



# Clouadar Helps SoundTalks Secure and Scale AI-Based Pig Respiratory Health Monitoring System Using AWS

## Executive Summary

Belgium-based SoundTalks created an artificial intelligence-powered monitoring platform for pig producers that helps detect early-stage respiratory disease symptoms to limit outbreaks. It built its platform using Amazon Web Services (AWS) in 2014 but wanted to improve security and scalability. Working with AWS Partner Clouadar, the company re-architected the system to follow security best practices and used Amazon ECS, AWS Fargate, and AWS Lambda, to allow the platform to scale according to demand. The transformation resulted in a significant reduction in infrastructure costs and an improvement in performance of more than 1,000 percent.

## Pig Respiratory Health Monitoring Initially Slow to Scale

Founded in 2011, [SoundTalks](#) is a Belgium-based technology startup that uses audio-based algorithms powered by an artificial intelligence (AI) layer to operate a monitoring platform in the pig farming industry. The system can listen to the noises made by pigs and recognize the sounds associated with respiratory diseases. Early detection reduces the need to administer antibiotics, helps improve animal welfare, increases productivity, and reduces farmers' costs. The system is already being used in China, Europe, South America, and the US.

The system uses a specially designed monitor that is installed in a barn to monitor the environment and different sounds made by the pigs. The monitoring device contains several sensors that record audio, temperature, and relative humidity. The data is collected and sent to the 'SoundTalks Gateway', which connects to the cloud, where the data points are then processed. When the system detects a potential respiratory disease outbreak—which it can detect up to 5 days before a manual check carried out by a human—it alerts the pig producer so they can treat any affected pigs and prevent an outbreak.



## About the customer

[SoundTalks](#) is a Belgium-based startup that has created a cloud-based product for pig producers that uses sound to detect potential respiratory health diseases. Its product allows pig producers to apply their protocols in an earlier stage of disease outbreak, which results in improved productivity and reduced costs. The company operates in China, Europe, South America, and the US.

## AWS Services Used

- [Amazon ECS](#)
- [AWS Fargate](#)
- [Amazon SQS](#)
- [AWS Lambda](#)

## Benefits

- 1,000% improvement in performance
- 25% reduction in infrastructure costs
- Serverless architecture scales with demand

From the start, SoundTalks built its platform using AWS but as its customer base started growing, the company recognized the need to strengthen its platform to handle growth. It was concerned that its platform contained single points of failure, had to be manually scaled up and down, and wasn't built to follow appropriate security guidelines. SoundTalks enlisted the help of [AWS Partner Clouadar](#) to run an [AWS Well-Architected review](#) in February 2023 to identify issues and help transform its infrastructure to be more secure, flexible, and cost effective.

## Clouadar Helps SoundTalks Use Serverless to Scale

As farms tend to be in rural areas with limited broadband connectivity, the monitoring data from the SoundTalks monitor is sometimes uploaded in big chunks. Because the company's infrastructure only allowed messages to be processed one by one, the system was often overloaded when there were large spikes in traffic. "The sensors continue recording even when the farm isn't connected, so sometimes we get several weeks, or even many months, of data all at once," says Johan Haest, development team lead at SoundTalks.

The first step was to migrate SoundTalks application containers from using [Docker](#) and [AWS Elastic Beanstalk](#) to [Amazon Elastic Container Service](#) (Amazon ECS), which lets you run highly secure, reliable, and scalable containers, and [AWS Fargate](#), a serverless, pay-as-you-go compute engine that lets you focus on building applications without managing servers.

Amazon ECS provides granular control over containers, which allows Clouadar to specify the size and number of clusters it requires and to enable auto-scaling. Meanwhile, AWS Fargate delivers the serverless processing power. Haest says the move to a scalable and serverless environment has transformed the platform and reduced workload for staff. "The platform now scales up and down according to load," says Haest. "Previously we had to try and predict traffic spikes and scale manually. Now it's so much easier because many of those manual tasks no longer exist."

## Handling 10,000 Messages a Second Using Amazon SQS and AWS Lambda

To deal with unusually large batches of incoming data, SoundTalks used [Amazon Simple Queue Service](#) (Amazon SQS), which lets you send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available.

Amazon SQS feeds into [AWS Lambda](#), a serverless, event-driven compute service that lets you run code for virtually any type of application or backend service without provisioning or managing servers. "Instead of processing one value at a time, we can send a batch to SQS, which triggers Lambda functions," says Haest. "Using AWS Lambda we can batch in parallel and scale almost indefinitely—this combination enables us to process lots of messages almost immediately."

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Development Team Lead  
at SoundTalks

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Moving to a serverless environment also helped optimize spending, reducing infrastructure costs by about 25 percent. The company made additional savings by using [AWS Graviton](#) processors. “The costs now scale according to the load, and when there is no load we don’t pay anything,” says Haest. “We are using AWS Graviton processors wherever possible—they are more cost effective.”

## Improving Security and Preparing for Global Growth

Cloudar’s technical expertise was especially useful when it came to improving the security of SoundTalks’ platform. It introduced numerous security improvements, which included using [AWS Secrets Manager](#), which helps manage, retrieve, and rotate database credentials, API keys, and other secrets throughout their lifecycles. “We didn’t have a layered network design, there wasn’t enough encryption, we were only using one AWS account, and too many people had admin access to the platform,” says Haest. “Cloudar helped us follow security best practices and that has been one of the most important benefits from this project.”

Haest says the SoundTalks infrastructure and platform are finally in harmony and can now evolve together. “Previously, our platform was designed to scale but the infrastructure couldn’t keep up,” says Haest. “Thanks to Cloudar and AWS, we are now ready for global expansion.”



## About the AWS Partner

Cloudar has been fully focused on delivering AWS solutions since its inception in 2014. Based in Belgium, Cloudar offers its customers tailored support and guidance when delivering the wide range of services it offers. These include: AWS reselling, 24/7 managed services, consultancy, cloud-native development, training, architecture reviews, and cost optimization.

