

Ilia Zakharov

Engineering Leader | Formal Methods | Distributed Engineering | AI-Augmented Delivery

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PROFILE

I'm an engineering leader with a PhD in formal methods and an Executive MBA, who's spent 12+ years on technically hard problems — formal verification of operating systems, security audits of crypto protocols, and building products on formal semantics and distributed payment protocols — research- and security-heavy work where the engineering rests on real math. What I do best as a leader is building the operating system of a company where research meets product, and wiring creative thinking into an operational flywheel: disciplined in process but built around people.

Over three years as Engineering Manager and then Head of Engineering at Pi2 Labs (Fast), that approach is what let us move fast — like building a security-critical distributed payments network from idea to a fully operational DevNet in under three months at ~150K transactions per second. One of my recent focuses has been building AI into that operating system: automating reporting, coordination, and engineering loops without letting the system lose its shape. Strict where it counts, light everywhere else, and built to let good people do their best work.

CORE STRENGTHS

- **Ownership-driven leadership:** end-to-end responsibility for complex technical work that reaches users, and building a culture of distributed ownership and accountability across the team rather than dependence on a single leader.
- **Engineering culture & infrastructure:** end-to-end ownership of engineering culture, development, DevOps, and infrastructure, and the ability to build the processes behind them.
- **Business-to-engineering translation:** turning leadership goals into KPIs, product requirements, and team-level stories that teams can execute.
- **Engineering finance:** managing the development and DevOps budget, choosing tools within budget constraints, optimizing vendor spend, and securing startup grants and platform credits.
- **Business-stage adaptation:** reshaping engineering structure and process from pre-seed execution to post-seed scaling and Series A preparation.
- **People systems:** continuous feedback, situational leadership, responsibility distribution, team skill/perks inventory, team-lead burnout prevention, and PM/leadership training.
- **AI-assisted engineering operations:** agents for reporting, project management, engineering, security reviews, and sharing company knowledge.
- **Technical depth:** formal methods, automated verification, distributed systems, blockchain and cryptographic systems, operating systems, file systems, security-aware SDLC, and software reliability.

EXPERIENCE

Pi2 Labs / Fast / Fast.xyz

2024 – Present · Remote

Engineering Manager → **Head of Engineering**

Built and adapted the engineering organization across company stages — pre-seed, post-seed, and Series A preparation — scaling from an early team of ~5 to a distributed engineering/product organization of 30–40 people.

SELECTED RESULTS

- Led a security-critical distributed payments network from idea to a fully operational DevNet in **~3 months**, reaching **~150K transactions/second**.
- Raised planning hit rate from **~30% to ~90%** across teams via clearer planning, continuous feedback, responsibility distribution, and delivery tracking.
- Cut typical lead time from **3–4 weeks to ~1 week** by replacing two-week cycles and ad hoc coordination with tighter one-week loops.
- Cut release time from **~30 minutes** of manual redeployment to **~3 minutes** from commit to production via CI image builds and automated deployment.
- Cut CI/infrastructure cost **~3x** by moving suitable workloads from AWS to a self-hosted Hetzner setup.
- Halved onboarding time — from **~1 month to ~2 weeks** to first contribution — through documentation, a mentoring structure, and team-specific test tasks.
- Eliminated team-lead attrition: from **~3 leads lost or burned out per year to zero** after introducing continuous feedback and responsibility distribution.

- Owned the engineering/DevOps budget and secured startup grants and platform credits — including a new **\$100K AI-platform grant** on top of an existing one.

RESPONSIBILITIES

- Built the engineering management system for a fully distributed organization: team structure, planning, delivery cadence, leadership routines, DevOps, reporting, feedback, onboarding, hiring, and conflict resolution.
- Built the system that turns leadership goals into delivery: translating company objectives into KPIs and product requirements, then breaking them into team-level stories.
- Adapted the engineering system to each company stage: speed and flexibility early, clearer ownership and metrics post-seed, stronger reliability and repeatability for Series A.
- Ran an adaptive people-management system — continuous feedback, situational leadership, responsibility distribution — and created and delivered internal PM/leadership training.
- Introduced pragmatic Agile/Lean and DORA-style metrics without heavyweight process, alongside testability review, security-aware SDLC, and cloud/self-hosted DevOps with CI and automated deployment.
- Led and personally built the transition to AI-assisted engineering operations: agent workflows for reporting, project management, onboarding, and documentation, plus a unified, searchable company knowledge base.

Runtime Verification

2021 – 2023 · Remote

Verification Engineer

- Designed formal proof-compression approaches for zero-knowledge and cryptographic contexts; contributed to zkVM design.
- Led development of internal blockchain analytics monitoring tooling.
- Audited Algorand and Ethereum smart contracts; built simulation and formal modeling artifacts in Isabelle/HOL to detect high-impact vulnerabilities and math/rounding issues.

EMURGO Learning

2022 – 2023 · Remote · Part-time

Guest Lecturer, Formal Verification

- Developed and taught an online course on formal verification practices for blockchain software engineering, bridging formal-methods research and practical engineering.

Institute for System Programming, Russian Academy of Sciences

2012 – 2021 · Moscow

Academic Researcher / Software Engineering Researcher

- Researched automated verification of large C programs (environment-modeling decomposition), applied to real OS and file-system code to find defects.
- Contributed to the Klever verification framework, which operationalized my PhD work and supported bug-finding in the Linux kernel and proprietary systems.

EDUCATION

Executive MBA

ESEM Business School, Belgrade · 2024–2025

PhD, Computer Science / Software Engineering / Formal Methods

Institute for System Programming, RAS · 2014–2019

Dissertation: “Decomposition of Environment Modeling for Automated Verification of Large C Programs.”

MS, Applied Mathematics & Physics

Moscow Institute of Physics and Technology (MIPT)

BS, Applied Mathematics & Physics

Moscow Institute of Physics and Technology (MIPT)

AWARDS & RECOGNITION

- **Presidential Scholarship**, awarded during PhD research.
- Completed **3 Google Summer of Code** projects for the Linux Foundation.
- Microsoft PhD Summer School, Cambridge, 2015.

SELECTED METHODS & TOOLS

Situational leadership · continuous feedback · responsibility distribution · PM/leadership training · Agile/Lean · DORA metrics · planning hit rate · lead time · OKRs/KPIs · DevOps · CI/release automation · cloud & self-hosted infrastructure · security-aware SDLC · testability review · regression/performance tracking · agent-based workflows · company knowledge systems · formal methods · automated verification · distributed systems · blockchain & cryptographic systems · operating & file systems.