CONVOX

DevOps Case Study:
Transformation Exercise with a Non-Profit Organization

Developing large-scale applications as a non-profit organization is a challenging undertaking. When sensitive data security is thrown into the mix of budget constraints, limited team sizes, custom requirements, etc., non-profits can get overwhelmed by the diverse challenges they must overcome to achieve their goals. In a resource-constrained environment, these organizations must find cheap and efficient deployment methods to scale up their services.

Selected deployment strategies should fit data security needs, adherence to compliance regulations, data protection policies, and best practices without sacrificing uptime and delivery speed. Too many resources dedicated to managing project infrastructure could impede efforts to get the actual product up and running. Non-profits need efficient build systems that are easy to set up, quick to execute, and can readily be adapted into their desired cloud environment.

RISC (Radical Innovation for Social Change) is a University of Chicago non-profit subsidiary that faced these challenges and found Convox to be a perfect fit for navigating them. The rest of this case study discusses how Convox helped the RISC team automate deployments, scale up application delivery and reallocate more of their resources to problem-solving.
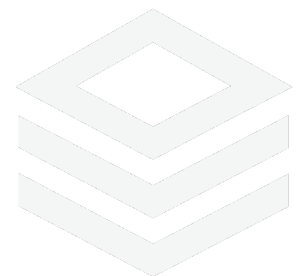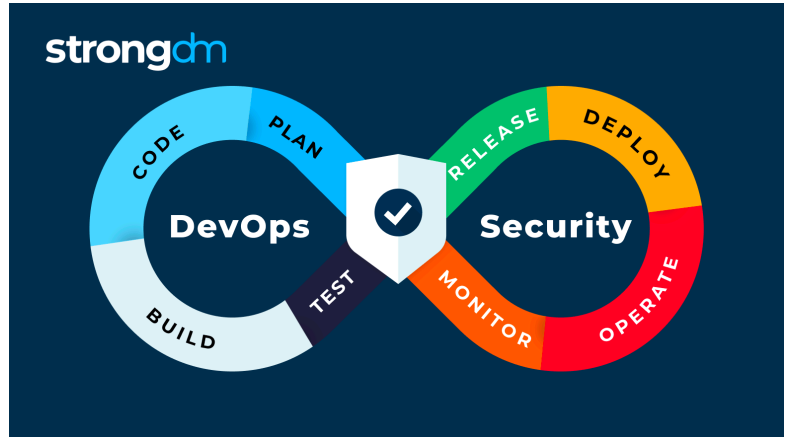
Table of Contents

Case Study Objectives

This case study offers insight into the decision-making factors that led to RISC choosing Convox as the preferred DevOps tool for meeting its non-profit objectives.

The Client

RISC is a non-profit associated with the University of Chicago, founded by a University professor and economist, Steve Levitt. The project was designed to create innovative solutions for making real-world changes for social good. To achieve its aim, RISC embarked on several projects under various social domains: education, health care, climate change, and criminal justice. The team relied on Convox for its criminal justice project.

The small team comprises two full-time developers and about two dozen other employees.
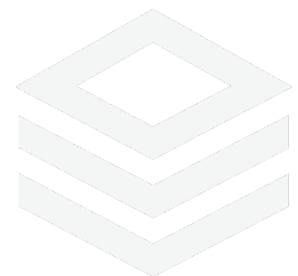
The Background

RISC's criminal justice project was centered on an application that furthered the cause of decarceration through electronic monitoring. With the country's reputation for having the highest incarceration rate globally, the team wanted to change the narrative with a less costly, more efficient, and safer alternative - electronic monitoring.

This alternative provided the option to serve justice for relevant cases through house arrests rather than incarceration. Minimizing interactions with law enforcement while managing the population of offenders offered a win-win situation for all parties, including the environment, through reduced fossil fuel consumption.

The application was offered at no cost to law enforcement agencies to increase adoption. This model was also necessary to maintain a transparent relationship that allowed for honest feedback while preserving the pursuit of social good.


We are an innovation lab for social change.

Driven by curiosity, unfettered by orthodoxy, and grounded in the sciences of human behavior, we're investigating bold new ways to tackle the world's biggest problems.

TECH STACK

The application was built using a microservices model, and written in Go, React, and Elixir. As it was positioned centrally to many different agencies, it had to process and integrate personal data from various siloed domains across different industries.

This attempted to upgrade the antiquated radio-frequency-based trolley monitoring systems that could only detect whether or not a person was home at night.
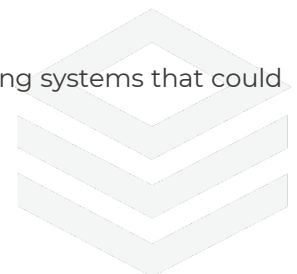
The Problems

BUDGET CONSTRAINTS

The first hurdle that RISC faced was operating within a limited budget. As a team funded by donors and University grants, there was a need to execute within tight schedules while working with limited resources. These budgetary constraints created a need for a cost-effective solution that could handle RISC's deployment infrastructure while the team focused on actual problem-solving.
Unlike revenue-generating applications, RISC'S criminal justice application faced a unique financial challenge that squeezed the budget on both the supply and the demand sides.

First, the application generated no revenue. Next, the development team had to be kept lean with the bare minimum number of developers. The perfect tool needed to simplify the team's build and deploy process without relying on a full-time DevOps engineer.

As a non-profit, this means that RISC had to find the best way to balance its resource allocation while optimizing the use of its infrastructure.

DATA ACCESS CONSIDERATIONS

Built on a microservices architecture, the application dealt with vast volumes of sensitive data coming in from various data streams and sources. The data had to be siloed to prevent trans-agency access and public access - this was achieved by limiting data processing to the necessary IP addresses.

Data had to be well segmented and controlled to prevent leaks to the wrong parties and the public. The team also needed efficient solutions that could help them achieve fine data access control via network segmentation, tenant separation, specific data compliance standards, etc.

This complex setup made up of microservices, a public-facing application, segmented networks, tenant separation, and access control restraints presented real data access challenges. There was a need to find a balance between accommodating each vendor and ensuring protected data access to relevant bodies.

COMPLIANCE STANDARDS

The nature of the data processed necessitated compliance with the Criminal Justice Information Systems standards (CJIS) as part of the team's agreement with agencies.

While the recommended set of practices was less rigorous than HIPAA for health-related data management, the agencies still required specificity in the data processing technique.

DEPLOYMENT CHALLENGES

For the application prototype and in the early stages, the team used rudimentary processes like CSV files and FTP file-sharing for data transfers. As demand grew, so did the need to 'flesh out' prototypes into fully operational versions that offered real-time electronic monitoring.

The operation needed to be streamlined to deal with real-time GPS alerts and output. There was also a need for scalable, DevOps-enabling architecture to get started with advanced tools like Kubernetes.

As RISC had to work with multiple agencies with varied requirements, finding a common deployment platform was challenging. The team finally decided to deploy using AWS as it was the most familiar platform.

Limited resources also meant the team's chosen tool had to make deployments easy to set up and execute.
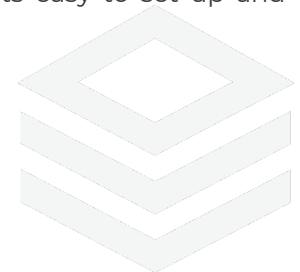
The Solution
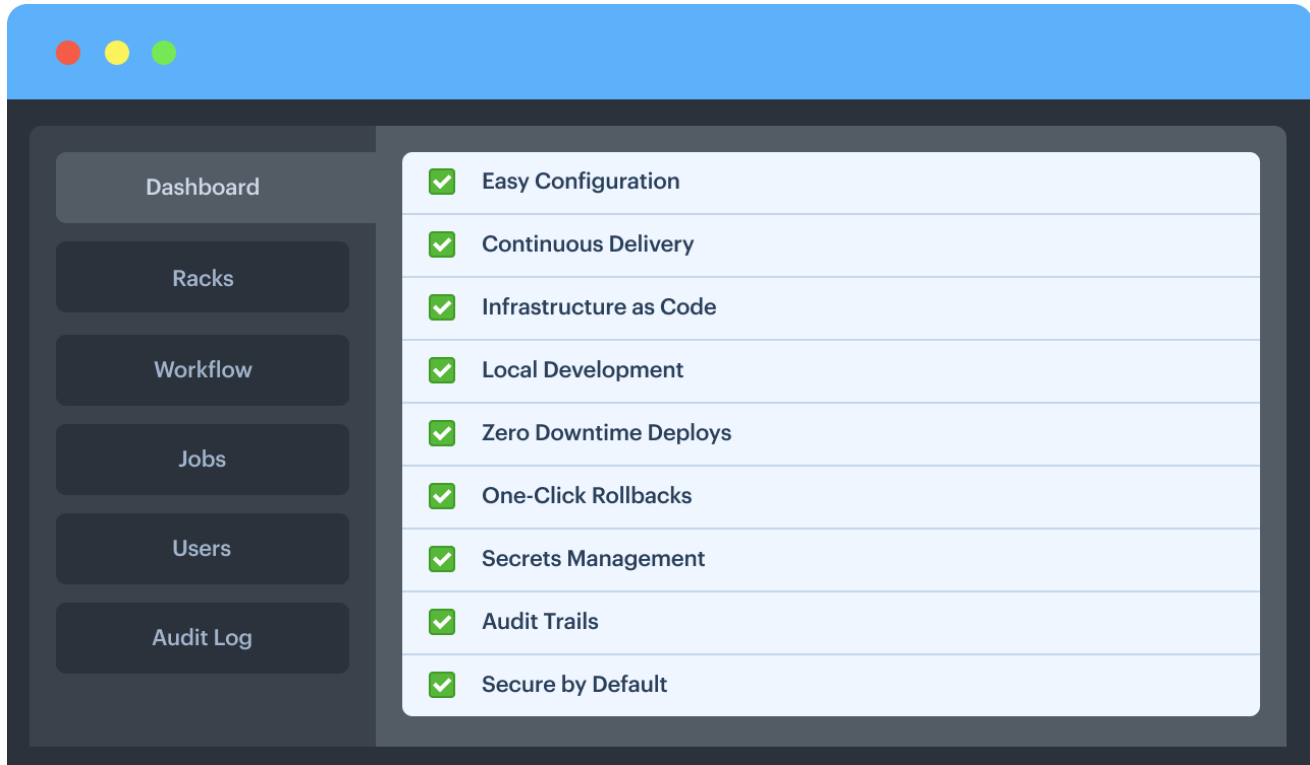
Convox offered a solution for every problem that RISC faced

- **Ease.** With Convox, RISC could easily set up their builds and deploy with little effort
- **Cost-efficiency.** Convox was significantly cheaper and more efficient than standard tools like Heroku
- **Microservices-friendly.** Convox was also able to accommodate their needs for microservices and provide them with a good access control solution
- **Compliance-ready.** Convox was compliance-ready and can be easily adapted into AWS Gov cloud platforms
- **User-friendly.** The RISC team found Convox user-friendly, allowing them to quickly roll out their application without requiring additional DevOps expertise

Convox was the best fit for their out-of-the-box requirements and data security needs. Convox empowers anyone to build and roll out microservices with ease. It also provides free logging and tracing - excellent value for a non-profit team.
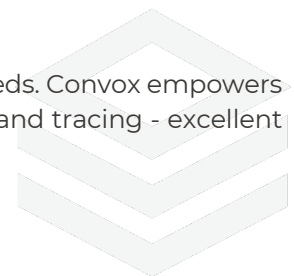
End State with Convox

With Convox efficiently handling RISC's infrastructure requirements, the team could focus on product development and improvement. They could also transition their prototypes to successful real-time applications and quickly scale their user base from 200 to 3000 in around four months.

Key Takeaways: Convox is the best DevOps automation tool for non-profits

Non-profits always need help finding the right solutions to translate their prototypes into successful products. They must work within tight constraints and spend their productive hours on actual problem-solving rather than worrying about infrastructure needs. Having the right tool to do the heavy infrastructural lifting can boost the success of their projects, as seen in this instance. Besides streamlining its deployment process, Convox helped RISC meet its unique data access requirements and stay compliant with the data standards required in their domain.

A practical solution like Convox addresses the financial challenges of non-profit organizations and data security requirements with increased operational efficiency, better value to customers, and reduced implementation times. If you want to see how Convox fits your team's needs, get a free developer account or speak to a member of the Convox team.