

# Matías Mirabelli

## Software Engineer

### About me

I am a software engineer with almost twenty years of experience in the software industry. I am a senior developer specialized in web applications and distributed systems. I developed static web sites; classic request/response applications; frontend applications with reactive components; different types of APIs; infrastructure services like job schedulers and single sign-ons; data processing applications like ETLs and scrapers; and biometrics systems, among others. I worked with different architectures and application models such as web services (SOAP), microservices (REST), web sockets, classic request/response (MVC, streaming), batch processing, and CLIs, among others. I have used multiple data sources.

In backend development, I worked with several stacks and frameworks in PHP, Java, Scala, Kotlin and NodeJS. Some problems I have solved are user and API authentication (SAML, OIDC), session management with role based access control (RBAC), transaction management, data access with multiple data sources, free text search, static resources management and compression (JavaScript, CSS, images, videos, etc.), multi-language support, geolocalization, data clustering and processing, content storage, application and information security, third party services integration, biometric hardware integration, resiliency and scalability, among others.

In frontend development, I value software design and architecture more than mastering specific frameworks. Some problems I have solved are the implementation of reusable components, resource optimization focused on user experience, cross-domain communication, customization, user-based features, state management and persistence, multi-language features, multitenancy, among others. I have worked with frameworks and utilities such as Vue 2/3, React, charts.js, jQuery, and lessCSS. I used build tools like webpack, vite, rollup, and babel. I did write functional tests using cypress, puppeteer and playwright.

I think team work and a quality-oriented development process is the key to build good software. I build solutions based on well-known software architecture patterns, good practices and conventions. Good communication, peer reviews and group design are essential to build a common knowledge base and deliver a good product.

I support the free software philosophy. I am involved in the free software community and I try to contribute whenever possible. In my free time I build social-oriented software like open government, social organization, and decision making software.

### Links

Github: <https://github.com/seykron> and <https://github.com/f-nyx>

Gitlab: <https://git.rlab.be/seykron>

Resume: <http://seykron.github.io/cv>

Twitter: [https://twitter.com/matias\\_mi](https://twitter.com/matias_mi)

### Languages

Spanish (mother tongue)

English (upper-intermediate)

Esperanto (progresanta)

## Experience in Software Development

### ***Government of the Province of Buenos Aires (2020 - 2023)***

Since 2020 I worked as a part time consultant for the Ministry of Justice. I was hired to build a biometrics system to identify subjects in the Buenos Aires Penitentiary Service. I built an AFIS system to enroll and identify people in penitenciaries. The system consisted on a web application that allows users to enroll and to search for subjects; a public API to interoperate with another systems; and a standalone, multi-platform service to manage fingerprint readers devices. There are several challenges building an AFIS, but I can mention the multi-platform support; the use of standard protocols and formats to interoperate between different biometrics systems; the information architecture to securely store biometric information; the abstraction layer to support multiple hardware using a common interface; asynchronous and distributed fingerprint search.

The web application backend was built using Kotlin, Spring Boot, Postgres, open source biometrics libraries like SourceAFIS, RabbitMQ, MinIO, among others. The frontend was built using Vue3 and TypeScript, Jest for testing, and Storybook to document the components library. I also worked with proprietary hardware drivers, and I did the research to define which devices were feasible for this project.

*Technologies: Kotlin, TypeScript, Vue3; libraries like Spring Boot, Exposed; data sources like Postgres and Redis; other services like RabbitMQ and systemd (linux).*

### ***SCV - WireWheel (2019 - 2023)***

WireWheel is a USA east-cost based company that sells privacy-related products for other companies. For instance, software to manage users data access requests, and cookie-based consent management. The first two years I worked as developer in one of their main products, and since Feb 2022 I'm leading the development of a new product for consent management.

As tech lead I have two kind of responsibilities: operational and technical. Some of the operational responsibilities include giving technical support to the development team; ensuring some predictability in the team velocity; ensuring the delivery quality; working with the product team to plan ahead for short and mid term; organizing the release process; taking interviews for new hirings; and monitoring production.

As part of technical responsibilities I can mention designing solutions with the team; doing all configuration management related tasks like dockerizing and automating CI to make the dev experience easier; defining and implementing quality policies for the development process like code coverage thresholds and static code analysis; defining the tech stack with the VP of technology; implementing complex integrations like the contention system to provide high availability in public APIs; and implementing the tools to support the QA team with automation.

As we work with PII (Personal Identifiable Information), I'm also responsible for the application-level security. I work with the devops team to design the security schema for services. I'm also in charge of analyzing the penetration tests results to resolve the security issues reported by the auditing team.

*Technologies: NodeJS with TypeScript; frameworks like Fastify for the web server and Awilix for dependency injection; data bases like Cassandra, Postgres and Snowflake; AWS services like S3, SQS,*

SSM, SNS, y ECS.

## **Despegar.com (2015 - 2019)**

Despegar.com is an online travel agency. I work in backend programming developing microservices.

The first two years I worked in the flight selling team. I had to rewrite the flight booking engine in Scala. Some challenges were learning the Scala programming language, the interoperability within the complex booking flow, and the optimization of the application in order to support the selling throughput.

I currently work in flights post-sales. I'm involved in the development of several applications to detect and process involuntary flight changes. Some challenges are processing asynchronous flow of involuntary changes (flight providers notifies involuntary changes asynchronously), the errors management and recovery, and the analysis of providers data (since data consistency from providers is eventual and it depends on airlines).

I worked in the flights post-sales team building the automated systems to detect involuntary flight changes. My main job was the integration with flight providers like Sabre, Amadeus, Worldspan, American Airlines, etc. Some challenges were the async processing of involuntary changes (flight providers notify involuntary changes asynchronously); error handling across multiple microservices to provide feedback to the final user; data analysis to detect inconsistencies in the providers; generating abstractions to support multiple flight providers; build the services to support the high throughput from both users and flight providers while honoring the high availability policy; design testing tools since some flight providers do not have testing environments; and rewrite/refactor several applications to migrate them to the microservices architecture.

We were a team of six persons, and we worked together with the product team.

*Technologies: GIT, Maven, Spring MVC, Java Spark Web, Play Framework, Scalatra, Finagle, Cassandra, RabbitMQ, SBT, Java, Scala, Kotlin.*

## **55Social (2013-2015)**

55social was a digital marketing company with operations in Brasil. The product consisted of a content manager to create and publish marketing campaigns on Facebook, a community management module to manage multiple social networks accounts, and a metrics engine integrated with Facebook and Google Analytics to analyze the outcome of marketing campaigns.

I worked as developer frontend and backend in the content manager and the metrics engine, respectively. In the frontend the challenge was the generation of a customizable design environment to allow marketing agents building a Facebook campaign only by configuring a set of widgets. Regarding the backend, the challenge was the creation of a metrics engine able to extract and process data to display different kind of graphs in order to allow customers analyze the outcome of marketing campaigns.

While working on 55social and Globant I was an interviewer and I prepared technical workshops and trainings about web development.

*Technologies: GIT, Maven, Java EE, Hibernate, Spring MVC, Katari, Elastic Search, Freemarker, Social APIs (Facebook, Twitter, Google Plus), jQuery UI, Histone, OOCSS, AWS*

## **Globant (2009 - 2013)**

My next job was for Globant, another HR consulting company. I worked as web developer for JWT, a media agency specializing in marketing and communication. The project consisted of a complete re-

engineering of a content management system. The product was a content manager to organize digital content like documents, images and videos. It was designed to allow the agency to customize the application for different customers. The agency was able to re-brand the application and define storage and processing quota for its customers.

In this project I learned to work with a service-oriented programming model, since most of the application's responsibility was managed by the frontend. The backend was build using Spring MVC and Jawr for services, JackRabbit for content management, Hibernate to manage the domain model, and FFmpeg/ImageMagick to process videos and images. The view rendering used the freemarker template engine. In the frontend, I used jQuery for DOM, YahooUI for rich components, and underscore.js for utilities.

I had my first experience bootstrapping an application and managing a development team in another project for JWT. The customer wanted to integrate agencies from all over the world in order to share their work and get to know them. We built a social network of marketing projects so agencies were able to present creative ideas from anywhere for a project created by another agency. The goal was to promote the interaction between agencies in order to build common knowledge and reduce redundancy and costs of content. My role in the project kick off was to estimate the effort, set up the infrastructure, and agree with the customer how to manage the project's follow-up and delivery.

After two years working for JWT, I started working for 55social, another Globant's customer. The challenge was the creation of a social media platform to allow companies manage content and marketing campaigns in social networks. Thanks to a small high-performance team the first beta was ready in four months. After two years of development, I left Globant and I continued working for 55social.

*Technologies: SVN, GIT, Maven, Java EE, MySQL, JackRabbit, Hibernate, Spring MVC, jawr, Freemarker, YahooUI, AWS, ImageMagick, FFMPeg*

## **CDA (2007 - 2009)**

After leaving W3 I worked as a Java programmer for CDA, an HR consulting company. I was involved in the development of internal HR systems such as admissions, retirements, vacations, etc. I learned a lot about HR processes. Some challenges were the integration of several databases, the validation of consistency among different data sources, and learning Adobe Flex since it was a requirement to develop the frontend by using this technology. I developed the backend with Java 1.6, Struts MVC and web services in the application layer, and Ibatis in the data access layer.

I also had the chance to bootstrap a new project for a local bank. It was an administrative audit software that implemented SOX controls in order to ensure internal processes accountability. Some challenges were working with Java 1.4, a database without data integrity check support (a legacy version of Sybase), and a programming model required by the bank based on stored procedures. I developed the frontend using JSP. I learned about technical management, and I solved infrastructure problems such as data access, storage and packaging and distribution of Java applications.

*Technologies: SVN, Ant, Java EE (v1.4/1.6 + Web Services), Sybase DB, Ibatis, Struts, JSP, HTML, CSS, JavaScript, Flex (ActionScript 3, Cairngorm), Websphere*

## **W3americas (2006 - 2007)**

My next job was for W3, a system consulting company focused on web development and sites maintenance for third party customers. I worked on the progressive maintenance of Citibank Brasil website. I was involved in the site's full redesign, mainly developing components that required integration with third-

party services like stock exchange tables and currency values, among others. I worked with Perl programming language to automate deployments within a proprietary deployment management software. It was a challenge to build cross-browser features since there were very few tools (jQuery was at its early phase).

It was my first direct experience with customers, since I often had to coordinate tasks with them. In my free time I learned Java web applications development.

*Technologies: SourceSafe, Perl, HTML, CSS, JavaScript*

### ***Netic infoservicios (2006)***

After finishing middle-school I worked as a Visual Basic programmer for a small company writing software for search engine optimization (SEO). I had to solve several architecture and distribution problems. The product was a static site generator. It consisted of several applications, each one in charge of generating part of the static site. This suite was distributed as a self-contained installation package.

*Technologies: Visual Basic, MS Access, NSIS*

### ***Freelance (2004 - 2006)***

My first jobs were as freelance programmer. Some projects to mention are the corporate website for Labyes Laboratory and a Visual Basic-based travel management system for a local rent-a-car shop. I developed several sites by using Wordpress and Drupal.

*Technologies: PHP, HTML, CSS, JavaScript, Visual Basic, MS Access, Symfony 1.0*

### ***Free software***

I have developed, maintained and collaborated in different free software projects for many years. The logic behind a free software organization is quite different from the business logic, so the experience managing both kind of projects helped me to develop a critical view of leadership, mainly oriented to problem solving through collaboration. Many of the projects I started no longer exist, but there are a couple of them that still are published on Github and I would like to comment on the ones I consider more relevant.

#### **Tehanu**

Tehanu, a library to build bots over different messaging services.

#### **Domino**

Domino, a crowd-managed financial system we use in several Free Software organizations.

#### **Kotlin-Search**

kotlin-search, a library to create local search indexes using Lucene. It supports multi-language indexes.

#### **afip-sdk-kotlin**

afip-sdk-kotlin, a library to emit bills using the AFIP web services. It also supports certificate management.

#### **Argentine congress data importer**

ogov-importer retrieves all bills and their votes from the Argentine National Congress since 2001 until nowadays, the list of current legislatures and the committees' meetings and agendas, among other things. The importer is generic and it is designed to make a fast and efficient crawling of any site.

*Technologies: Grunt, JavaScript (NodeJS), Cheerio*

### IRC client API

irc-client-api allows to connect to IRC servers from the web browser through a low-level API. It supports different transports, so it might be adapted to different devices and environments.

*Technologies: Grunt, JavaScript (NodeJS), WebSockets*

## Formal Education

National University of San Martín (ongoing) - *Social and Cultural Anthropology*

E.N.E.T N°17 D.E. 20 (2001 - 2006) - *Electronic Technician*

Alfonsina Storni (Primary School)

## Books

The following selection are books I consider an essential part of my knowledge base. Some of them are like manuals, I always get back to them whenever I need to take educated decisions.

**Martin Fowler**, *Patterns of Enterprise Application Architecture*, 2002.

**“The Gang of Four”**, *Design Patterns: Elements of Reusable Object-Oriented Software*, Addison-Wesley, 1994.

**Robert Martin**, *Clean Architecture: A Craftsman’s Guide to Software Structure and Design*, 2017.

**Robert Martin**, *Clean Code: A Handbook of Agile Software Craftsmanship*, Pearson, 2008.

**Steve McConnell**, *Code Complete: A Practical Handbook of Software Construction*, Microsoft Press, 2004.

**Mary and Tom Poppendieck**, *Implementing Lean Software Development: From Concept to Cash*, Addison-Wesley, 2006.

**Mary and Tom Poppendieck**, *Leading Lean Software Development: Results Are Not the Point*, Addison-Wesley, 2009.

**M. van Steen and A.S. Tanenbaum**, *Distributed Systems*, distributed-systems.net, 2017.

**A. Silberschatz, P. B. Galvin, G. Gagne**, *Operating System Concepts 10th edition*, Wiley, 2021.

**Daniel Bovet (Author), Marco Cesati**, *Understanding the Linux Kernel 3rd edition*, O'Reilly Media, 2010.

**Robert Love**, *Linux Kernel Development 3rd edition*, Addison-Wesley Professional, 2010.

## Contact

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