

# ZAKARIA SMAHI

Principal Software Engineer – .NET & Complex Systems *High-Performance Engines | Algorithmics | System Design*

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## PROFILE SUMMARY

Principal Engineer with **12+ years of experience** building high-complexity business systems where the core challenge lies in rule variability, combinatorial logic, and evolving regulatory constraints.

**I remain deeply hands-on, actively contributing to the implementation of core engine components.** My value lies in bridging strategic business goals, high-level architectural patterns (DDD, Modular Monoliths), and low-level performance optimization.

I specialize in business-critical environments where correctness, traceability, and long-term evolvability are mandatory.

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## CORE EXPERTISE

- **Engineering (Hands-on):** C# / .NET 8, Algorithm Design, **Performance Optimization (CPU, Memory, SQL).**
  - **Architecture:** Domain-Driven Design (DDD), Modular Monoliths, Rule Engines, Decision Systems.
  - **Algorithmic & Modeling:** Combinatorial Optimization (Google OR-Tools), Constraint Programming (CP), Exact Solvers.
  - **Practices:** Clean Architecture, TDD, CI/CD, **Secure SDLC, Static Code Analysis, Compliance-driven Development.**
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## PROFESSIONAL EXPERIENCE

**Principal Software Engineer (Lead Architect) MAXIMIS RETRAITE** – Paris, France | *July 2020 – Present* *Technical owner of the core calculation engine.*

### Strategic Architecture & Business Value

- **Translated complex public pension policies** into a modular Domain-Driven Design (DDD) architecture, ensuring strict alignment between business rules and code.
- **Reduced "Time-to-Market" for new regulatory reforms from months to weeks** thanks to the strategic decoupling of rules and calculation engine.
- Designed the **Modular Monolith** architecture to isolate workflow navigation from pure calculation logic.
- **Ensured architectural resilience** to future regulatory reforms without structural rewrites.

### Core Engineering & Algorithmic Implementation (Hands-on)

- **Designed and implemented in C# the core projection algorithms** handling multi-regime pension calculations.
- **Automated High-Volume Document Ingestion:** Built a robust pipeline utilizing OCR technologies (Azure Doc Intelligence) to process complex PDF streams, reducing data entry time from 1 hour to 10 seconds (**Industrialization & Performance focus**).
- **Wrote custom heuristics and solvers** to reconstruct incomplete historical data and model complex eligibility schemes (Google OR-Tools / SCIP).
- Optimized high-performance SQL processing pipelines for large historical datasets (**300x performance gain**).
- Developed the specific temporal versioning logic (C#) enabling the coexistence of past and future legal rules.

**Internal Technical Trainer GROUPE OPEN** – Paris, France | *March 2020 – July 2020*

- Designed and delivered advanced SQL training for Product Owners and Business Analysts.

**Senior .NET & Data Engineer NEUFLIZE OBC (ABN AMRO Group)** – Paris, France | *September 2019 – March 2020*

- Built systems to detect regulatory breaches in credit contracts (Risk Management).
- Designed critical ETL pipelines integrating core banking systems (AS/400) into analytical platforms.
- Conducted cross-functional technical scoping workshops with Middle and Front Office teams.

**Senior .NET Engineer AXA FRANCE** – Paris, France | *February 2018 – July 2019*

- Led the modernization of on-prem systems to distributed PaaS architectures (App Services, SQL Database).
  - Implemented "Security by Design" in CI/CD pipelines (SonarQube, CheckMarx).
  - Developed GDPR-compliant anonymization processes.
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## **EARLY CAREER – SYSTEMS WITH CONSTRAINTS & OPTIMIZATION**

**Senior .NET Engineer | ONPO** (Algeria) | *2016 – 2018*

- **Designed and implemented a constrained assignment engine using Operations Research techniques** for pilgrim accommodation management.

**Technical Auditor | SOVAC** (Algeria) | *2016*

- Conducted software quality audit (Clean Code, SOLID) and defined IS refactoring strategies.

**Fullstack Engineer | ANEM** (Algeria) | *2014 – 2016*

- Developed a **national-scale** Supply/Demand matching engine using high-performance T-SQL procedures.
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## **EDUCATION**

**State Engineer in Computer Science (Master's Degree equivalent) ESI (ex-INI)**, Algiers | *2014*

**Certifications:** The Complete Guide to Becoming a Software Architect (2024), DevOps Fundamentals DASA (2019).

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## **LANGUAGES**

**French & Arabic:** Native/Bilingual | **English:** Professional Proficiency