the future of
digital government

cloud solutions that are
helping the global community
turn visions into reality.

aws | intel

welcome

The world of digital government is quickly changing.

The world of digital government is quickly changing. Driven by new ideas and a demand for data, the global community needs innovative ways to turn visions into reality.

From programmes that are paving the way for smart cities to new data solutions that make sure digital services don't topple during elections to reducing wait times from years to weeks, Amazon Web Services (AWS) is helping better-connect digital government to realize those visions.

Our reliable and highly-secure cloud infrastructure, coupled with data centres throughout the world, are helping countries to share new thinking and bold ideas in ways that are both cost-effective and easily scalable. So, rather than waste time on managing IT solutions, digital governments can simply focus on the task at hand – innovation.

overview

tourism

Wonderful Copenhagen

Wonderful Copenhagen (WC) is a foundation that works with more than 300 tourist attractions, tour operators, restaurants, theatres, and other partners to develop the tourism industry in and around Copenhagen, Denmark.

With annual increases in foreign visitors since 2009, WC wanted to inspire guests to experience an even wider variety of attractions throughout the year. The answer lay within the large volume of mobility data it holds on tourist movement throughout
the city.

Working with data analysis expert Vizalytics, a machine learning pilot project explored where visitors go and when, how long they stay at individual attractions, where they go next, and how weather and event schedules affect their visits. The model ingests the organisation's internal data and also publicly available information such as weather patterns.

Within a short time, the project showed the potential to trace entire tourist seasons, identify bottlenecks and opportunities, and help deliver data-driven value to partners, allowing them to strategize for events such as poor weather.

Wadhwani Institute for Artificial Intelligence

Based in Mumbai, India, **Wadhwani Institute for Artificial Intelligence** (WIfAI) is an independent, nonprofit research institute and global hub focused on developing artificial intelligence (AI) solutions for social good. Their main areas of research include health, agriculture, financial inclusion, infrastructure, and education. Amazon Web Services (AWS) helps WIfAI scale and securely process their government sensitive data as they build multiple solutions for large-scale societal problems.

One such solution concerns infant mortality rates in rural areas of India, where access to even basic medical equipment is not possible. It's a fact that much can be done to protect against mortality if the baby's weight is measured at birth. A solution is now being developed by the institute to allow health workers in these locations to do just this using only photos and video taken with their cell phones. Using AI, a virtual 3D model of the infant is created in the cloud, and from that, the weight and other crucial measurements can be calculated.

Using Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), Amazon SageMaker and more in bold new ways, the organization is building innovation solutions that are positively impacting lives in India and beyond.

Agentschap Wegen & Verkeer

Agentschap Wegen & Verkeer (AWV) is the government agency responsible for maintaining road infrastructure in the Flemish part of Belgium, covering 6,970km of roads and 7,668km of cycle lanes.

Before the cloud, IT and operations were outsourced. With diverse workloads around databases, applications that monitor the flow of traffic and even mobile apps to register potholes, AWV required a cost-effective solution that would allow for faster development, with greater security and stability.

By using AWS, the agency can now develop and test features three times faster than it previously could, has reduced system admin time by 67%, and halved costs.

transportation

Vancouver International Airport

Innovative Travel Solution (ITS) is the largest provider of self-service border-control kiosks across Canada, the United States, the Caribbean, and the Pacific.

But, as the company grew, it needed a highly secure data-hosting solution that could scale quickly.

Working with AWS Partner TriNimbus, ITS moved from on-premises data centres to the cloud. ITS can now quickly deploy new virtual servers – with virtually 24/7 uptime in all the airports it operates across North America – with the highest security in place.

Miovision

Miovision is a tech company that helps cities improve traffic safety and systems. They needed a hosting solution so they could focus on engineering smarter solutions, rather than managing IT services.

Each Miovision device often generates 100,000 each per day and AWS easily handles this volume, whilst scaling automatically with each added customer. Building their entire data ecosystem on AWS and using it to connect and control all of their devices in 50 countries worldwide, means Miovision has more time to spend on what their business is about – innovation.

City of Porto

Land Transport Authority

City of Porto Porto is a coastal city in northwest Portugal. It has over 250,000 citizens and 1.8 million inhabitants in the surrounding area covering more than 2,000 square kilometres. Already a hub for exports, research, and innovation, Porto wanted to expand its smart city aspirations.

Working with AWS Partner Veniam, the city deployed a network solution to its 400+ public service vehicles, transforming them into mobile hotspots and urban sensors. This increased the range and quality of free internet for citizens and gave the city real-time insights into passenger mobility patterns, bus stop locations, and wait times.

Land Transport Authority (LTA) of Singapore is a government agency responsible for all land transport development, policies, and enforcement. Transporting over 2.2 million users a day, LTA needed a faster, cheaper way to respond to public feedback.

With AWS, the LTA quickly rolled out and scaled hosting services to meet its needs. This complied with strict security policies and saved 60 percent on traditional infrastructure costs. Developing its own app, the organisation was also able to run a simulation with 100,000 users receiving a response within three seconds.

City of Cagliari

City of Cagliari Each year, cities in Italy run local elections to decide the mayor and council that will run each comune. In 2016, the Italian city of Cagliari in southern Sardinia implemented a new portal to provide citizens with real-time access to these local election results. The project would allow anyone to easily track results after the polls closed, without fear of this high traffic crashing the website.

Given the importance of the elections to the local population, it was critical that the service be reliable and responsive, and with infrastructure costs at a minimum. The city worked closely with a local technology firm, BeeToBit, to develop the portal, which took advantage of resilient services built in to AWS around scaling and failover (in this case, switching seamlessly to a backup server), so they could focus on the functionality.

On the night of the local election, the portal successfully served more than seven million requests, and automatically scaled up and down as demand fluctuated, all without requiring expensive infrastructure to support the load. Even more impressively, the entire project was started just 20 days prior to the election.

elections

Australian Electoral Commission

The Australian Electoral Commission (AEC) is responsible for conducting federal elections and referendums, and maintaining the Commonwealth electoral roll.

With its growing number of websites, online services, and applications, coupled with record enrolment rates and more mobile participants, the increasing public demand for digital services was putting pressure on the AEC's website, especially in the lead up to and during election events when hits reached over 100 million.

Partnering with the ASG Group, the AEC's web services were seamlessly moved to AWS. The new infrastructure provides a highly secure, scalable, and flexible solution that responds rapidly to the peak-capacity demands required during an election period. In addition, a self-service web portal was built so the AEC can now develop, test, and deploy applications and web content without interrupting public-facing online services. This empowered the AEC to meet their obligations to the Australian public, both now and in the future.

meteorology

German National Meteorological Service

The Met Office

Deutscher Wetterdienst (DWD), also known as the German National Meteorological Service, is responsible for monitoring the weather throughout Germany. In 2017, changes in the law meant the DWD is free to share its data more openly, but it needed an affordable and scalable way to do this.

AWS gave DWD a cost-effective solution to store all its data and made it available to be analysed immediately. Emergency services, road management authorities, and energy companies can also access the large volumes of information without needing to download it.

Met Office (MO) is the UK's national weather service. It's recognised as a world leader of accurate forecasting, using more than 10 million daily weather observations, an advanced atmospheric model and a supercomputer to create 3,000 tailored forecasts and briefings each day.

Data is stored and processed on-site, but the Met Office needed an agile and cost-effective way to make it possible for citizens, businesses, and governments to consume its data on demand. Using AWS, the organisation has increased agility, speed, and scalability, while reducing costs. Benefits include getting data to customers in seconds, not minutes, and workload automation enabling release of new applications 30 times more frequently.

cybersecurity
SKL

Communications Security Establishment

SecureAppbox helps organisations manage sensitive data and comply with the European Union's General Data Protection Regulation (GDPR). In 2015, unprecedented numbers of child refugees were entering Sweden without parents. In a bid to find homes for these orphans, the Swedish Association of Local Authorities and Regions, **Sveriges Kommuner och Landsting** (SKL) worked with Secureappbox to build and launch a secure, scalable platform.

In a normal year, Sweden would typically have approximately 20,000 children in need of a new home. But in 2015, as a result of mass displacement from ongoing conflict in the Middle East, this number more than tripled to over 60,000.

The Communications Security Establishment (CSE) is one of the Government of Canada's key security and intelligence organizations. When CSE collaborated with the University of New Brunswick (UNB) to simulate large-scale cyberattacks in order to find ways to prevent them in future, neither had the compute capacity.

Using AWS, they were able to carry out their vital research in a scalable and cost-efficient way. They used hundreds of virtual servers at the click of a button and accomplished a year's worth of compute in just one day.
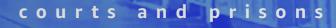
The Ministry of Justice

The Ministry of Justice (MoJ) provides justice to UK citizens. It uses technology as an enabler to help make justice fairer, more effective, and to provide better access to that justice for the entire population.

Before the cloud, the MoJ was using its own on-premises data centre, as well as others through external suppliers. This created many issues, including the inability to implement changes quickly and a scarcity of expertise in-house to be able to make informed decisions regarding technical elements such as data centre design.

Working with external developers and AWS, the MoJ overcame such problems. It quickly began creating more

digital services, primarily for citizens, which led to it using AWS as its base platform. This allowed the ministry to automate the delivery of services to the cloud and consolidate work methods.

Currently, more than 20 Ministry of Justice digital services now live in the AWS Cloud, prompting a cultural shift towards agile development and operations (DevOps). This now underpins the MoJ's ability to deliver services to citizens or civil servants rapidly, adapt to user needs, listen to the data about how people use the services, and build more effective software.

Ministry of Housing and Urban Affairs

Launched by the **Ministry of Housing and Urban Affairs** (MoHUA) in India, the **Smart Cities Missions** (SCM) aims to develop 100 smart cities which will drive economic growth and improve the life of its citizens. It aims to do this through developing clean and sustainable environments and harnessing technology.

MoHUA needed a platform that would deliver insights into transport, health, environment, water, and finance so they can make informed policy decisions.

Using AWS, the India Urban Observatory was set up to gather and store data both from real-time and archival sources. It took just five weeks to set up the platform,

which enabled a seamless integration of data coming from a variety of sources and environments, including solutions hosted on-premise. The scalable platform took MoHUA from 500 to 500,000 datasets, providing much-needed information for the 100 cities trying to change the future of India and paving the way for the SCM vision.

citizen services

Information and eGovernment Authority

Bahrain's **Information & eGovernment Authority** (iGA) maintains the infrastructure and security of public sector technology. Despite a heritage of innovation, the iGA was spending 70 percent of its time buying and installing systems. And constantly issuing and servicing tenders to meet the demands of the public meant they were losing sight of what's really important: building applications that can help citizens.

Because of this, Bahrain became a cloud-first country, collaborating with AWS to open a new Region. The cloud enables Bahrain, its citizens, and local and international companies to innovate faster and much cheaper. For the iGA, changes that previously would have

taken two years are now introduced in weeks. And they have created a state-of-the-art marketplace that is flexible enough to accommodate any international company, as well as help stimulate local startups, which helps the iGA to achieve their mission to assist the well-being of society.

citizen services

Government of Ontario

The **Government of Ontario** (GoO) look after healthcare, education, education, transportation, and the environment in the east-central Canadian province of Ontario.The Government needed to ensure government information and services were accessible on their website to their 14 million inhabitants around the clock, but they didn't have a big budget.

Using AWS avoided the cost of building their own infrastructure onsite. But it also allows their team to experiment, learn, and make iterative changes to their website. The site stopped going down, the Government gained a disaster-recovery solution, and the AWS Cloud autoscales to their exact needs.

Common Service Centres (CSC), India

Common Service Centres (CSC) act as access points to government of India digital services. By bringing these services to rural and remote locations, CSC helps to make the country a more digitally and financially inclusive society. In order to deliver these valuable e-governance services, CSC required a scalable, cost-effective solution. They also needed to reduce response times and increase reliability.

To achieve this, CSC turned to AWS. They built a solution that brought together AWS content delivery, storage, management, and high-availability services to simplify the delivery of citizen services in rural India. With this in place, CSC is now prepared to quickly deliver these vital services to a greater number of people. They've also paved the way for innovation, giving people in remote areas access to new technology and the benefit this brings to citizens.

our global infrastructure

The **AWS Cloud** spans 69* Availability Zones within 22* geographic Regions around the world, with announced plans for 9* more Availability Zones and three* more Regions in Cape Town, Jakarta and Milan.

Meeting Compliance and Data Residency Requirements

You retain complete control and ownership over the region in which your data is physically located, making it easy to meet regional compliance and data residency requirements.

Region & Number of Availability Zones

⬤ New Region (coming soon)

Hover over points to reveal location

Location:

US East
N. Virginia (6),
Ohio (3)

US West
N. California (3),
Oregon (3)

Asia Pacific
Hong Kong SAR (3)
Mumbai (2),
Seoul (2),
Singapore (3),
Sydney (3),
Tokyo (4),
Osaka-Local (1)

Canada
Central (2)

China
Beijing (2),
Ningxia (3)

Europe/Middle East/Africa
Frankfurt (3),
Ireland (3),
London (3),
Paris (3)
Stockholm (3)
Bahrain (3)

South America
São Paulo (3)

GovCloud (US)
US-East (3),
US-West (3)

Cape Town
Milan

To learn more about our global infrastructure of AWS Regions and Availability Zones in more detail – and to see what offerings are available at all AWS locations – *simply click below.*

*Figures - September 2019

our data centres

AWS pioneered cloud computing in 2006, creating cloud infrastructure that allows you to securely build and innovate faster. We are continuously innovating the design and systems of our data centres to protect them from man-made and natural risks. Then we implement controls, build automated systems, and undergo third-party audits to confirm security and compliance. As a result, the most highly regulated organisations in the world trust AWS every day. Take a virtual tour of one of our data centres to learn about our security approach to protect the data of millions of active monthly customers.

a better future for all

Start Your Cloud Journey

The next era of innovation in digital government
has already begun.

By using the cloud effectively and harnessing the
transformative power of innovators, collaborators,
and creators, there's no limit to what can be achieved.

Start today. If you would like to explore any of the
subjects covered in this eBook, or answer other questions
that could help realise a vision that greater benefits
citizens and society, please get in touch.