months for new variants, delivering an insurmountable economic and speed advantage.

Go-to-Market Strategy: Leveraging Defense to Drive Industrial Growth

Our entry strategy is targeted and high-impact. We will begin with the Defense & Aerospace sector to attract significant non-dilutive R&D contracts from the European Defence Fund, building unparalleled technological credibility. Building on this validation, we will expand our presence into the adjacent critical infrastructure and industrial automation markets, where our value proposition of reliability, security, and sovereignty addresses needs unmet by incumbent players.

The Pillars of Sustainable Competitive Advantage

Our competitive advantage is built on three strategic pillars that create a defensive moat:

1. **Policy Alignment & Sovereignty by Design**: We are the only platform natively aligned with the Chips Act and European regulations (NIS2, GDPR), creating an intrinsic procurement preference in strategic sectors.
2. **Modular Platform Economics**: Our modular architecture delivers cost efficiency and development speed that traditional monolithic models cannot match.
3. **First-Mover in a New Category**: We are the first commercial European modular RISC-V platform, capitalizing on ecosystem maturity and a competitive vacuum in the high-assurance processor market.

Capital-Efficient Business Model & Funding Plan

We are adopting a two-phase business model to maximize capital efficiency. We will begin with an IP & Services model (Years 0-2), generating early revenue through R&D contracts and IP licenses. Once the technology is silicon-proven and we have market traction, we will transition to a Fabless model (Years 2+), selling ItalCore-branded chips with target gross margins of 60-65%.

Chapter 1: The European Imperative: A Market Forged by Crisis

The echoes of the 2021-2022 chip shortage still reverberate across Europe, a stark reminder of a painful truth: our continent, despite consuming 20% of the global chip supply, controls less than 10% of global production. This dependency inflicted a €290 billion economic loss, revealing a profound strategic vulnerability. This crisis has forged an unprecedented political and industrial resolve, creating a once-in-a-generation window for European semiconductor independence.

This historic moment is defined by three converging forces:

- **A New Economic Reality**: The supply chain crisis has fundamentally shifted priorities. European manufacturers, having experienced the catastrophic cost of production halts, now prioritize supply security over the lowest cost. A verifiable **67% of EU manufacturers** demonstrate a willingness to pay a **10-20% premium for guaranteed European supply**. For strategic buyers in defense and critical infrastructure, transparency and auditability now often outweigh pure performance.
- **Unprecedented Political & Financial Backing:** In response, Europe has launched the **€43 billion EU Chips Act**, a strategic mandate to double Europe's global market share to 20% by 2030. This mobilization of resources includes **€270 million specifically dedicated to fostering the RISC-V ecosystem**, providing a powerful, policy-driven tailwind for homegrown innovation.
- **A Mature Technological Shift**: The **RISC-V open instruction set architecture (ISA)** has reached commercial maturity. Projected to become a $12.6B market by 2030, this royalty-free standard offers a transparent, secure, and flexible alternative to proprietary dependencies. With Europe currently lacking any sovereign commercial processor options for its critical infrastructure, the adoption of RISC-V is a strategic imperative.

ItalCore rises to meet this historic challenge. We are architecting Europe's technological sovereignty—one modular core at a time.

Chapter 2: The €35 Billion Strategic Opportunity

The European Paradox: Strengths Undermined by a Critical Gap

Europe possesses formidable strengths in the semiconductor value chain, yet a critical void exposes a profound strategic vulnerability. This is the opportunity ItalCore is uniquely positioned to fill, targeting specific niches within a **€35 billion strategic reference market**.

What Europe HAS	What Europe LACKS
💰 **Capital:** An unprecedented €43 billion committed via the EU Chips Act.	🚫 **Commercial RISC-V Platform:** Despite academic projects, Europe has no industrial-ready commercial RISC-V solutions for general-purpose computing.
🧠 **Talent:** World-class R&D institutions like IMEC, CEA-LETI, and Fraunhofer.	🚫 **Modular & Adaptable Architecture:** A dependence on one-size-fits-all foreign chips that fail to optimize for nuanced European industrial, defense, and infrastructure applications.
🏭 **Infrastructure:** Advanced foundries such as GlobalFoundries and STMicroelectronics available on the continent.	🚫 **Verifiable Hardware Root-of-Trust:** Critical infrastructure remains reliant on foreign chips with potential unknown backdoors, a risk no longer acceptable for national security.

Market Pain Points: The Cost of Dependency

This dependency directly impacts Europe's most vital sectors:

- **Defense & Aerospace** (Market Size: €50B by 2030):
  - **Pain Point**: Strict ITAR restrictions and persistent backdoor concerns in foreign components compromise strategic autonomy. There is an urgent need for a new local supplier to provide auditable, ITAR-free designs.
  - **Current Dependency**: US/Asian chips with export limitations and unauditable "black box" designs.
- **Industrial Automation** (Market Size: >$100B, ~8% CAGR):
  - **Pain Point**: Acute supply chain vulnerability and a need for 15+ year support lifecycles, which foreign mass-market suppliers often fail to guarantee.
  - **Current Dependency**: Intel Atom, ARM-based PLCs, and other general-purpose foreign processors.
- **Smart Infrastructure** (Market Size: €38B, ~22% CAGR):
  - **Pain Point**: Critical security and sovereignty concerns for vital systems like smart grids and transportation networks. Governments increasingly demand auditable, trusted components.
  - **Current Dependency**: Generic foreign processors not designed for high-security, long-lifecycle infrastructure needs.
- **Medical Devices** (Market Size: ~$207B by 2032, ~5% CAGR):
  - **Pain Point**: Stringent regulatory compliance and an urgent need for transparent, auditable supply chains to ensure patient safety and data privacy (GDPR).
  - **Current Dependency**: Legacy proven chips with limited innovation pathways and opaque supply chains.

Chapter 3: The ItalCore Solution: A Modular Platform for Sovereignty

ItalCore is not just building another chip; we are engineering a new paradigm for European semiconductor design. Our solution leverages the inherent advantages of RISC-V to deliver a platform that is sovereign, secure, and supremely adaptable. **This is European Sovereignty by Design.**

The ItalCore Platform Architecture: The "LEGO" Advantage

At the heart of ItalCore is a 100% European-controlled, modular RISC-V platform, architected like a "LEGO for processors." This eliminates foreign licensing dependencies and allows for rapid, cost-effective customization. Our platform consists of a base RISC-V core combined with a library of verified, modular IP blocks, including:

- **Ultra-Efficient Arithmetic Units:** Specialized, data-dependent processing blocks that slash dynamic energy consumption by over 90% compared to standard implementations, extending operational life for battery-powered devices.
- **High-Assurance Fault-Tolerant Logic:** Innovative redundancy schemes, such as dynamic multi-threading and heterogeneous core protection, to deliver high resilience with significantly lower hardware and performance overhead than traditional lockstep systems. Our approach enables instruction-level recovery with negligible checkpointing overhead, maximizing operational performance.
- **Powerful Vector Accelerators for Edge AI:** Fault-tolerant hardware acceleration for complex workloads like neural network inference and real-time signal processing, enabling powerful AI capabilities directly at the edge without compromising reliability.

This modular platform fundamentally transforms the economics and speed of chip development. It enables us to deliver not just customized SoCs, but solutions optimized for specific operational domains: from ultra-low-power edge devices to mission-critical systems demanding verifiable resilience and high-performance nodes for real-time analytics. This is Sovereignty and Performance, tailored to mission needs.

Feature	Traditional Approach	ItalCore Innovation
Design Model	Monolithic chip → One size fits all	**Modular platform → Mix & match IP blocks**
Time to Market	18-24 months per variant	**6-12 months** to market
NRE Cost (per variant)	€2-5M per new design	**€500K-€1M** (shared platform costs)
Control	Vendor lock-in to ARM/Intel	**Open sovereignty** → European control

Competitive Positioning: A New Category of Sovereign Silicon

ItalCore establishes a unique competitive position by being the **first commercial European modular RISC-V platform** that combines sovereignty, security, and adaptable design. We are not directly competing with ARM or Intel on raw performance for mass markets; we are creating a new category for strategic applications where trust is paramount.

Feature	ARM Cortex	Intel Atom	Codasip (EU)	🏆 ItalCore
Core Architecture	Proprietary	x86	RISC-V (IP)	**RISC-V (Platform)**
Customization	Limited	Monolithic	Customizable IP	**Modular Platform**
Key Focus	General-purpose	General-purpose	IP Licensing, tools	**Sovereignty, Security, Modularity**
Geographic Control	US/UK Control	US Control	European HQ	**Full EU Control**
Commercial Product	Yes	Yes	IP (not chip)	**First Commercial EU Modular RISC-V Platform**

Chapter 4: Go-to-Market Strategy: Lead with Defense, Expand to Industry

Our market entry aligns with the continent's most urgent needs. ItalCore will make a decisive move into the **Defense & Aerospace market** as our initial beachhead. This is a deliberate, high-impact strategy designed to secure high-value contracts, build unparalleled credibility, and leverage policy tailwinds before strategically expanding into adjacent industrial sectors.

Strategic Priority: Defense & Aerospace

The European defense landscape presents a unique and critical imperative for homegrown, trusted silicon. For ItalCore, this sector is the ideal entry point:

- **Sovereignty is Paramount**: Defense demands absolute control and transparency. Our **ITAR-free, fully auditable RISC-V design** directly addresses this core requirement.
- **Unprecedented Funding & Policy Alignment**: The **European Defence Fund (EDF)** creates a direct pathway for ItalCore to secure significant non-dilutive R&D contracts.
- **High Value, Niche Competition**: Defense projects offer high value-add per unit and prioritize trust over cost. Commercial competition is limited, allowing us to differentiate as a **new, transparent, and**

auditable European supplier.

- **Long Lifecycles & Ultimate Reliability**: Defense platforms require extreme longevity. RISC-V's stable ISA guarantees long-term software compatibility, aligning perfectly with our focus on robust, safety-certified designs.

Our initial product focus will be on a **secure processing unit for high-assurance applications**, such as drone flight controllers or secure communication gateways, developed in partnership with leading European defense primes. This bold move is the most direct route to fulfilling Europe's strategic imperative and establishing ItalCore as the leader in trusted European silicon.

Chapter 5: Our Competitive Advantage

ItalCore is positioned at a unique and highly defensible intersection within the European semiconductor landscape. Our advantage stems from a deliberate confluence of technology, timing, and strategy, creating sustainable moats that competitors cannot easily replicate.

Pillars of Our Competitive Advantage

🛡️ **Sovereign by Design & Policy Aligned:** Our platform is free from U.S. export restrictions and features a transparent, auditable architecture. It is natively designed for alignment with key EU regulations like GDPR, NIS2, and the Cyber Resilience Act. This creates a powerful, policy-driven procurement preference that non-European competitors cannot match.

🧩 **Modular Platform Economics & Sustainable Performance:** Our "mix & match" IP block approach slashes NRE costs and development time. This modularity extends to performance optimization. We offer a portfolio of IP blocks that are application-specific, allowing us to deliver maximum performance-per-watt and reduce average execution time for any given workload. From ultra-low-power embedded controllers to high-frequency processing nodes, our platform is not just cost-efficient, but also energy-efficient by design, a critical requirement for modern industrial and edge applications.

⏰ **Strategic First Mover in a New Category:** We are launching directly into the tailwind of the €43B EU Chips Act, capitalizing on the precise moment the RISC-V ecosystem has reached commercial maturity. Critically, there is currently no other commercial European modular RISC-V platform tailored for high-assurance applications, granting us a significant and defensible first-mover advantage.

Chapter 6: Capital-Efficient Business Model & Partnerships

ItalCore's business model is meticulously designed for capital efficiency and sustainable growth, leveraging a phased market entry and a dual revenue stream to de-risk development.

Dual Revenue Stream Architecture

1. **IP Licensing & Design Services (Years 0-2):** Our primary revenue source in the initial 24-36 months will be high-value R&D contracts with defense ministries, IP licensing fees, and NRE for custom design services. This provides crucial early cash flow and market validation.
2. **Fabless Chip Sales (Years 2+):** As our platform matures, we will scale into a fabless product company, selling ItalCore-branded processors with target gross margins of 60-65%.

Capital Efficiency Strategy

Our fabless model, combined with a strategic use of European programs, provides a significant capital efficiency advantage:

- **MPW Prototyping**: We will use Multi-Project Wafer (MPW) shuttles via programs like **EUROPRACTICE**,

allowing us to fabricate initial prototypes for **€50K-€100K**.

- **Leveraged IP**: We will build upon proven, open-source European RISC-V research (e.g., the PULP platform), dramatically reducing initial R&D effort.
- **EU Grant Co-Funding**: We will aggressively pursue EU grants, which can offset **50-70% of salary costs** for our R&D team.

Strategic Partnership Ecosystem

Partnership Category	Key Partners	Strategic Role
🏭 **Manufacturing Alliances**	- GlobalFoundries - X-FAB - STMicroelectronics	Secure EU-based capacity, ensure supply chain resilience, and provide auditable manufacturing control.
📡 **Go-to-Market Leverage**	- Defense Primes (Leonardo, Thales, etc.) - System Integrators (SECO, Kontron, etc.)	Accelerate market penetration, secure high-value pilot projects, and leverage existing sales channels.
🎓 **University & Research Network**	- University of Genoa & Bologna, Sapienza Rome, ETH Zurich, PoliMI, PoliTO - Leading Italian RISC-V research centers	De-risk R&D, access proven IP, and build a world-class talent pipeline.

Chapter 7: Phased Technical Roadmap

Our technical roadmap is a disciplined, phased approach to transform cutting-edge research into commercially viable, sovereign processors.

Phase 1: Foundation & Defense Prototype (Months 1-24)

This phase is focused on building our core platform, securing our first defense-oriented R&D contracts, and delivering a functional prototype that validates our technology.

- **Team & Architecture (M 1-6)**: Assemble the core engineering team (5-8 engineers), including the CTO. Select the baseline open-source RISC-V core and define specifications for our modular IP blocks, including a baseline fault-tolerant interconnect and a standard vector processing unit.
- **RTL Design & Verification (M 6-18)**: Complete the RTL design of the base SoC. Develop and verify our first proprietary IP blocks, prioritizing an ultra-low-power arithmetic unit based on variable-latency techniques to create an immediate and demonstrable competitive advantage for embedded applications. Integrate our initial security and industrial I/O modules. Develop an extensive verification environment with fault-injection capabilities to quantitatively prove resilience.
- **First MPW Tape-Out (M 18-24)**: Fabricate a 65nm or 40nm prototype via a EUROPRACTICE MPW shuttle for silicon validation and delivery to initial defense partners.
- **Software Stack Alpha (M 12-24)**: Develop alpha versions of the Board Support Package (BSP), essential RTOS ports, and core development tools for internal use and early partner evaluation.

Phase 2: Productization & Industrial Qualification (Months 24-48)

- **Develop Proprietary IP for AI Acceleration**
    - Custom Vector Co-processor: Design and verify a high-performance, energy-efficient vector co-processor optimized for CNNs and transformer models, targeting edge AI inference.

- Specialized ISA & Memory: Implement a custom Instruction Set Architecture (ISA) and on-chip memory hierarchy to minimize data movement and maximize processing efficiency.
- Compiler Toolchain: Develop an automated compiler to map complex AI models directly to the hardware for optimal performance.

- **Introduce Quantum-Ready Security Features**
  - PQC Acceleration: Integrate a hardware root-of-trust with dedicated Post-Quantum Cryptography (PQC) accelerator blocks to ensure long-term security against future quantum threats.
  - Secure Boot: Implement a secure boot process based on immutable PQC keys to verify the integrity of the entire software stack and prevent malicious firmware.
  - Hybrid Cryptography: Adopt a hybrid approach combining classical and PQC algorithms to ensure a seamless and secure transition.

- **Quantum-Inspired & Quantum Control on RISC-V**
  - Hyperdimensional Computing (HDC): Implement "quantum-inspired" architectures like HDC on RISC-V to simulate quantum properties such as robustness and learning with limited data, without using actual qubits.
  - Quantum Controllers: Develop RISC-V-compatible controller generators for quantum hardware, facilitating the integration and control of quantum architectures through standard toolchains.

Phase 3: Commercial Scale & Platform Expansion (Months 48-72)

Chapter 8: Building Europe's Premier RISC-V Team

ItalCore's success hinges on assembling Europe's premier RISC-V team, combining proven entrepreneurial leadership with world-class technical depth.

- **Founding Leadership - Business & Funding Excellence**: The founding team brings a proven track record in scaling technology ventures, deep expertise in navigating EU grant mechanisms, and established relationships in complex European B2B markets.
- **Technical Leadership - World-Class RISC-V Expertise**: Our CTO, a semiconductor industry veteran with extensive CPU design experience and recognized leadership in the RISC-V ecosystem, will lead a highly skilled tech team. We are actively evaluating multiple qualified candidates for this key equity partnership.

Chapter 9: Strategic Funding & EU Policy Alignment

The **€43 billion EU Chips Act** represents a once-in-a-generation funding opportunity that aligns perfectly with ItalCore's vision.

Targeted EU Funding Mechanisms

Funding Program	Total Budget	ItalCore's Strategic Fit & Approach
European Defence Fund (EDF)	€8B (2021-2027)	**Primary Target.** The EDF directly funds strategic defense technologies. Our defense-first GTM makes us a prime candidate to lead or join consortia.
Chips Joint Undertaking (Chips JU)	€3.3B (EU Budget)	**Primary Target.** With **€270 million specifically for RISC-V**, this is a direct opportunity to fund our core platform development.

Horizon Europe (inc. EIC Accelerator)	€95.5B (2021-2027)	**Primary Target.** The EIC Accelerator is ideal for our early stage, offering grants (€2.5M) + equity (€15M).

Funding Strategy: A Phased, Blended Approach

We will adopt a blended strategy, combining non-dilutive grants with targeted private equity. Our **Seed / Series A target is €5M–€10M**, leveraging our founding team's proven track record of securing over €5M in EU grants to attract both public and private investment.

Chapter 10: Vision & Call to Action: Investing in European Sovereignty

Our vision is clear: **Design Once. Scale Securely. Powered by Europe**. By 2030, ItalCore processors will be the trusted foundation powering Europe's smart factories, securing its critical infrastructure, and fortifying its defense systems.

The Investment Thesis: A Generational Opportunity

ItalCore represents a rare convergence of a geopolitical mandate, a disruptive technology shift, and a clear, validated market need.

- **Strategic Value & Market Opportunity:** We are focused on a **€35B+ addressable market** where our value proposition is strongest, with massive funding leverage from EU grants and clear exit paths.
- **European Impact:** Our mission directly contributes to the EU Chips Act goals, building semiconductor independence, fostering resilient supply chains, and creating high-value engineering roles in Italy and across the continent.

The Window Is Open: The Time to Act is Now

This is a unique, time-sensitive opportunity that demands decisive action.

- **Policy Perfect Storm**: The unprecedented **€43B EU commitment** creates unparalleled tailwinds for European-designed components.
- **Technology Inflection**: The **RISC-V ecosystem has reached commercial maturity**, enabling rapid industrial deployment.
- **Competitive Vacuum**: A **critical 24-month first-mover advantage** exists before the market for sovereign processors becomes saturated.

This is more than an investment in a semiconductor company. It is a chance to build a foundational pillar of Europe's technological destiny while generating exceptional returns.

We will not just build chips—we will build European independence.