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Onward: When you don't need an ambulance to reach medical care

Case Study

Onward

Onward modernizes medical transport with an app-driven platform, replacing traditional ambulances

CloudGeometry's comprehensive approach guided Onward through a transformative journey. They transitioned from a Ruby-based MVP to a cloud-native SaaS platform, integrating with industry leaders like Uber and Lyft.

📍 **Onward**

INDUSTRY

Healthcare, Technology, Cloud Computing, Ride-Sharing, Transportation

SOLUTION

The modernization enabled rapid onboarding, tenant customization, and advanced AI integration, resulting in a healthcare solution that combines technology, efficiency, and patient care.

CLIENT

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In the advanced landscape of medical transportation, Royal Ambulance consistently sets high standards for patient care. As experts in emergency medical transportation, Royal Ambulance understood that not all medical transportation is an emergency. By acquiring Onward Transportation, an MVP-stage assisted transportation software company, they envisioned expanding their patient services capabilities to the next level. By integrating the onward platform into Royal's existing assets, they enable not emergency care and transportation throughout their existing expansive network of hospitals, healthcare and senior care facilities, and their ambulance fleet.

The Challenge

Patients and medical professionals alike anticipate a user experience from medical transportation services that mirrors the simplicity and efficiency of platforms like Uber. Beyond such service expectations, stakeholders – from ambulance companies to healthcare institutions and elder care facilities – require comprehensive tracking of all journeys. It's imperative to adhere to stringent industry and local regulations while simultaneously managing dedicated internal systems for the training and evaluation of drivers and medical assistants.

The original system, designed as a Minimum Viable Product (MVP), was established to validate the business model and secure initial clients. Constructed using Ruby on Rails, it resided in an on-premises data center. While it hosted significant features, much of its operations were semi-automated, relying on manual interventions by transportation administrators. The vision for the business was clear: they aimed to be the leading medical transportation system for major hospitals and healthcare institutions on the West Coast. Objectives included delivering a seamless experience akin to Uber, ensuring rigorous compliance with industry and local regulations, and empowering local hospital administrators to efficiently manage both Royal Ambulances and their pool of trained drivers.

Effortless Onboarding and Partner Integrations	Streamline client onboarding and integrate seamlessly with Uber, Lyft, and certification authorities using AWS Well-Architected standards, Uber API, and **AWS Cognito**.
Optimized Healthcare Operations	Streamline ride scheduling, ensure regulatory compliance, and empower healthcare facilities with centralized customer data analytics for rapid responses to patient and driver needs. Utilizes a **Business Intelligence Portal** and **AWS Well-Architected standards** for compliance.
AI-Optimized Driver-Passenger Matching	Employed **AI algorithms** for precise driver-passenger matching, reducing patient wait times and optimizing the medical transportation system. Utilized **AWS Lambda** for scalability and real-time data processing to deliver advanced AI-driven matching capabilities.

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The Challenge

A key aspiration was to collaborate with ride-sharing services like Uber, Lyft, and others to provide a mix of their fleet and specially trained drivers for assisted transportation. Given the depth and breadth of these requirements, transitioning to a Software-as-a-Service (SaaS) platform was the logical step forward. The platform had to be adept at quickly onboarding new hospital partners, ensuring data integrity in line with healthcare standards, and accommodating different regional compliance mandates. With hospitals having distinct needs, the platform had to be agile in feature development and customization. Moreover, overarching system administrators needed a consolidated view of all partners and real-time access to patient and driver data for immediate assistance. Comprehensive logging for all riders, drivers, and administrators was paramount to comply with regulatory needs and to provide real-time data for support interactions. The ultimate goal? Ensuring that multiple development teams could simultaneously evolve the platform to meet these ever-growing demands.

The Solution

CloudGeometry provided an all-encompassing service that began with a detailed assessment of Onward's existing technology, ensuring alignment with business and product objectives and guiding Royal's management during the acquisition phase. As part of this assessment, we formulated and validated a technology roadmap, encompassing cloud migration, adoption of native cloud technologies, creation of new mobile apps for both patients and drivers, and a phased modernization strategy to transition from a monolithic design to a robust microservices-based SaaS architecture tailored for a growing enterprise.

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The Challenge

Concurrently, our Solution Architecture team embarked on an exhaustive analysis of current application functionalities, pivotal use cases, and forthcoming business needs. Adopting the Well-Architected Framework and the SaaS Lens, we conceptualized a fresh SaaS blueprint, considering features like distinct tenant management and data isolation. This enabled us to transition from the current application framework to a vibrant microservices architecture, strictly adhering to industry norms.

With this architecture as the foundation, our development team initiated re-coding, systematically transitioning functionalities from the existing Ruby-based monolith to NodeJS-based microservices. Utilizing AWS Lambda and a serverless methodology, we ensured the necessary scalability and flexibility for these new microservices, increasingly incorporating AWS native services such as API Gateway and DynamoDB.

Our development methodology also underwent a revamp, with the introduction of a Platform Engineering approach anchored on our **CGDevX** solution. This solution integrates a suite of leading open-source tools covering every phase of modern cloud system deployment, guaranteeing that Onward can deploy new features with consistency and reliability.

The end product was a centralized service suite encompassing user registration, driver training, and tenant (hospitals) onboarding via AWS Cognito. Ride management services were tailored through tenant-specific apps, with certain tenants benefiting from added customization. Additionally, ride data was archived centrally for analytics and compliance.

A notable milestone during this transformation was our integration with Uber and Lyft. Users could request assisted rides via their native apps, but the provisioning and management of these rides were executed by Onward, including reporting steps to ensure adherence to Uber's stipulations.

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The Benefits

With the enhanced app, Onward can effortlessly onboard new drivers, integrate dispatchers, and provide an enriched service experience to their patients. Their integration with the Uber API positions Onward at the forefront of the medical transportation industry, delivering a distinct fusion of healthcare and tech solutions. The updated SaaS architecture, featuring tenant data isolation and tenant-specific customization, equips Onward with a versatile platform. This not only facilitates rapid client onboarding but also ensures tailored services for each client without compromising the platform's consistency.

Quick client onboarding and partner integrations

The new platform architecture, designed in accordance with AWS Well-Architected standards, facilitated rapid client onboarding and ensured tenant data isolation. Additionally, it provided avenues for integrating data and services with industry partners, such as Uber, for demand generation in assisted driving and with certification authorities for licensing drivers and specially equipped vehicles. Three months post-launch, Onward secured a medical transportation contract with UCSF. The subsequent onboarding process for this new tenant was efficiently completed in just one month.

Comprehensive Healthcare Business Intelligence Platform

The updated app, paired with the Business Intelligence Portal, establishes Onward as a comprehensive solution for healthcare facilities, streamlining ride scheduling and ensuring regulatory compliance. Additionally, the centralized customer data analytics and investigation tools grant ride operators swift access to ride statuses, enabling prompt responses to patient and driver requests.

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The Benefits

Advanced AI Integration for Optimal Matching

The use of artificial intelligence ensured precise driver/passenger pairing, enhancing efficiency and reducing wait times for patients.

Feature Agility. Rapid Feature and Service Additions for OnWard and its Tenants

CloudGeometry's **CGDevX** solution implemented a Platform Engineering approach, offering an integrated toolset for product managers and developers across multiple remote teams. This solution facilitates the design and addition of new features, incorporates DevSecOps, QA Test Automation, and CI/CD layers managed by dedicated Platform Engineers, and employs a production environment on AWS, maintained by SREs using the latest runbooks

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Technology Solutions & Services
to build, optimize and run your cloud software and operations.

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TECHNOLOGY SOLUTIONS

APPLICATION MODERNIZATION
Transform Legacy Systems
for Future-Ready Innovation

CLOUD COST MANAGEMENT
Optimize Cloud Spending
for Maximum ROI and Efficiency

AI & DATA
Achieve breakthrough automation and analytic
insights via cutting-edge data strategies

SECURITY AND COMPLIANCE
Reinforce your cloud infra, workload,
operations, and development end-to-end

FOUNDATION SERVICES

CLOUD INFRA & OPS
Robust Infrastructure Solutions for Seamless
Operations

- DevOps as a Service
- Managed Cloud Operations
- Cloud Spend Optimization
- Resilience, Continuity & Backup
- AWS Well-Architected

MODERNIZATION & MIGRATION
Smooth Transitions to Modern Architectures
with Minimal Disruption

- Application Modernization
- Kubernetes Adoption
- AWS Database Migration
- Data Engineering Operations
- Data Integration
- Data Migration
- Cloud Migration & Adoption

ADVANCED SERVICES

CLOUD-NATIVE DEVELOPMENT
Build Scalable, Resilient Applications with
Cloud-Native Technologies

- CI/CD
- Multi- Platform App Design &
  Development
- Cloud-Ready Teams
- Enterprise SaaS Modernization
- Multi-Tenancy SaaS
- B2B Customer Success Engineering

CLOUD-NATIVE OPERATIONS
Streamline Operations with Advanced
Cloud-Native Practices

- Platform Engineering
- Workload Management
- Monitoring & Observability
- Infrastructure Management

AI/ML & DATA SERVICES

AI/ML & DATA
Leverage Advanced Analytics and Machine
Learning to achieve exponential acceleration in
the ROI of your data assets

- AI/ML Engineering for Data Analytics
- Generative AI
- Traditional ML for Data Analytics
- AI/ML Development and and Data Science
- Data Engineering for MLOps

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CloudGeometry delivers expert technical services, helping our clients unlock the full potential of cloud-native open source tooling and commercial platform technologies.

With roots in Silicon Valley, we've seen firsthand what works (and what doesn't). Count on CloudGeometry to accelerate application modernization, Kubernetes adoption, developer enablement, secure multi-tenancy, AI/MLOps, DevOps automation and more.

- As **AWS Advanced Consulting** partners, our certified solution architects and platform engineers help address the range of challenges facing enterprise innovators and venture funded startups alike.

- The **Cloud Native Computing Foundation** has accredited us as a **Kubernetes Certified Service Provider**.

- We serve as charter contributors to the **Linux Foundation Data & AI Commons** (LF Data & AI), supporting a diverse, sustainable ecosystem for open source data and AI technologies.

Over the last decade, we've built and deployed hundreds of big, fast full-stack apps with well-engineered cloud infrastructure across industries: Financial Services, Industrial Automation, Healthcare, AdTech, Consumer-grade Mobile, smart devices, and more.

From enterprise upgrades to data engineering to cloud-native scale-out, CloudGeometry helps you plot the shortest path across all dimensions of modern cloud software engineering.

aws partner network

Advanced
Consulting Partner

SaaS

Amazon Kinesis

AWS Lambda

Amazon Redshift

AWS Database Migration Service

kubernetes CERTIFIED SERVICE PROVIDER

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CloudGeometry

Expert
Platform Engineering
& DevOps

CloudGeometry.io

+1 408 444-7061

info@cloudgeometry.io

github.com/cloudgeometry

100 S Murphy Ave #200

Sunnyvale, CA

94086 USA

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& Application
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