Karsun Reimagines Customer Migrations Using Amazon Bedrock and Opens a New Line of Business

Discover how Karsun Solutions made mainframe modernization 4 times faster with ReDuX AI and launched a new business.

OVERVIEW

AWS Partner Karsun Solutions specializes in serving US government organizations. A major challenge for these customers is updating outdated legacy mainframe systems, often decades old, to modern cloud computing systems. A dwindling legacy technology workforce, combined with the benefits of cloud-native architecture, has created a strong business imperative for government departments and agencies to migrate to the cloud. To ensure migration with full functionality, Karsun devoted resources and staff time to manually check code and map functionality. Using Amazon Web Services (AWS), Karsun developed its ReDuX AI toolkit to give Karsun insights into legacy system behavior so its team could optimize systems while simultaneously modernizing them. This has reduced the resources required and improved results, including accelerating project delivery, making it 4 times faster.

Mainframe Modernization is a Complex Task

Founded in 2009, Karsun Solutions is headquartered in the Washington, DC, area and is well placed to serve its many US federal government clients. With nearly 800 employees and contractors, the company has worked with AWS to develop solutions, including multiple toolkits of services, to help its customers achieve their modernization and migration outcomes. When the company faces a challenge, it looks at the resources available and builds a solution.

KARSUN SOLUTIONS
Enterprise Modernization Experts

About the AWS Partner

Founded in 2009, Karsun Solutions is headquartered in the Washington, DC, area, making it well placed to serve its many US federal government clients. Employing nearly 800 staff and contractors, the company has worked with AWS to develop many solutions, including multiple toolkits of services, to help its customers achieve their modernization and migration outcomes.

AWS Services

- Amazon Bedrock
- Amazon EKS
- Amazon Aurora
- Amazon Neptune

Benefits

- 4x faster project delivery
- 50% fewer resources required for migration
- 22.5% increase in productivity
- 2x improvement in code quality

Over the decades, mainframe computers—although vital to many critical industries like government, healthcare, and finance—have become costly burdens that need updating. Using software written in languages such as COBOL, these mission-critical systems have become increasingly difficult to maintain, update, or augment with new capabilities.

This presented a great opportunity for Karsun to provide modernization and efficiency to the government. It works as a partner to help US federal government agencies deal with the challenges of migrating and transforming these systems in a timely and efficient manner. However, this work presents its own challenges. Some customers are highly risk averse because these systems have mission-critical workloads, are high-value assets, and are normally core to the functioning of the organization. At the same time, the potential for errors is high because these systems also typically have large user or customer bases. They also have vast and complex functionality that often integrates with other complex systems that are themselves in various states of modernization.

Often, the age of these systems means that there are few—or no—employees with the knowledge and skills to maintain them. Original developers have moved on, and documentation, if there was any, is now missing or out of date. The system is effectively a closed box, making modernization a potentially high-risk and high-cost endeavor. “Dealing with technical complexity, mapping the data properly, extracting code, and writing the correct code that implements everything is a very involved task,” says Badri Sriraman, senior vice president at Karsun. “We wanted to apply technology to simplify the process, improve accuracy, and reduce errors.”

Building the Perfect Toolbox with AWS

The first step in modernizing these legacy systems is understanding how they work and how they were being used. This meant examining tens of thousands—or more—lines of code written in a legacy language that few developers know, and then understanding both the functionality and the business logic of the system. Karsun would have to look at how users, internal or external, interacted with the system.

Karsun also needed to understand how the system integrated with systems and subsystems that had been added over the years. “We were doing all of this manually,” says Jude Gabriel, lead cloud architect for Karsun. “It could take months to understand the system before you could begin to modernize it. We were good at this, but when AI tools became available and then AWS made so many foundation models easy to access, it changed the game.”

Karsun used its expertise to develop the ReDuX AI toolkit, powered by Amazon Bedrock—the easiest way to build and scale generative AI applications with foundation models. The goal was to open the closed box and give Karsun insights into legacy system behavior. Optimization and modernization can now happen together. ReDuX also assists with code generation, converting the legacy code required into a modern equivalent that is compatible with cloud-native applications.

“ReDuX represents the best in innovation. AWS, and especially Amazon Bedrock, let us build a toolkit that has endless room for growth.”

Badri Sriraman
Senior Vice President,
Karsun Solutions

ReDuX is a toolkit consisting of playbooks, mechanisms, and frameworks designed to make the modernization of mainframe applications faster and easier, saving costs and minimizing errors. Key tools in the ReDuX toolkit include Blueprint, which gives insights into systems and maps them to new services, and Transformation Agent, a generative AI tool that uses Blueprint to generate code and help with incremental migration. Transformation Agent also improves security and privacy, offers project-specific suggestions, and helps overcome hallucinations that can occur with large language models (LLMs). It also offers prompt templates to save developers time.

By creating the ReDuX toolkit, Karsun has gained flexibility and can add new capabilities as they emerge. Developing toolkits has worked for the organization previously. "We've had success building toolkits with AWS services before," says Amanda Mahoney, marketing manager at Karsun. "The toolkits focused on particular outcomes such as cloud migration or digital transformation. We use them ourselves and make them available to customers. It gives our teams confidence, knowing these resources work well together."

ReDuX's primary components, Blueprint and Transformation Agent, are hosted in Amazon Elastic Kubernetes Service (Amazon EKS), a fully managed Kubernetes service that enables users to run Kubernetes seamlessly. Serving as the data stores are Amazon Aurora PostgreSQL, which provides unparalleled high performance and availability at a global scale; Amazon Neptune, a serverless graph database designed for superior scalability and availability; and Amazon Simple Storage Service (Amazon S3).

A New Toolkit and a New Line of Business

ReDuX has delivered improvements in ways of working. "Back in 2020, we were working on a large migration, and we were thinking about ways the process could be improved," says Gabriel. "There was a lot of back and forth with the customer to figure out everything that we needed and how the code worked. Now, with ReDuX, we can get a good look into things quickly and start planning faster and implementing better."

The improvements from using ReDuX are many. Project delivery is about 4 times faster than it was previously. Those projects now require 50 percent fewer resources to complete. Although projects require fewer resources—already a win—productivity of those working on the project has seen a 22.5 percent increase. Furthermore, code quality had doubled from what was achieved manually. This was calculated by running quality control tests on the new code after conversion—the error rate was better with ReDuX.

ReDuX has improved Karsun's ability to produce the high-quality results that its customers in the US government expect. Karsun has seen possibilities beyond internal use. It has made ReDuX available to the public as a new line of business offering a tool to serve organizations in other industries. It is also available for other companies and developers to use. "ReDuX represents the best in innovation," says Sriraman. "AWS, and especially Amazon Bedrock, let us build a toolkit that has endless room for growth. It will be exciting to see everything that comes from it."

"When AI tools became available and then AWS made so many foundation models easy to access, it changed the game."

Jude Gabriel
Lead Cloud Architect,
Karsun Solutions