

"During this period of re-architecture, not only did we continue to grow significantly, but we also successfully rebuilt our entire platform. Now it stands more scalable, stable, and secure than ever before." Damian Grabarczyk

Business Manager, PetLabCo

PetLab Co., established in 2018, has rapidly ascended to become the world's fastest-growing pet supplement company, achieving an unparalleled milestone of 9-figure revenues by 2022, all while remaining bootstrapped and profitable. This remarkable journey from \$0 to \$142 million in revenue within just five years was accomplished without any external funding, underscoring the company's innovative approach, operational efficiency, and direct-to-consumer (DTC) marketing acumen. The company found itself with a commanding 50%+ market share in the direct-to-consumer (DTC) pet supplement market, having not only established itself as a global leader but also cultivated a dedicated community of loving pet parents across Canada, the UK, and the US.

As PetLab Co. soared to the forefront of the pet supplement industry, the rapid expansion began to reveal critical limitations within its technological infrastructure. The company's platform, originally designed to support a fledgling startup, was increasingly unable to handle the surging demands of a burgeoning customer base. By late 2022, it became evident that the existing tech stack was straining under the weight of over 1.5 million satisfied dogs and their owners, leading to frequent system breakages and downtimes. The monolithic architecture on oversized EC2 instances, coupled with a patchwork of languages and frameworks, significantly hampered the platform's scalability and reliability. This situation was further complicated by the siloed nature of frontend applications, a lack of unified development practices which compounded the difficulty of maintaining and enhancing the platform, and significant security vulnerabilities throughout the application.

This confluence of issues highlighted a critical juncture for PetLab Co.: to sustain and further its remarkable growth, a comprehensive re-architecture of its platform was imperative. The need to evolve its tech stack became as crucial as the innovative products that had catapulted the company to its market-leading position.

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PetLab Co. embarked on a pivotal transformation, spearheaded by Michael Housman, an experienced interim CTO with expertise in technical re-architecture within startups. To ensure seamless progress and integration, PetLab convened weekly meetings with a dedicated tiger team comprising talented leads from frontend, backend, QA, and DevOps, all integral to the migration and enhancement efforts. The company also enlisted AI-ccelerator Solutions, Housman's development firm, to bolster their team with skilled developers specialized in DevOps and SecOps, areas where PetLab previously faced resource gaps. A collaborative partnership with their AWS account team, fortified through bi-weekly meetings, played a crucial role in sculpting the optimal architecture and navigating through emerging challenges. Throughout 2023, PetLab Co. engaged in this re-architecture of its technological infrastructure, the specifics of which are elaborated in the Appendix.

The results of this intensive effort were indeed transformative. PetLab Co. experienced a notable revenue jump from \$118 million in 2022 to \$142 million in 2023, marking a 20% growth. Moreover, the re-architecture ushered in a new era of enhanced development velocity. With the revamped tech setup, PetLabCo now averages 6-10 optimization tests weekly, boasting a success rate of 50-72%, far surpassing the industry average of about 20%. Building on this solid foundation, PetLab Co. is now poised to elevate its market differentiation by integrating advanced analytics and machine learning for deeper personalization and customization. The newly scalable platform not only supports the company's current growth but also lays the groundwork for leveraging technology to create more personalized customer experiences, driving future expansion and success. "As the business manager of PetLab, a company laserfocused on growth, the decision to momentarily pause development to address technical debt and fortify our platform initially seemed daunting. The tech world moves fast, and slowing down for infrastructure overhaul isn't an easy choice. However, this strategic pivot proved to be absolutely the right call. During this period of re-architecture, not only did we continue to grow significantly, but we also successfully rebuilt our entire platform. Now it stands more scalable, stable, and secure than ever before.

This transformation has laid down a robust foundation, essential for our ambitious vision. We're now equipped to handle the influx of customers we anticipate as we expand in the coming years. Looking back, I can confidently say this was the right decision. The results speak for themselves - a testament to the hard work and dedication of our team. We're incredibly pleased with the outcomes and deeply grateful to everyone who played a part in this monumental effort."

Damian Grabarczyk

Business Manager, PetLabCo





Appendix 1: Work Streams For Technical Rearchitecture

	What were the pain points?	What did we do?	What was the result?
BACKEND	Monolithic EC2 Instance Issues: Large EC2 with frequent breakages, significant revenue loss. Code Base Complexity: Mixed languages / frameworks, outsourced code ownership	Micro-Services / Cost Optimization: Scoped EC2 services to micro-services with Lambda/ECS for cost efficiency. Unified Backend Framework: Standardized on Python + Lambdas; regular teach-ins for devs.	Increased Developer Versatility: Achieved modularity; developers can work on any component. Robust Subscription Engine: Deployed scalable engine; zero breakage, handles massive traffic.
FRONTEND	Performance Issues with Gatsby: Very slow (13% Google score) due to excess scripts. Siloed Frontend Applications: Difficult DRY adherence, redundant separate apps.	Framework Migration / Modernization: Migrated to React/NextJs; audited and deactivated non-critical services. Unit / Integration Testing: Developed automated backend/frontend tests, reduced manual QA. Shared Component Libraries: Utilized shared libraries for code sharing and faster development.	Enhanced Page Load Performance: Page speed improved to 50-60, boosting conversion rates. Streamlined Frontend Deployment: Deployments via IaC, improved control, security, minimized downtime.
DEVOPS	Testing and QA Challenges: No clear testing strategy, heavy manual QA reliance. Service Configuration and Hosting: Manual config, scattered across Netlify, GoDaddy, AWS.	Service Consolidation / Cost Reduction: Moved services to AWS; cut compute costs significantly. Automated Deployment Pipeline: Built automated pipeline for frontend with secrets retrieval, AWS auth, IaC. Terraform for Service Management: Deployed services via Terraform; efficient management, deactivated stray services. Deployment Best Practices: Adopted best practices including canary deployments	Cost Savings: Significant savings from shutting down services and optimizing outsourcing. CMS and Operations: Moved to Strapi; improved content management, near 99+% uptime with regional instances.



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SECURITY	<text><text><text><text><text></text></text></text></text></text>	<text><text><text><text><text><text><text></text></text></text></text></text></text></text>	<text><text><text><text><text><text></text></text></text></text></text></text>
MISCELLANEOUS	CMS and Development Challenges: Builder.io CMS use, difficult for developers, updates in many places.	Efficiency in Testing / Deployment: Added 500+ automation tests; isolated and combined feature testing on pre-release URL.	Revenue Optimization and Advanced Technologies: Automatic Dunning saved millions, significant revenue retention. Component Reusability: Frontend components easily reused across projects, enhancing development efficiency

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