

# Upside Picks AND Digital For Data Build With AWS

## Case Study

### Executive Summary

Upside is a startup aiming to revolutionize savings and financial services by using Open Banking data. It partnered with AND Digital using Amazon Web Services (AWS) to build a data platform that would underpin its services. This had to be extremely resilient, scalable, and satisfy complex banking regulations.

### About Upside

Upside is a startup banking platform that aims to revolutionize financial services by using Open Banking data. Its first offering is a mobile app that gives users cash-back on purchases from partner retailers.

It partnered with AND Digital using Amazon Web Services (AWS) to design and build a data platform that would underpin its services and deal with unpredictable fluctuations in demand. This had to meet detailed regulatory requirements, and keep sensitive data invisible from staff unless they required access to it.

Upside also needed a set of dashboards for customer behavior analysis and other insights. The main requirements for the business intelligence tool were that it offered fast processing time, complex metrics, and was easy to use.

### The Business Aims to Automate Savings

Upside uses Open Banking Data—information that high street banks in the UK have to make available to customers or anyone they authorize to use it. Armed with this information the company aims to automate savings and optimize and personalize the financial services an individual uses.



**Company:** Upside  
**Industry:** Financial services  
**Country:** UK  
**Employees:** 8  
**Website:** [www.upsidesaving.com](http://www.upsidesaving.com)

Upside is a startup aiming to revolutionize savings and financial services by using Open Banking data. It partnered with AND Digital using Amazon Web Services (AWS) to build an extremely resilient, scalable, data platform that would underpin its services.

### Challenge

- Create a complex data analysis system with easy-to-use dashboard interface that could cope with very rapid scaling as the startup launched.
- Ensure it all met with complex UK banking regulations.

## Solution

AND Digital using AWS built a data lake that can absorb data from a variety of sources. Dashboards can quickly interrogate the data and provide visualizations to provide business insight and to demonstrate how the business works to retailers.

## Results

- A data solution that will work on different AWS instances
- Machine learning capabilities
- Encryption and compliance with banking regulation
- Ability to deal with fast-growing business
- Guaranteed business continuity

It will use other sources of data and AI to make sure people are getting the most from their savings and not wasting money unnecessarily.

Currently in beta the company could save the average UK earner up to £1,500 a year. Upside's CEO Andries Smit said: "There are so many common pitfalls: duplicate sign-ups, train delays that you should be refunded for but never get around to applying, direct debits you no longer need, mobile contracts you're paying too much for. We can deal with all of this automatically and give you a savings account which fills itself up."

The company was 'born in COVID'—Smit has only met half the people working for him in real life.

CTO Paul Russell said: "We knew we were going to be cloud-focused from the start, so we could move quickly. We considered several providers but quite quickly focused on AWS because of its breadth of offerings. We've got no appetite to build everything and it has a great set of tools—that help us move quickly, especially in the data space."

Smit said he appreciated working with AND Digital because of their flexibility—at one point they had 17 AND people working with them, but this was quickly scaled down when the initial platform build was completed.

The launch was also Upside's first access to genuine Open Banking data from real customers rather than test data from friends and family.

## Database and Dashboard

The initial plan was to build a system that took in transactions from customers as they were made, and then build the dashboard. But AND Digital suggested that a safer approach would be to build both lake and dashboard in parallel.

The first step was creating the data lake and uploading a dump of the existing database to start building the dashboard. That gave the DevOps team, and the business team a chance to learn how to use their main business tool and tweak its development based on performance. AND Digital also decided that the first iteration would take a snapshot of data early in the morning, leaving the possibility of real-time updates to a later iteration. This removed the challenges of sorting through potentially 'dirty' data at speed—although Open Banking rules restrict how data is presented this was still something of an 'unknown' as the business started.

## AWS Services Used

- Amazon Athena
- AWS Glue
- AWS Lambda

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*“It was kudos to the AND Digital team that the launch went so well. Prior to launch, to satisfy the Financial Conduct Authority, we had to go through its penetration testing. We passed that without a single issue, which I’ve never seen in my 20 years in the business.”*

Andries Smit  
CEO, Upside

## The Challenges of Tight Regulation

The data lake had to deal with a large amount of highly sensitive information and keep that encrypted and secure. To achieve this, large parts of the database were made invisible and inaccessible to most staff—only a very few individuals have full access. The data lake also stores information from a wide variety of data sources in different formats that are normalised and anonymized, when requested, before being analysed by the business.

AND Digital built the data platform using Terraform—a code-based tool for provisioning IT infrastructure. Using Terraform meant the same project can be used for updating different AWS instances (development, staging, production) in minutes.

## AWS Services for Crunching Numbers

Upside uses AWS Glue crawlers, the AWS Service Catalog, and ETL job processing based on PySpark to bring in data from a variety of sources, extract data, and transform data so that it’s ready for loading into the database or archive.

Queries are processed in SQL using Amazon Athena. This scales with demand and removes maintenance headaches because no server is needed. Amazon QuickSight can interrogate Athena directly and provide fast visualisations. The business can look at this data to see how retailer offers are being taken up by users as well as gain better understanding of what users are spending money on. This means they’re making the right decisions about choosing future retail partnerships which their users will like.

The system uses complex caching based on AWS Lambda-generated materialised views and SPICE to speed up results. Dashboard-generated reports that contain hundreds of thousands of rows can be visualised in less than six seconds. Once tied to real-time data the firm will be able to tweak its offers several times a day.

## A Future-Ready System

The project has delivered in all key ways. Upside has a data platform that is replicable on various platforms—crucial as it has to deal with growing customer numbers. It is already on to its second set of algorithms and systems are becoming more rule based—again crucial as the number of customers grows. Each new customer brings a massive amount of data—every 250 customers add about one million rows of data—and existing customers can add additional accounts, with even more data, so increasing automation is vital.

Upside said the dashboards had provided one unexpected benefit beyond providing internal insight to what customers were doing and what additional offers could be attractive to them. They have also proved powerful persuasive tools when signing up retailers. They make it much easier to demonstrate to retailers exactly what Upside is offering and how they could benefit from signing up in terms of attracting more customers.

QuickSight has also been a very important part of the set-up because the quantity of data and how fast it is likely to scale, despite all the preparations, was still surprising to actually see. It helped provide easy-to-use visualisations to better understand how the platform was performing. Data loads were doubling every month until the beta was closed to new members.

Upside has plans to continue to grow and develop its machine learning capabilities to further improve its offering to both customers and retailers. That means better targeting of campaigns to the right customers and a wider selection of retailers offering more discounts.

## Benefits



Agility & Performance



Elasticity



Availability



Innovation

## About the partner

AND Digital is a highly experienced AWS partner with a focus on people as well as technology. A partnership with AND Digital will ensure you get the right technology and the very best training for your staff. That will give your organisation the right people, in the right environment to drive forward innovation and digital transformation.



To learn more, visit [www.and.digital](http://www.and.digital) or email [hello@and.digital](mailto:hello@and.digital)

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