



Accelerate growth and improve innovation

How ten public sector organizations are using artificial intelligence to drive innovation, improve applications, and optimize costs

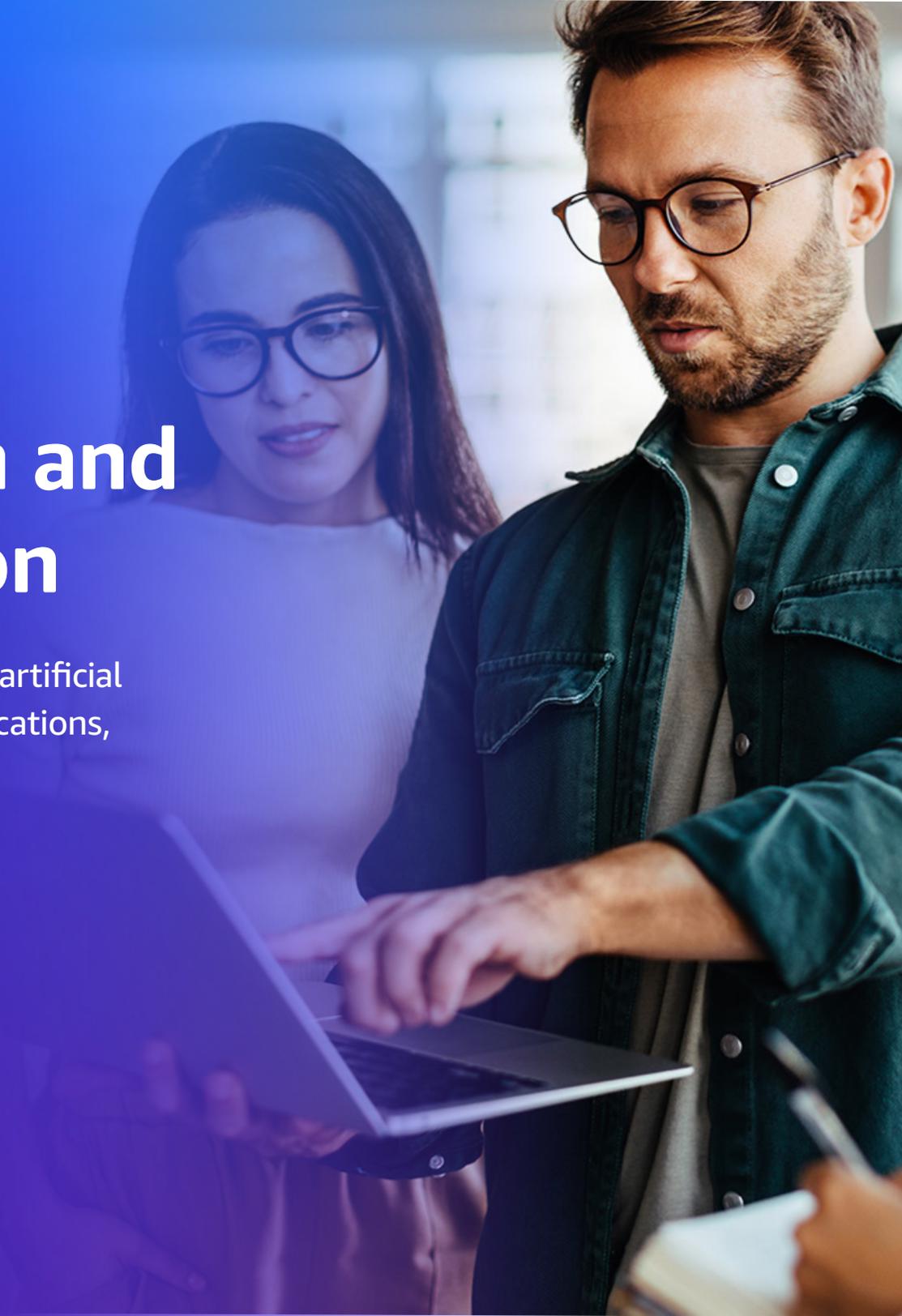


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Your organization in the age of accessible artificial intelligence

Thanks to the rapid adoption of cloud computing, the rise of compute power and data volumes, and the emergence of easy-to-use solutions that require little or no experience, artificial intelligence (AI) is now more accessible than ever.

Leading software companies across nearly every industry are leveraging AI to achieve business growth. For many, AI has become a core component of their operations. According to Databricks, the number of companies using SaaS LLM APIs has grown 1,310% between the end of November 2022 and the beginning of May 2023.¹

Amazon Web Services (AWS) is playing a pivotal role in the advancement of AI, empowering users to effectively derive the most benefit from the technology. These users span across verticals from, healthcare and life sciences, education, government and entertainment, nonprofits, aerospace, satellites, defense and technology.

Categorizing artificial intelligence objectives

By offering the broadest and most complete set of AI services, AWS is able to meet its customers wherever they are in their AI journeys and help them achieve their mission objectives. More than 100,000 customers use AWS AI services for everything from enhancing the customer experience and predicting trends to improving productivity and accelerating innovation.

AWS helps organizations of all sizes to successfully leverage AI across three categories of critical operations objectives: improving user experience, optimizing operations, and accelerating innovation.

This eBook features success stories from AWS customers that have achieved transformative results across these three categories using innovative AI capabilities.

SUCCESS STORIES

Accelerating innovation

Organizations leverage AI to help accelerate innovation across their offerings, services, and applications. This can help your teams accomplish more—regardless of their ML skills, driving productivity, ease to scale or optimizing costs.

Read on to discover how NatureScot, Rikuzentakata City, and Seton Hall University are leveraging AI to achieve transformative results.





Enhanced environmental decision making support

NatureScot is the national nature agency for Scotland that works to help improve the natural environment, protecting the biodiversity, geodiversity, and natural elements of both land and marine areas.

Opportunity

The agency began receiving increasingly numerous and complex applications for land use changes, with staff struggling to find the time to resolve each one. Each request meant lengthy investigation times because critical data was located in different places in multiple formats—both structured and unstructured—across on-premises legacy systems. The proposed platform included the latest advances in AI, data analytics, mapping, and satellite and earth observation imagery to simplify and resolve complex customer queries, providing advanced support for NatureScot's case officers to make decisions on planning applications across the whole of Scotland.

Solution

NatureScot created InformedDECISION, built on AWS, with AWS Partner, Informed Solutions. Informed Solutions began by configuring the platform's data integration and unification capabilities, extracting information by ingesting 150,000 documents from various formats, including email, scanned or PDF documents, and Word, Excel, and PowerPoint files. For this, it used a combination of AWS Glue, which can integrate data at any scale, and Amazon Textract, which automatically extracts printed text, handwriting, and data from any document.

Informed Solutions' proven natural language processing (NLP) and named entity recognition (NER) modules were combined with Amazon Kendra, which provides intelligent enterprise search powered by machine learning.



Results

- 50% expected reduction in casework review times
- 50% estimated decrease in application review times
- Up to 50% anticipated reduction in pre-application processing times
- 150,000 data items ingested from various sources

“Combining AWS services with our own technology has allowed NatureScot to support all stakeholders in processing land use applications much more efficiently and effectively.”

David Lawton, Technical Director, Informed Solutions



Enhancing disaster response with AI-Powered mass calling systems

Rikuzentakata City in Iwate Prefecture, Japan, was devastated by the massive tsunami during the 2011 Tohoku earthquake and tsunami disaster. Drawing on this experience, the city aims to create a safe and secure town for all residents.

Opportunity

While using disaster prevention radio, phone calls, and social media to provide information during emergencies, the city faced challenges with quickly and reliably disseminating information and a lack of staff. In cooperation with NTT East, the city sought to develop a new information delivery system utilizing mass calling and AI on AWS.

Solution

Incorporating resident feedback, Rikuzentakata City and NTT East worked to put the “Shin AutoCall” system into practical use. Built on AWS services like Amazon Connect, Lambda, and DynamoDB, the system can make mass calls from a pre-registered phone number list and record responses.

Initially a prototype to confirm usability, it was updated after a workshop revealed issues with pushing numbers for safety checks. By integrating Amazon Lex’s voice AI, recipients can now respond vocally with yes/no and locations, converted to text data. Keywords like “injured” can indicate urgency for prioritizing rescue.

After successful trials in 2022 disaster drills with positive feedback, Rikuzentakata plans full rollout for the November 5th tsunami evacuation drill. While already used for staff safety checks, the city continues improving the resident-facing system.

Results

- Faster telephone contact and safety confirmation
- Reduction of secondary damage risk
- Enhance disaster information communication.

“While utilizing the latest digital technologies such as AI, we aim to create a system that is easy for everyone to use. We hope to spread the life-saving system as one of the ways to return the favor given to our city, which received a lot of support during the Great East Japan Earthquake.”

Mr. Yoshio Nakamura, Rikuzentakata City, Disaster Prevention Division, Section Manager and Disaster Prevention Measures Supervisor

Accessing next-gen research computing capabilities

Seton Hall University is a leading academic institution committed to fostering innovation and driving research excellence across disciplines.

Opportunity

With advanced use cases like AI and machine learning increasing the importance of computing in research, the university embarked on a collaboration between the Libraries, the Biology Department, and the Department of Information Technology.

Seton Hall University sought to provide its faculty and students with powerful computing resources to accelerate discoveries and prepare the next generation of scholars. Traditional on-premises infrastructure posed limitations in terms of scalability and accessibility, hindering the university's ability to keep pace with the rapidly evolving research landscape.

Solution

Seton Hall University implemented AWS LightSail for Research, a cloud computing service from Amazon Web Services (AWS). This solution simplifies the process of setting up and managing virtual private servers in the cloud, enabling researchers to focus on their work rather than technical complexities.

The university's IT department created a system that automatically generates workspaces for students based on course enrollment. This initiative marks a significant milestone in expanding students' and researchers' access to computing for emerging use cases.

Results

- Access to scalable computing resources for advanced use cases like machine learning.
- Automated environment provisioning for users.
- Cost-effective dedicated Virtual Private Servers

“Working within the Data Lab and using LightSail has been fulfilling... our aim is to leverage Data Science to drive research advancements, especially at Seton Hall University, and support its academic growth.”

Victor Carrillo, Computer Science Undergraduate,
Seton Hall University

Machine learning services for accelerating innovation

Amazon SageMaker offers an end-to-end service to build, train, and deploy ML models for any use case with fully managed infrastructure, tools, and workflows



Accelerate machine learning development

Reduce training time from hours to minutes with optimized infrastructure. Boost team productivity up to 10 times with purpose-built tools.



Prepare data at scale

Access, label, and process large amounts of structured data (tabular data) and unstructured data (photos, videos, and audio) for ML.



Make machine learning more accessible to non-developers

Enable more people to innovate with ML through a choice of tools—integrated development environments for data scientists and no-code visual interfaces for analysts.



Streamline the machine learning lifecycle

Automate and standardize MLOps practices across your organization to build, train, deploy, and manage models at scale.

Machine learning services for accelerating innovation

Amazon SageMaker offers an end-to-end service to build, train, and deploy ML models for any use case with fully managed infrastructure, tools, and workflows



Bring applications to life

Amazon Rekognition makes it easy to add highly accurate and automated image and video analysis to your applications.



Extract printed text, handwriting, and data from any document

Amazon Textract can automatically recognize and take out data from different file types and formats.



Combine multiple tasks

Traditional multistep Business Intelligence tasks can be turned into intuitive and powerful experiences—transforming organizations' offerings with data analytics capabilities.

SUCCESS STORIES

Improving the user experience

Many organizations are turning to the intelligent, predictive powers of AI to enhance the user experience and improve innovation. If you're taking a fresh look at your strategic goals, or trying to understand how AI can help deliver the best user experience, then you're likely to find practical inspiration in the following five success stories. Read on to discover how 911 dispatch services, Mental Health Innovations, Discovery Education, AlHealth.sg, and Arkansas Department of Health are demonstrating the transformative power of AI to elevate user services.





Easing the workloads of 911 dispatchers

Emergency call centers across the United States are facing a staffing crisis, with 1 in 4 jobs vacant between 2019 and 2022.

Opportunity

This staff shortage has led to longer wait times, unanswered calls, and increased workloads for dispatchers, contributing to burnout and high turnover rates. Many centers are exploring ways to alleviate the burden on human dispatchers, particularly for non-emergency calls, which can account for a significant portion of their workload.

Solution

Several municipalities, have turned to artificial intelligence solutions to handle non-emergency calls. These localities have implemented Amazon Connect, which uses AI to answer non-emergency calls, triage the requests, and redirect callers to appropriate resources.

When a caller dials the non-emergency line, Amazon Connect's AI system answers and asks what assistance is needed. Based on the caller's response, the system can provide information, transfer the call to the relevant agency, or route it to a human dispatcher. This approach has reduced the volume of non-emergency calls handled by human dispatchers, allowing them to focus on emergency situations.

In Charleston County, the use of Amazon Connect has decreased the volume of calls to the administrative line by 36% since March, while Jefferson County has processed about 40% of its administrative calls through the AI system since December 2022. Call center leaders emphasize that AI is not intended to replace dispatchers but rather to enhance their roles by reducing workloads and improving efficiency.



Results

- **Decreased call volume: 36% of calls being addressed with AI support.**
- **Stronger staff focus: removing non-emergency responses decreases workloads and distractions.**
- **Reduced burnout: repetitive administrative tasks can be automated away.**

“It has been very beneficial to the call takers, who are already overworked,” Battles said. “Anything we can do to relieve that stress while actually providing a more efficient service to the citizens is a no-brainer on our part.”

Brian Battles, Communications Administrative Specialist, St Louis County Police Department



Using AI and data insights to improve mental health interventions

Mental Health Innovations (MHI) is a UK-based nonprofit organization that operates Shout, a free 24/7 text messaging support service for individuals struggling with mental health issues. Since its launch in 2018, Shout has had over 2 million text conversations with people seeking support.

Opportunity

MHI faced challenges in managing and analyzing the vast amount of data generated from these conversations. The organization needed a secure, reliable, and scalable system to store, manage, and anonymously analyze the data to improve its services, provide mental health data insights to academic researchers, and train its volunteers.

Solution

MHI partnered with AWS Advanced Partner Cloudwick Technologies to build its data and insights capability using the Amorphic Data Cloud. Cloudwick delivered an MHI-specific pilot of its Amorphic Data Cloud solution on Amazon Web Services (AWS), which seamlessly integrates with and orchestrates over 72 AWS services. The pilot demonstrated how MHI could use Amorphic to gain greater insights from its data, manage and store data securely, and share vital insights with volunteers and researchers.

With the new system, MHI can analyze text conversations with users based on keywords, times of conversations, types of crises, and more. The organization has used its system to identify and de-escalate over 9,500 cases where people's lives are at risk. MHI has also started using Amazon SageMaker to build, train, and deploy machine learning models, which has helped the organization to better understand the needs of every Shout user and improve the ability to intervene if a Shout user is in imminent danger.



Results

- Improved decision making with data-driven insights.
- Enhanced training and retention of volunteers.
- Increased efficiency and cost optimization.
- 100% availability and met service level agreements over the past 4 years.

“The solution Cloudwick built for us is really good because it gives us the opportunity to take advantage of so many things AWS provides. Our team can access these facilities and do a broad range of valuable work.”

Mark Ungless, Director of Data Insights, Mental Health Innovations



Helping educators deliver personalized learning experiences

Discovery Education transforms teaching and learning by empowering teachers with customized solutions that support learning, wherever it takes place. This state-of-the-art digital platform supports edtech learning with award-winning multimedia content, instructional support, and innovative classroom tools. Discovery Education serves approximately 4.5 million educators and 45 million students in nearly 100 countries and territories.

Opportunity

Educators are constantly connecting to high-quality, standards-aligned digital content. To help increase efficiency, productivity, and engagement with students, Discovery Education was looking to incorporate personalization into every aspect of the customer experience. They sought an AI solution to ensure the delivery of tailored and relevant content to match individual users' patterns and preferences.

Solution

Discovery Education embedded Amazon Personalize, which uses data to power personalized recommendations, into its enhanced learning platform. This transforms customer experiences and allows developers to build applications with the same ML technology used by Amazon.com for real-time recommendations. All done with no ML expertise required. It avoids the burden of building the model and also means educators spend less time searching for digital resources and more time teaching.



Results

- **Faster claims processing:** Discovery Education increased the number of claims reviewed for potential fraud by 83%.
- **Higher engagement:** Discovery Education had a 229% increase in homepage clickthrough rate and 220% increase in high-value interactions with content, such as assigning, downloading, and sharing.
- **Personalized experiences:** The solution delivered personalized experiences to match users' patterns and behaviors.
- **Increased productivity:** Amazon Personalize helps make use of purpose-built ML algorithms, taking the onus away from Discovery Education.
- **Ongoing innovation:** Discovery Education continues to add, contextualize, and organize exciting new content and timely resources each month.

“Our goal is to use machine learning to better match what we know about our educators, and what we know about our students, and how our platform is being used. By using Amazon Personalize, we are able to personalize our K12 learning platform.”

Pete Weir, Chief Product Officer, Discovery Education



Transforming non-communicable disease management securely

AI Health.SG is a platform that enables users to assess their risk of non-communicable diseases (NCDs) and provides personalized recommendations. The platform was born out of a personal experience of the founder, who suffered from a non-communicable disease, which led to the realization that existing health apps were not comprehensive enough to provide a holistic view of one's health risks.

Opportunity

The founder of AI Health recognized the need for a platform that could integrate various health metrics, such as blood pressure and heart rate, with personal and family history to provide a personalized risk assessment. The goal was to create a platform that was scalable, cost-effective, and accessible to anyone with a mobile device.

Solution

AI Health leveraged AWS to build its NCD platform with a microservices architecture, utilizing a range of services including AWS Glue and Amazon Textract. The platform connects to the cloud, runs AI algorithms on the phone, uploads data to the platform, and sends back analytics. The use of microservices enabled AI Health to transplant its environment into any AWS region, allowing for rapid deployment and scalability.



Results

- **Increased privacy and security:** AWS experts have provided technical advice to help AI Health.SG build a secure platform.
- **More personalization:** AI tools customize recommendations to individual users' data securely.
- **Faster time to market:** testing was able to be run quickly, and the platform can be rolled out seamlessly to any AWS region.

“We want to be able to deliver new AI health library capabilities at scale, with the same type of philosophy as Amazon first started out.”

Shaun Rossiter, CEO and Founder, AiHealth.SG



Accelerating Public Health Data Modernization with AI-Powered Document Processing

The Arkansas Department of Health (ADH) is a public health agency responsible for protecting and improving the health of Arkansans. However, the agency was struggling with manual data entry from clinical laboratory reports, which was time-consuming and prone to errors.

Opportunity

The ADH was receiving a monthly influx of approximately 20,000 clinical laboratory reports from different laboratories across the state, with varied reporting formats making it challenging to extract information accurately. The agency needed a solution to automate the extraction of information from these reports to improve data timeliness and completeness.

Solution

The ADH partnered with Quantiphi, an AWS Premier Tier Services Partner, to implement QDox, an intelligent document processing (IDP) solution that leverages artificial intelligence to recognize document types, extract information, and deliver output in the desired format.

QDox was configured to process various types of laboratory reports, automatically classify reports, and accurately extract key information such as laboratory test name and result and sending facility name. The solution reduced manual intervention and the time processing laboratory reports, and conducted a human review of low-confidence extraction results via a low-code interface.

Results:

- Automated the extraction of information from laboratory reports, reducing manual data entry and improving data accuracy.
- Improved data timeliness, allowing epidemiologists to quickly identify patterns in data and take timely action to prevent or control outbreaks.
- Enhanced data completeness, enabling public health officials to target their efforts to reach the neediest populations.

“QDox is mature enough to onboard public health documents and follows all the necessary data security and governance practices to develop HIPAA-compliant solutions. Leveraging AWS services, the solution ensures data is encrypted at rest and in transit.”

Jim Keller, AWS Global CEO, Quantiphi

Solutions to improve user experience

Virtual agents and chatbots

[Amazon Bedrock](#)

[Amazon Lex](#)

[Amazon Polly](#)

AI-enabled contact center

[Amazon Connect](#)

[Amazon Transcribe](#)

[Call Analytics](#)

[AWS CCI](#)

Personalization

[Amazon Bedrock](#)

[Amazon Personalize](#)

Extract and analyze

[Amazon Rekognition](#)

[Amazon Textract](#)

Prepare data, and build, train, and deploy machine learning models with Amazon SageMaker

Organizations that want to develop their own models can execute against any of the above use cases with [SageMaker](#). The end-to-end service provides pre-built models and purpose-built tools for every stage of the AI lifecycle and even includes no-code tools for analysts to generate ML predictions.

SUCCESS STORIES

Optimizing operations

With its ability to process massive amounts of data quickly and intelligently, AI can help organizations streamline operations, automate processes, and predict business outcomes. This can help improve productivity and augment team capabilities. The following success stories from Orion Health and Japan's Digital Agency demonstrate how core operations can be optimized with the power of generative AI and ML.





Better consumer health experiences

Orion Health wants to improve the healthcare experience for everyone. As a leading omni-channel customer engagement platform, it brings together vast amounts of health data to provide healthcare professionals and health insurers with the tools they need to manage their members' wellness programs. This is done through analytics and employing care management and patient engagement.

Opportunity

Ensuring access to timely, accurate and validated information is critical to healthcare organizations. But bringing it together can be difficult. So Orion Health was looking to create a user-friendly hub that would gather new and existing patient engagement technologies, with a key purpose to prevent people from needing to visit overcrowded hospital Emergency Rooms.

Orion wanted to build a platform where users could ask health-related questions using natural language processing. And in return get quick and easy access to trusted answers.

Solution

The platform, built with the help of Amazon Kendra, is now known as the Digital Front Door; it is secure, open, and scalable.

It drastically improves the current processes of finding information and ensuring that people are getting the help they need, when they need it.



Results

- **Improved access to trusted health information**, which gathers data from multiple areas onto one platform
- **Better consumer health experience** with a simplified health questionnaire and more detailed answers
- **Reduced costs** thanks to more efficient systems and automated processes

“Amazon Kendra was a natural fit for what we were looking for and what we were trying to do and was a perfect centerpiece for our new digital front door product.”

Jomo Starke, Senior Director of Innovation,
Orion Health

Accelerating cloud migration with generative AI-powered architecture reviews

Japan's Digital Agency is the central command for Japan's digital transformation, aiming to build a society where no one is left behind by improving convenience, health, and happiness through digital technology.

Opportunity

The agency faced challenges in developing a cloud-based government system, including a lack of human resources and vendor staffing, inexperience with cloud technology, and cultural resistance to change. To overcome these hurdles, the agency turned to cloud service providers, including AWS, for additional resources and expertise.

Solution

To accelerate government cloud migration, the agency's cloud migration unit began using Claude, Anthropic's generative AI model on Amazon Bedrock. The AI-powered architecture review tool checks the architecture of system configurations, suggests improvements, and generates code as a reference for the AWS Cloud Development Kit (AWS CDK).

The Digital Agency created reference architectures (RAs) to demonstrate optimal cloud architectural standards tailored to the characteristics of current administrative systems. The architectures focus on using AWS managed services..

Results

- Shortened the length of the government cloud design period.
- Streamlined migration reviews and reduce the burden on staff.
- Improved the efficiency of fee estimates and calculations for cloud usage.
- Increased the adoption of cloud technology across government ministries and local government entities.

“The Digital Agency plans to continue utilizing reference architecture along with generative AI to reduce the burden on government cloud users and realize fast and efficient system building,”

Shinichi Nishihata, Cloud Engineer, Japan Digital Agency

Solutions to optimize operations

Intelligent document processing

[Amazon Augmented AI \(Amazon A2I\)](#)

[Amazon Comprehend](#)

[Amazon Comprehend Medical](#)

[Amazon Rekognition Content Moderation](#)

[Amazon SageMaker](#)

[Amazon Textract](#)

Fraud detection

[Amazon Fraud Detector](#)

[Amazon SageMaker](#)

Supply chain optimization

[Amazon Bedrock](#)

[Amazon SageMaker Canvas](#)

[Amazon SageMaker](#)

Solutions to boost employee productivity

Conversational search

[Amazon Lex](#)

[Amazon Polly](#)

Content creation

[Amazon Bedrock](#)

[Amazon SageMaker](#)

[Jumpstart](#)

Text summarization

[Amazon Bedrock](#)

[Amazon Comprehend](#)

[Amazon SageMaker](#)

NEXT STEPS

Start realizing the strategic value of your artificial intelligence today

AWS offers the most comprehensive selection of AI services and solutions to develop the most innovative, productivity-boosting and customer-experience-improving solutions. That's why more than 100,000 organizations use AWS to accelerate their AI journeys.

Explore AWS AI services that fit your business needs—and learn how to get started today.

Accelerate growth for your organization with AWS AI services.

