

# How Asurion Scaled and Simplified Airflow for Workload Orchestration

Rajesh Gundugollu  
Karthik Raparthi



 **Airflow Summit**

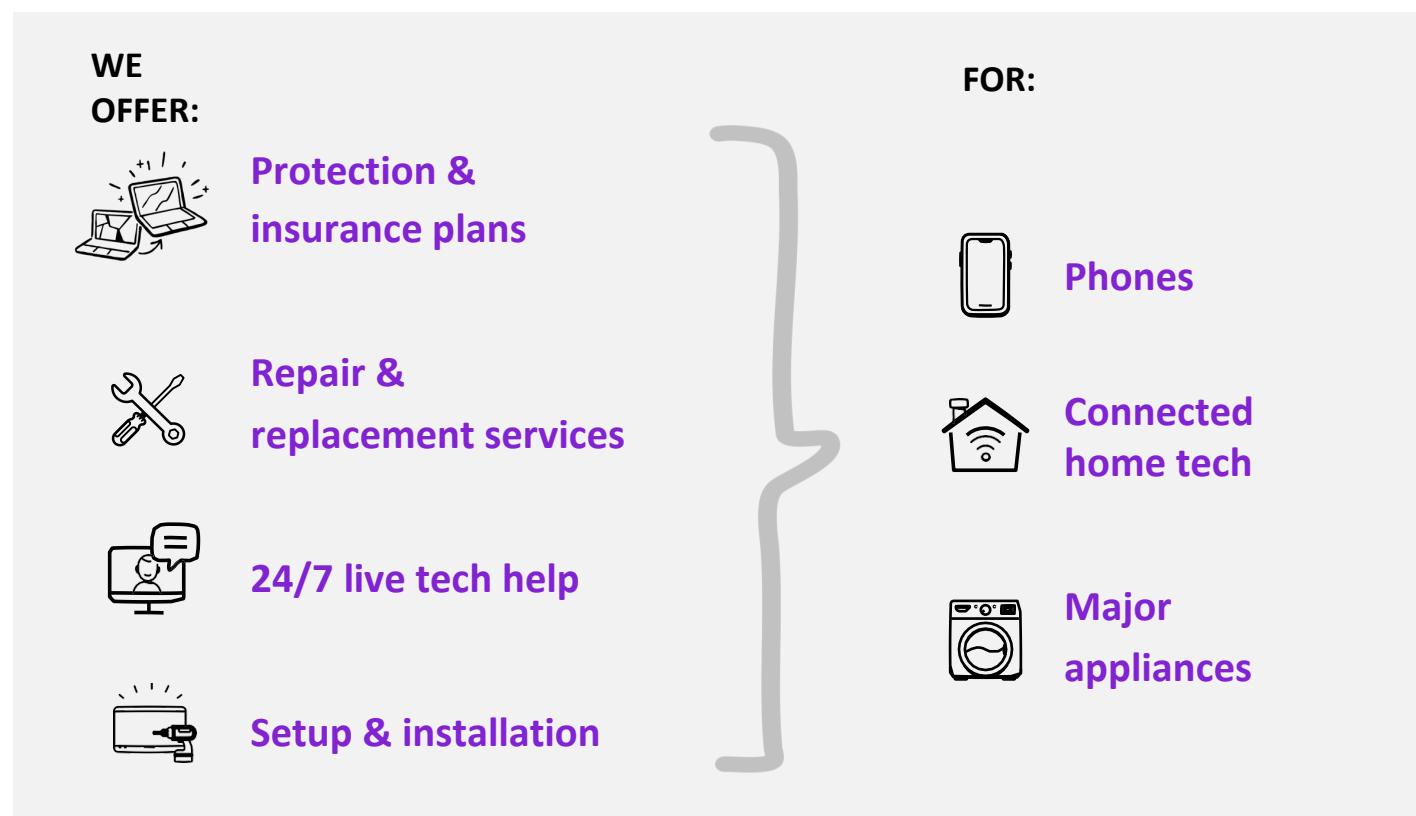
Let's flow together

September 19-21, 2023,  
Toronto, Canada

# asurion

## is a tech care company

We eliminate the fears and frustrations associated with technology, to ensure our 286 million customers get the most out of their devices, appliances and connections.



## Our purpose

We care for  
**people** and their  
**tech** – whenever,  
wherever, however.

### PEOPLE

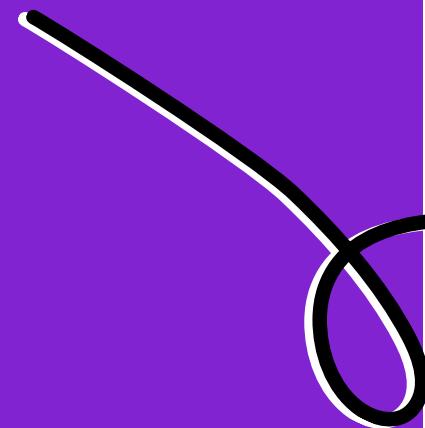
We support close to 300 million people all over the world

### TECH

We care for thousands of tech devices, including your favorite phones, laptops, tablets, TVs and gaming consoles



We operate  
on a global  
scale

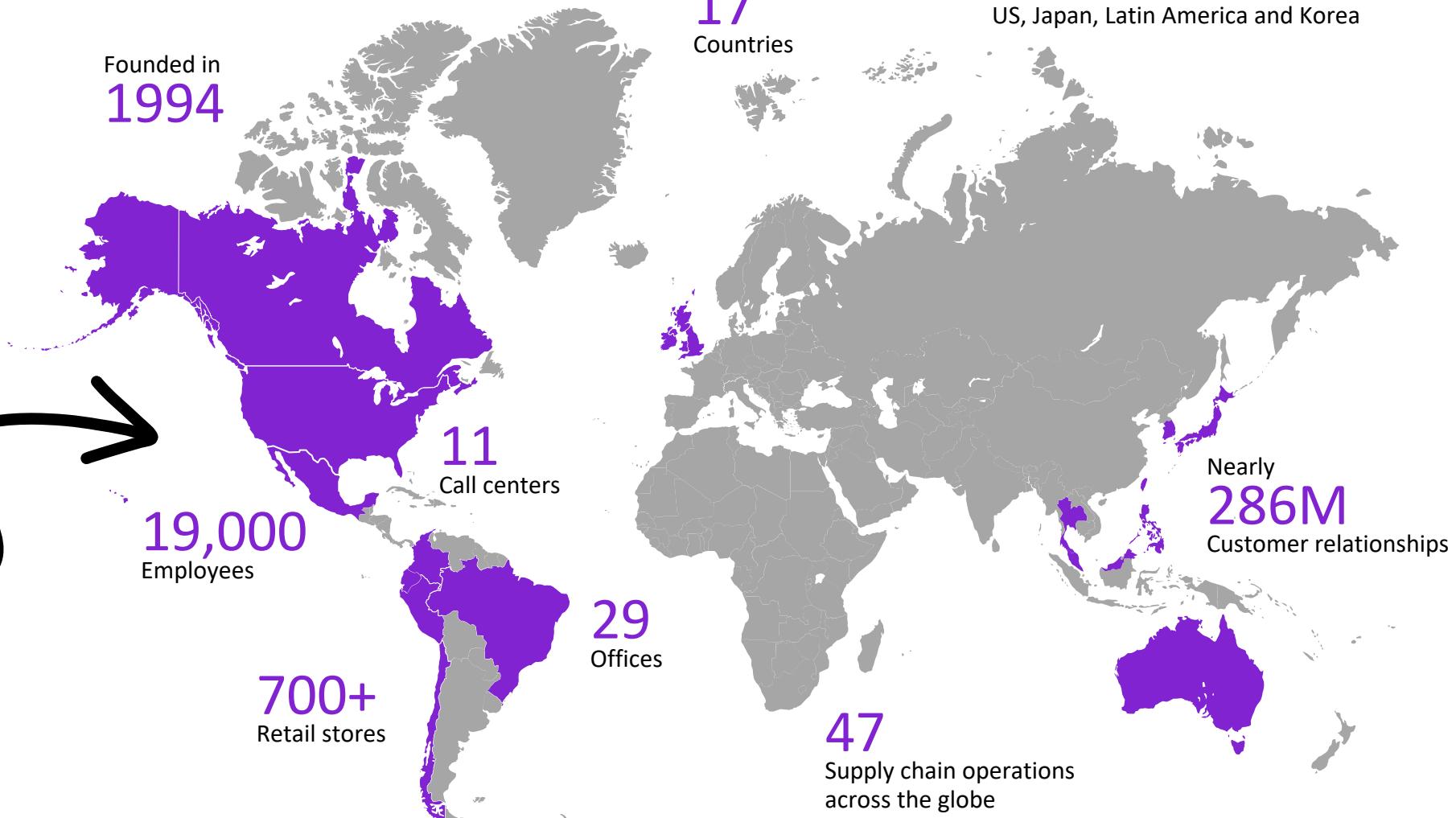


Founded in  
**1994**

**4.5** ★★★★☆  
Stars out of five<sup>1</sup>

**17**  
Countries

**121**  
Clients including the top carriers in  
US, Japan, Latin America and Korea



<sup>1</sup> based on 17.8M Asurion customer reviews

How we help our customers:

**10,000+**  
**experts**



We've created the largest tech care network:

**Virtual**  
Call or chat with us 24/7

**In-Store**  
700+ stores nationwide

**On the road**  
We make house calls for 88% of US Population



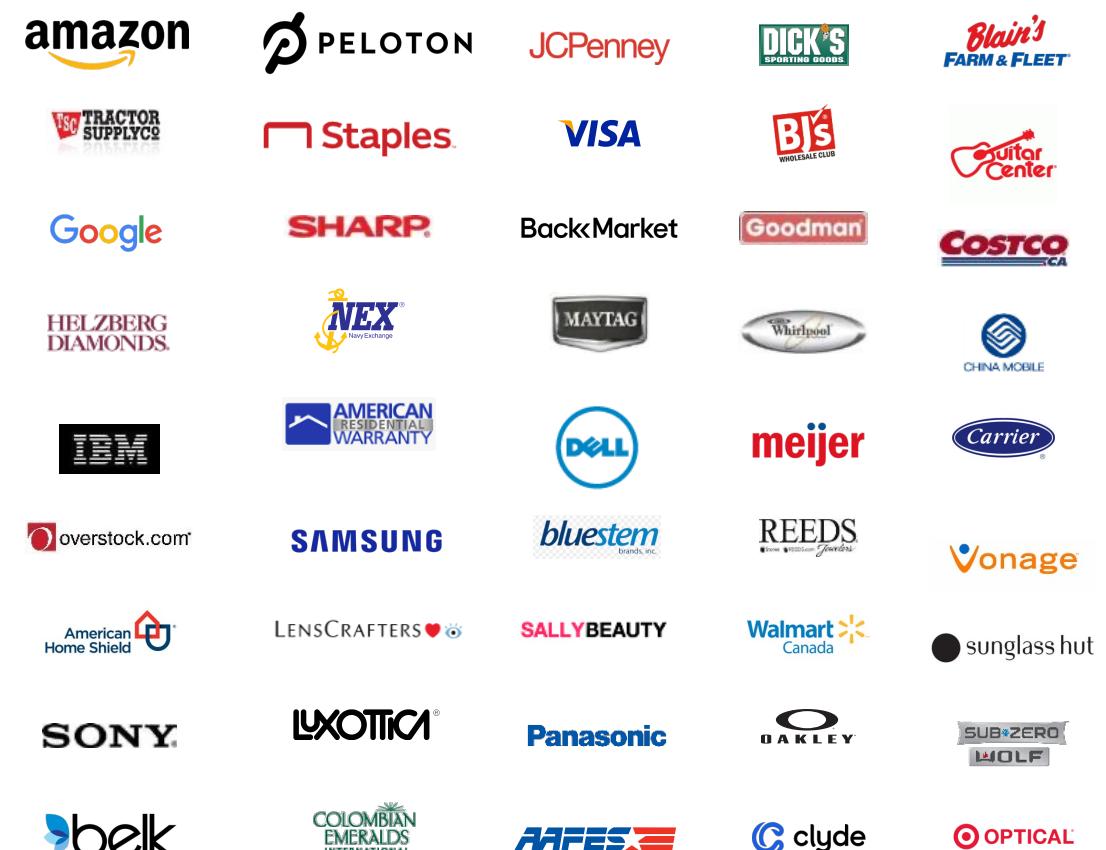
**asurion**

# We have built long-term partnerships

## Mobile | Telco | Cable



## Retail | OEM



# Why do we need a robust Workload Orchestration solution?

## A Data Driven Future

Workload Orchestration is at the heart of a Data Platform Founded on Data.

## Gravity of the Problem

1000s of Job runs that process 100s of Billions of rows per day with 1,000s of complex dependencies.



# What's our Solution?

## Orca

Its Asurion's flavor of Apache Airflow that's at the heart of our Data Platform.

With unparalleled reliability, accuracy, stability, and resiliency, **Orca** is the linchpin of our data-driven future—a future that embodies our vision.

**# DAGs**

1000s

**# Job Runs**

Millions

**Availability**

99.5%



# How was the solution approached? Principles

## Founding Principles

Separation of Concerns

Metadata First

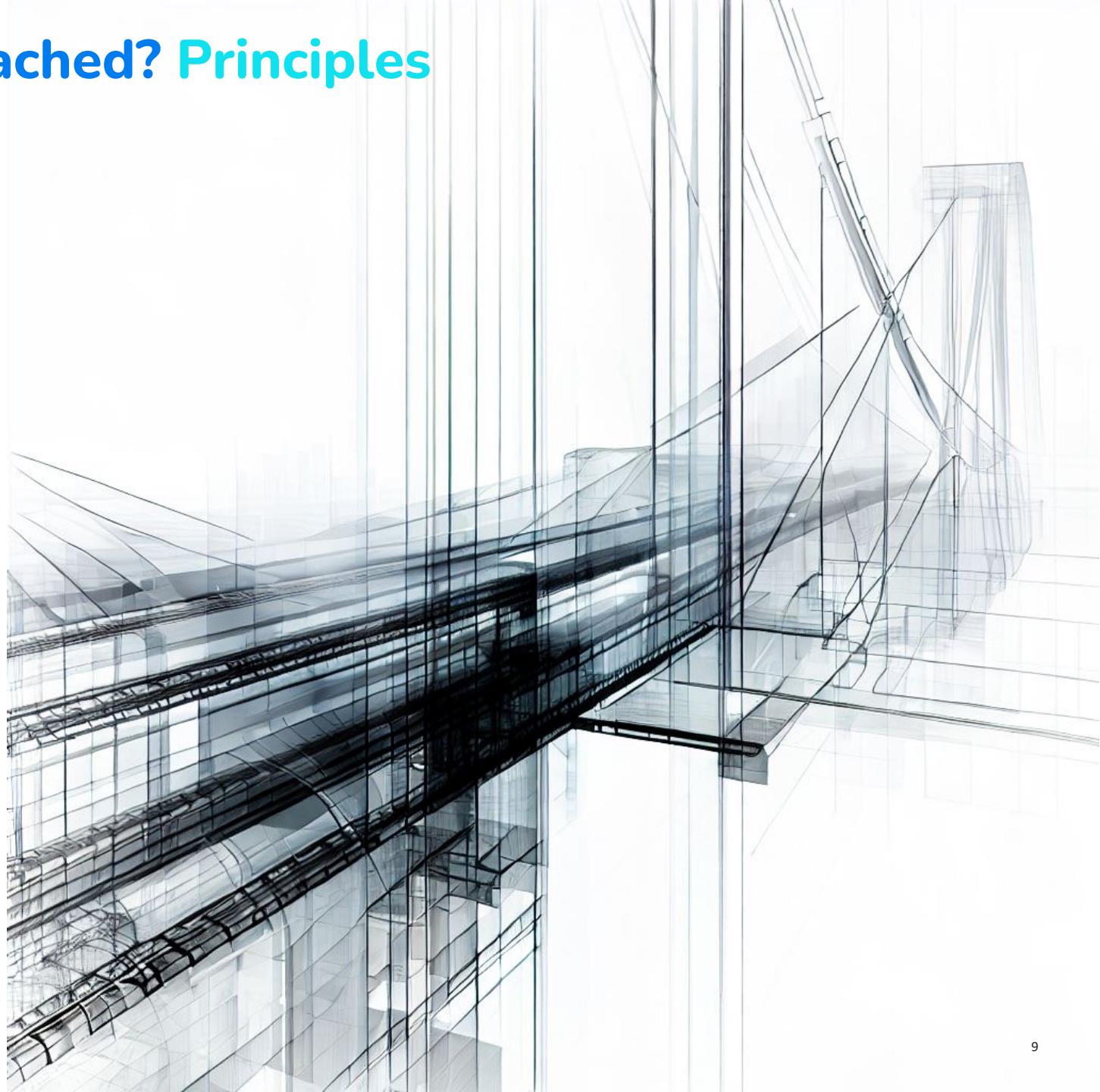
## Evolved Principles

Universal Operator

Shared nothing Infrastructure

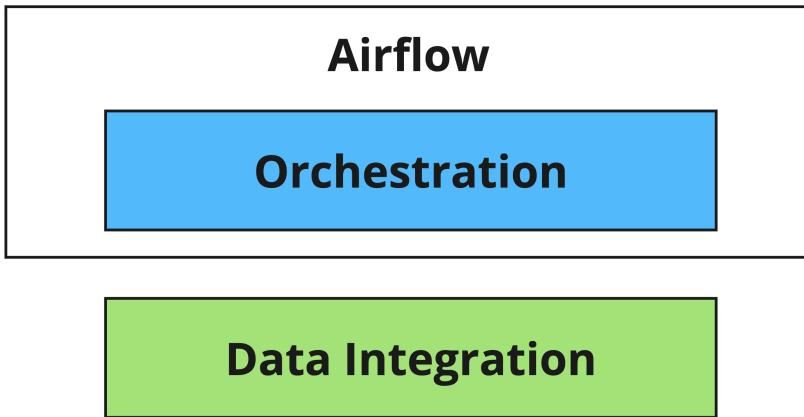
Metadata Rich

Automation

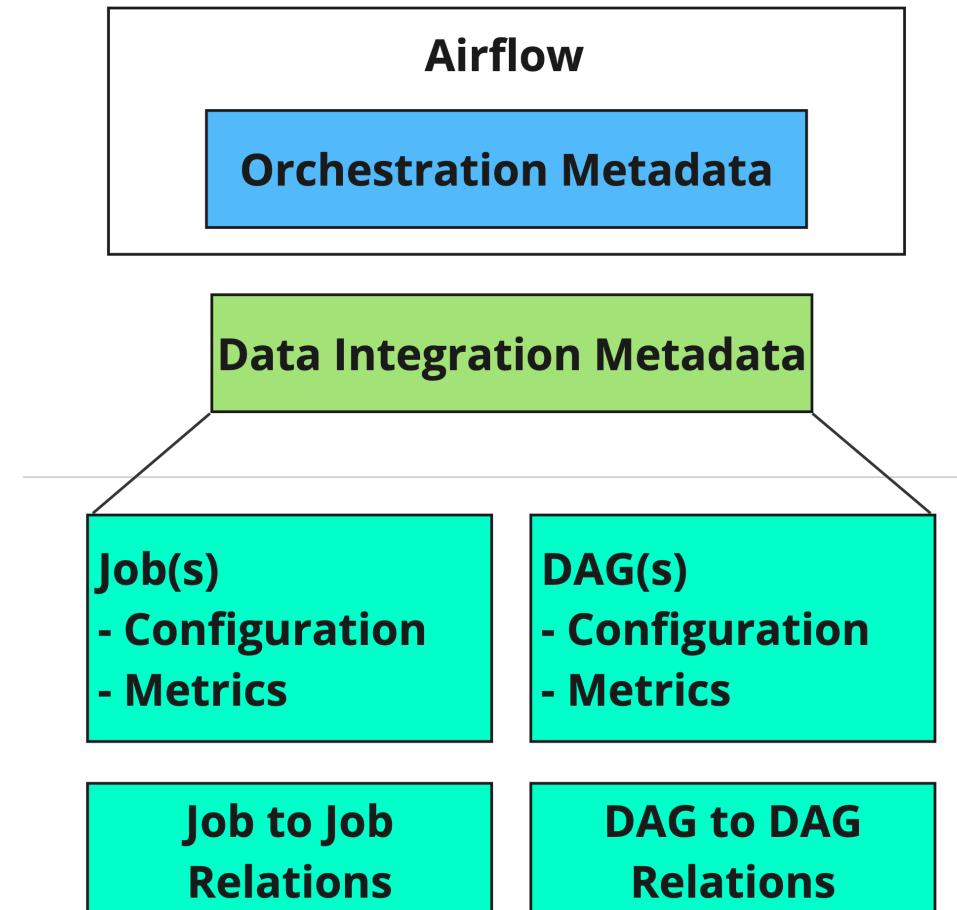


# How was the solution approached? Founding Principles

## Separation of Concerns



## Metadata First



# How was the solution approached? Experiment

## Stress Testing over 250 Days

# DAGs

1000

Peak Concurrency

700

# Job Runs

5.2M

Job Runs per Day

22K

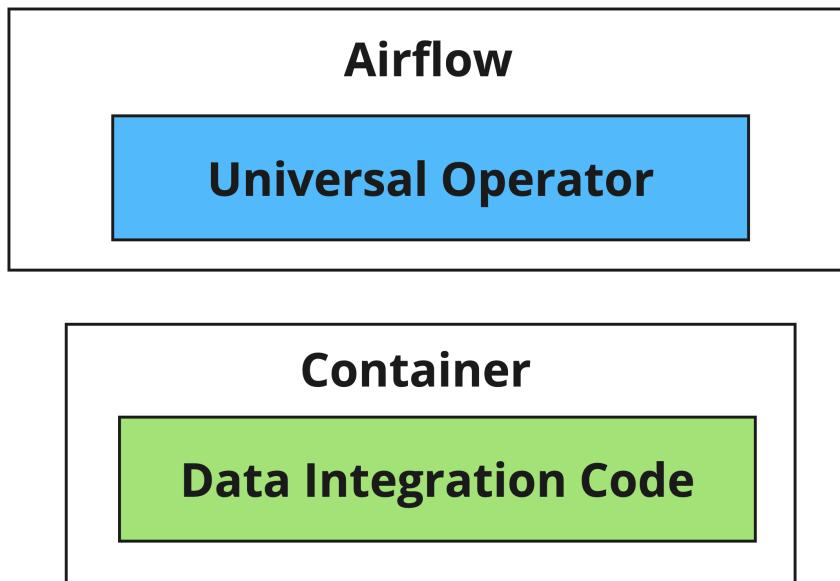
## Results

Sizing of Worker nodes/concurrency  
Auto scaling metrics

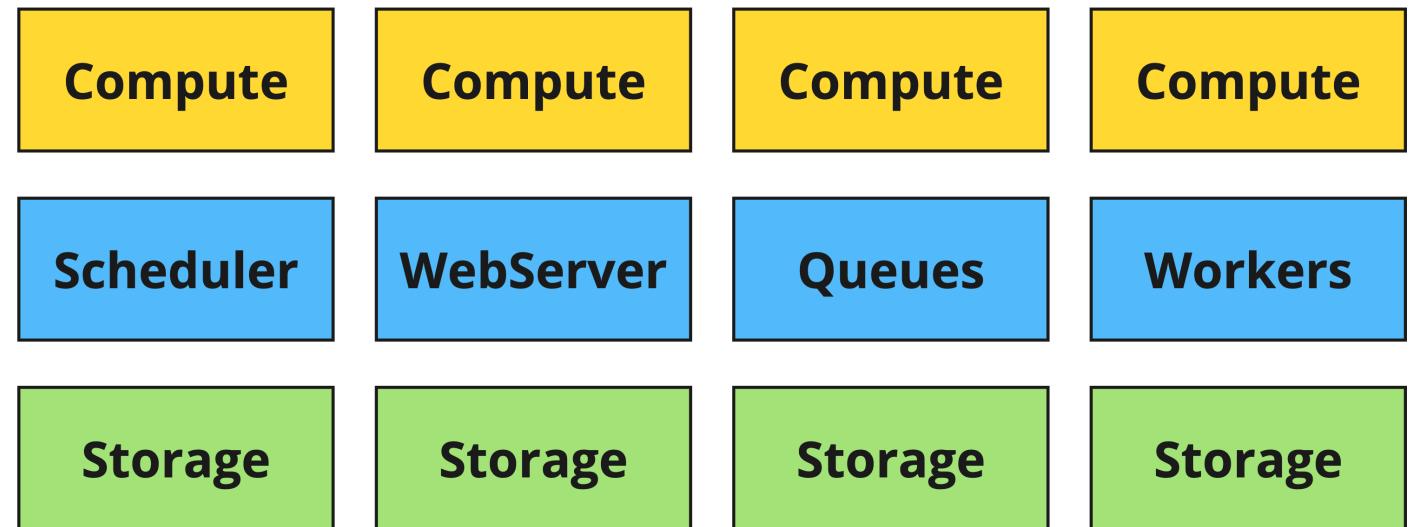


# How was the solution approached? Evolved Principles

## Single Operator



## Shared Nothing Infrastructure

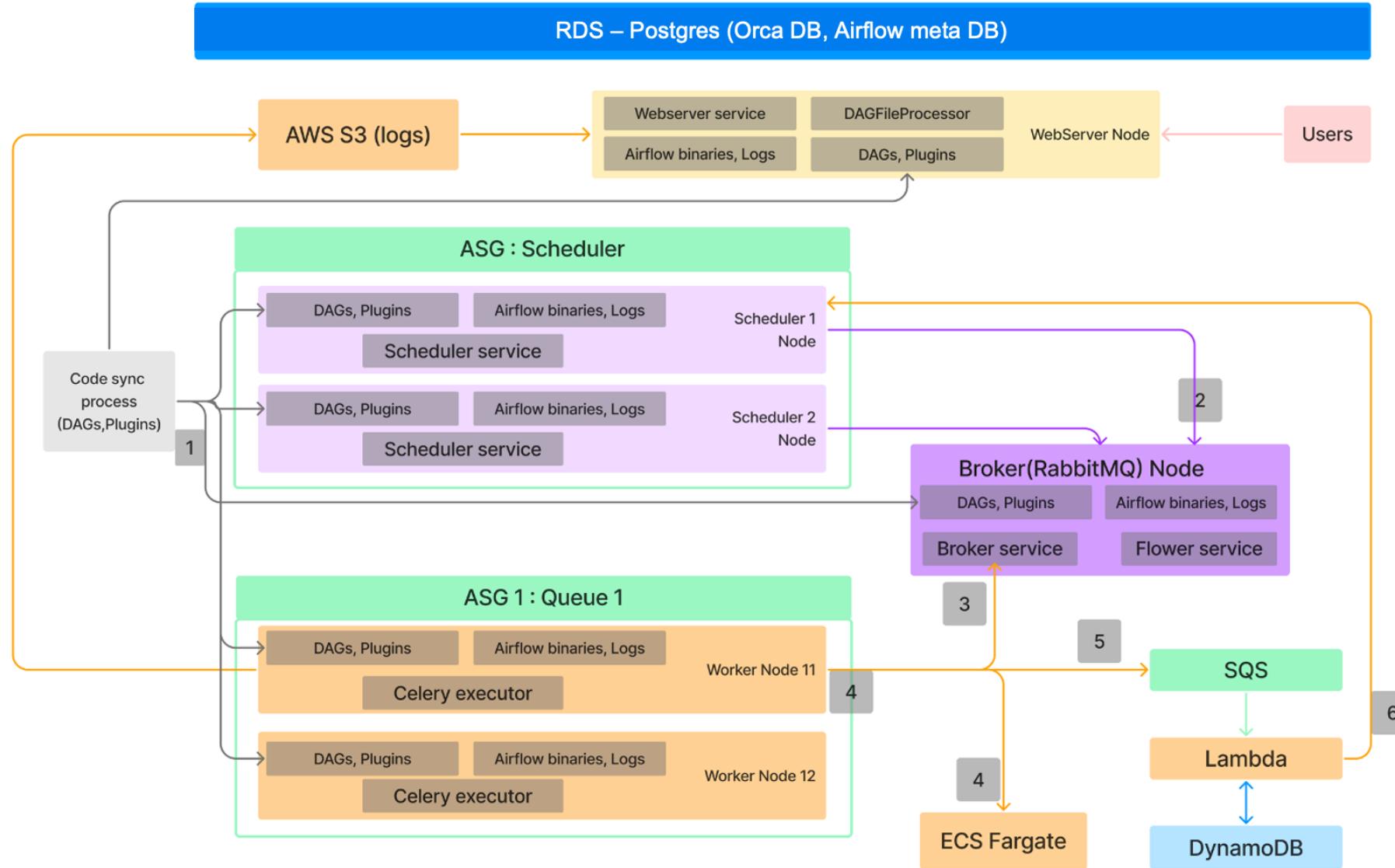
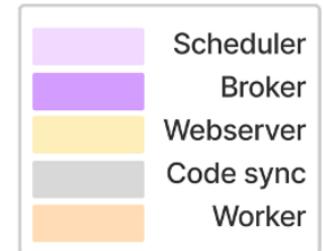


**“Simple is Powerful”**

# How was the solution approached? Architecture

Orca 3.0

RDS – Postgres (Orca DB, Airflow meta DB)



# Resiliency?

Metadata Rich

Comprehensive Metadata

Real-time Metadata Events

Automation

Code Generation

Deployments

Monitoring and Recovery

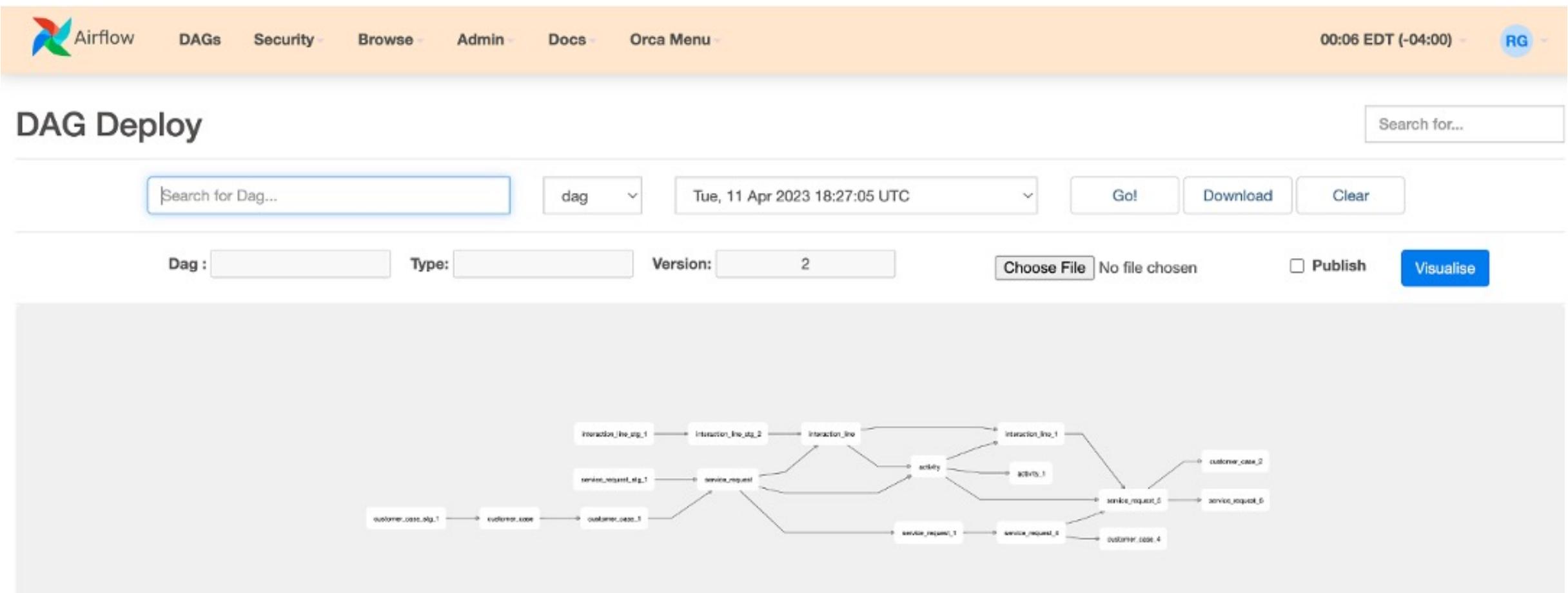
Incident Management



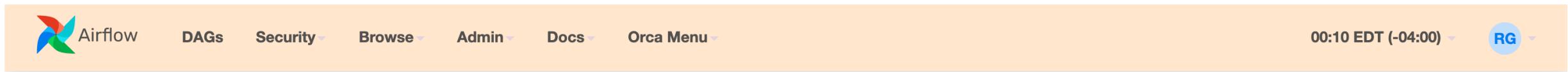
# User Accelerators

- 1- Metadata Validations
- 2- Metadata Registration

- 3- Intelligent Orchestration code embeds
- 4- DAG File creation
- 5- Event Generation



# User Accelerators



## DAG Edit

Range of Utilities, Command Center Operations to use while operating Airflow or Orca Menu.

[Edit Load Pointers](#)[Metadata Profile](#)[Disable Tasks](#)[Disable Pods](#)[Edit Metadata](#)[Disable Dag Notification](#)[Update Parameters](#)[Download Dag Image](#)[Delete Dag](#)[Sync Dag Metadata](#)[Create Dag file](#)

# User Accelerators



## Dag Overview

Search for Dag...

Go!

Dag Version
<i>Latest Dag version published date</i>
<i>author</i>
<i>published_by</i>

Dag Data Pointer
<i>Data loaded up till</i>

Dag Flow	
<u>Upstream</u>	<u>Downstream</u>
<i>upstream dags</i>	<i>downstream dags</i>

# User Accelerators



Airflow

DAGs

Security ▾

Browse ▾

Admin ▾

Docs ▾

Orca Menu ▾

00:13 EDT (-04:00) ▾

RG ▾

## Queue Information

updated: 2023-04-18 04:11:50 UTC

Cluster	Running	Waiting
Queue1	4	0
Queue2	0	0
Queue3	0	0
Queue4	0	0
Queue5	0	0
Queue7	0	0
Queue8	1	0
Queue9	0	0

# The Team



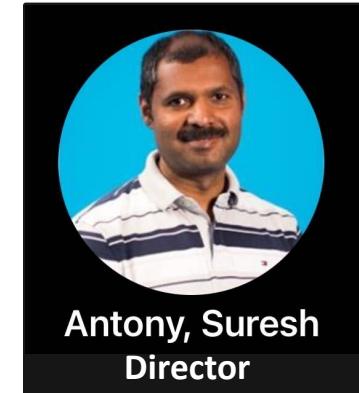
**Raparthi, Karthik**  
Software Engineer 4



**Grange, Arpita**  
Principal Project Manager



**Butler, David Aaron**  
Software Engineer 2



**Antony, Suresh**  
Director



**Javvaji, Srinivas**  
Principal DevOps Engineer



**Jeremy Dykes**  
DevOps Engineer 4



**Sanjoy Das**  
Snr Software Engineer



# Summary : Principles and Lessons Learned

**Separation of Concerns**

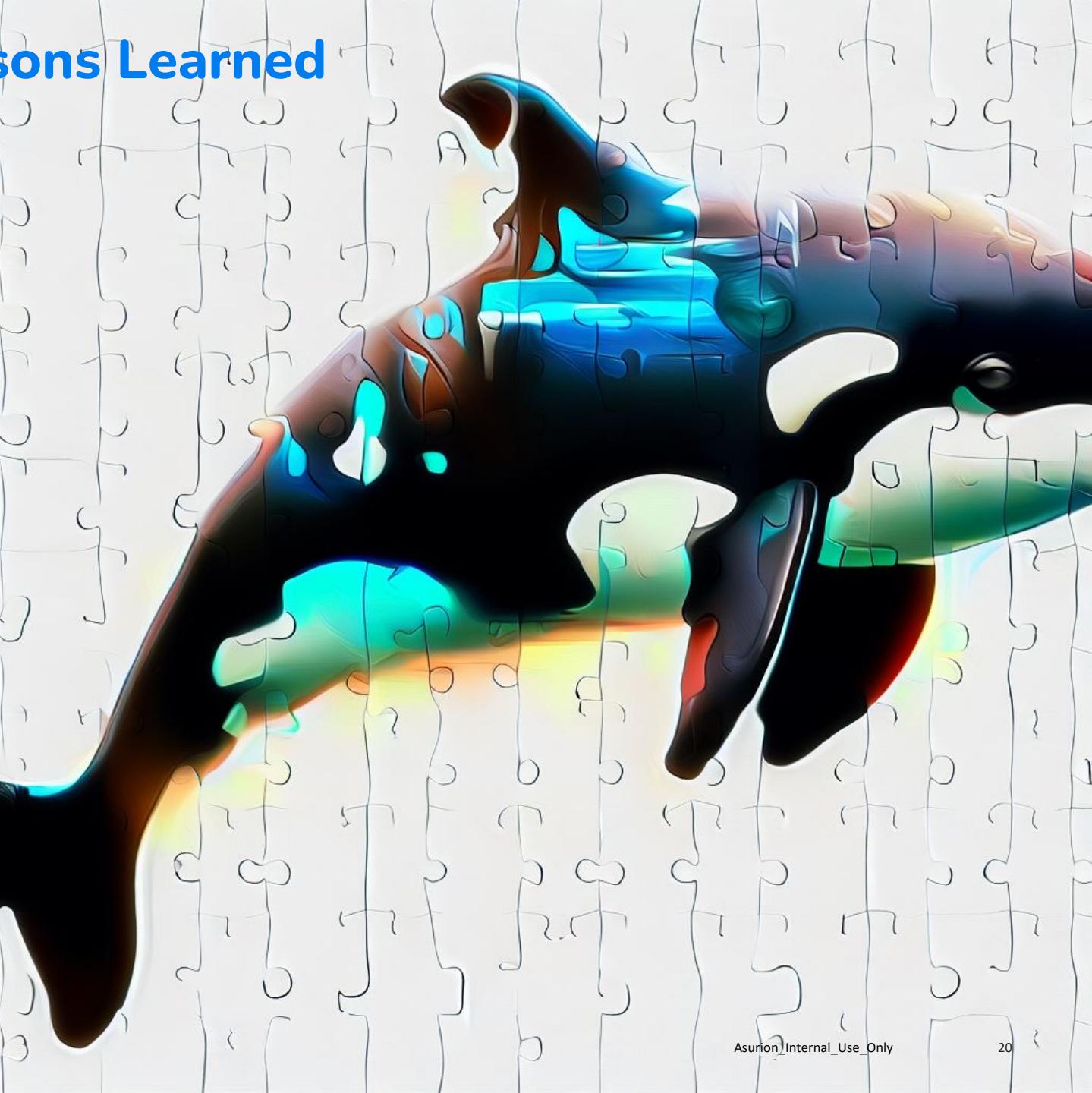
**Metadata First**

**Universal Operator**

**Shared Nothing Infrastructure**

**Metadata Rich**

**Automation**



# Questions?

[Rajesh.Gundugollu@Asurion.com](mailto:Rajesh.Gundugollu@Asurion.com)  
[Karthik.Raparthi@Asurion.com](mailto:Karthik.Raparthi@Asurion.com)