



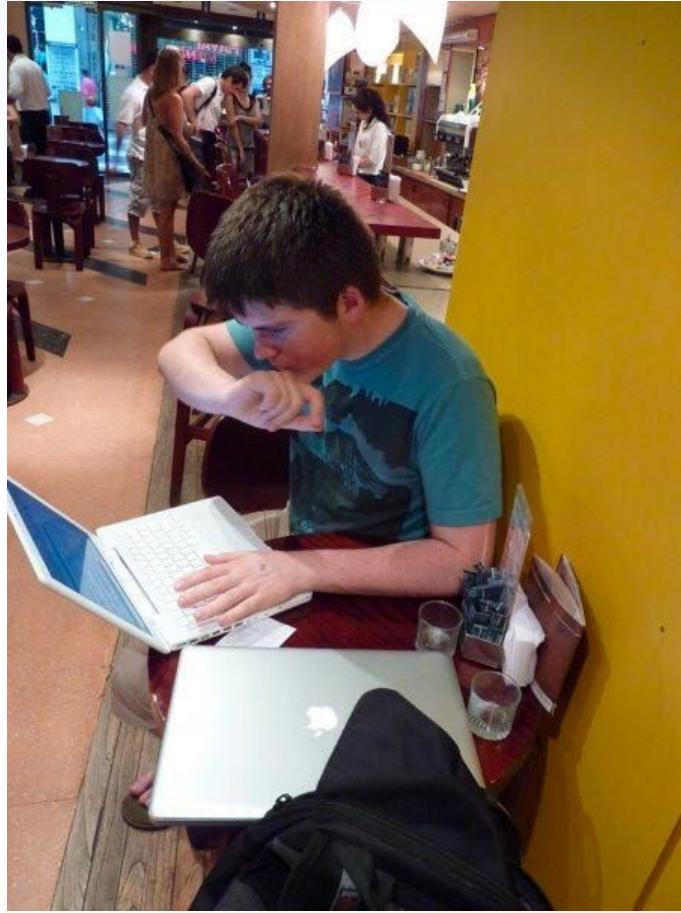
Do you trust  
Airflow with your  
money? We do\*!

3.0

Sabrina Liu

Senior Software Engineer, Stripe

**In 2010, Stripe was a  
hole in the wall**



John Collison, cofounder of Stripe, in 2010

# The backbone for global commerce

Stripe makes moving money as easy and programmable as moving data. Our teams are based in offices around the world and we process hundreds of billions of dollars each year for ambitious businesses of all sizes.

**500M+**

API requests per day, peaking at 13,000 requests a second.

**99.999%**

historical uptime for [Stripe services](#).

**90%**

of U.S. adults have bought from businesses using Stripe.

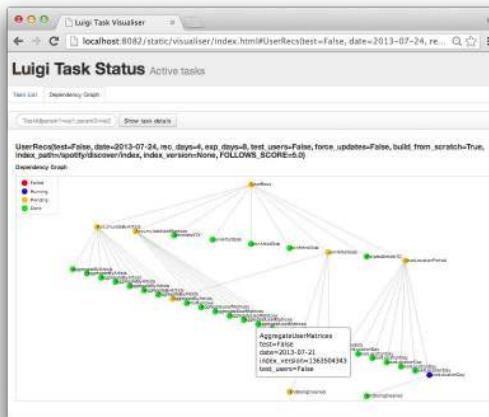
**135+**

currencies and payment methods supported.

# Mid-2010s

# 2017 - present

What are data pipelines??

A screenshot of the Apache Airflow web interface showing the "DAGs" page. It displays a table of DAGs with columns for ID, DAG, Schedule, and Owner. The table includes entries for "example\_bash\_operator", "example\_branch\_dop\_operator\_v3", "example\_branch\_operator", "example\_xcom", and "latest\_only".

ID	DAG	Schedule	Owner
On	example_bash_operator	0 0 * * *	airflow
On	example_branch_dop_operator_v3	* /1 * * *	airflow
On	example_branch_operator	@daily	airflow
On	example_xcom	@once	airflow
On	latest_only	4:00:00	Airflow

# Airflow at Stripe in 2025

**15,000**

unique Task classes

**180,000**

unique Tasks instantiated

**10 million**

daily task instance executions

# 2 Airflow clusters

# **Why Airflow 1, 2, or 3 out of the box don't solve our problems**

We have an **UberDAG** (not you, Dara)

I want to reuse code across the **monorepo** like a  
good engineer

**Just run** my workload

Let my task live for **3 days**

# What we've built

## Airflow but easier

Low-code + no code  
orchestration on top of  
Airflow

## Local testing

User Scoped Mode (USM)

## Multitenancy

Project-level isolation and  
reliability on a single Airflow  
cluster

# Airflow but easier

The screenshot shows the Pipeline Studio interface with two main sections: "Starred Projects" and "Team Projects". The "Starred Projects" section is collapsed. The "Team Projects" section is expanded, showing a table of pipelines. The table has columns: NAME, STATUS, and DESCRIPTION. The pipelines listed are:

NAME	STATUS	DESCRIPTION
demo-tutorial-project	active	This is a demo
demo-pipeline-studio	active	A demo
data-transformation-metrics	active	Operational and team metric
my-new-pipeline-dmelchor-v2	active	A new pipeline
recent-enrichment-count-test	draft	Test pipeline draft
ncp-data-transformation	active	Automatically migrated NCP
data-transformation-airflow-v2	active	All tasks that will only run in
data-transformation-canaries	active	Data Transformation pipeline
recent-enrichment-count-test	active	Test pipeline

At the bottom left, there is a "View: 10" dropdown.

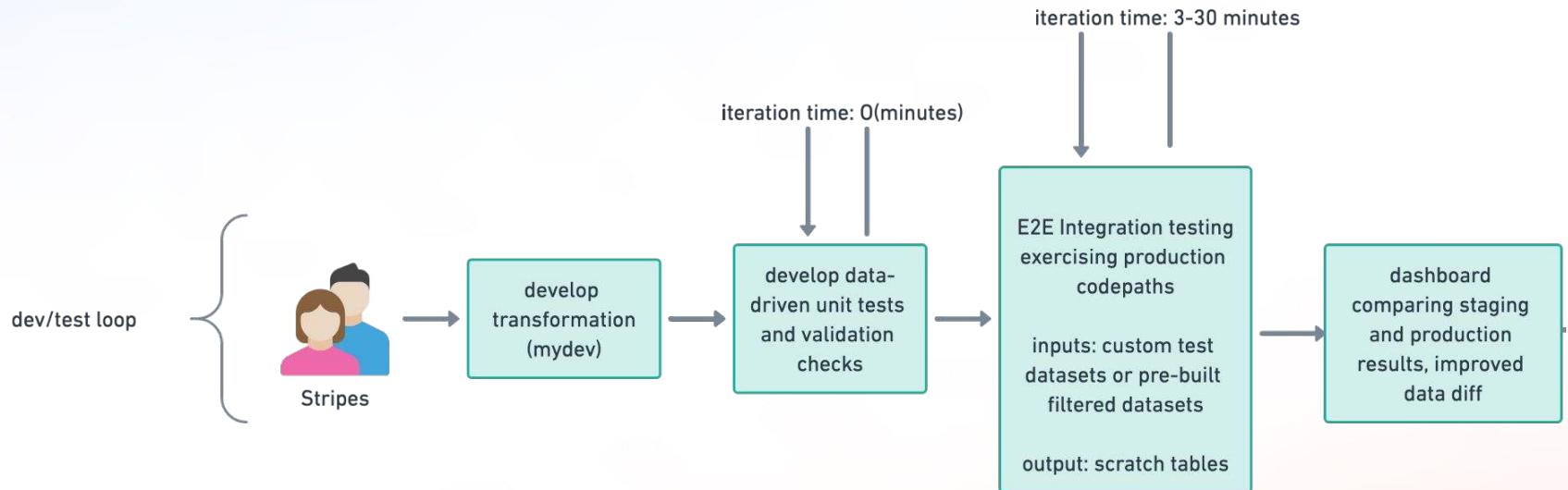
## Simple Pipelines:

yaml-based task  
authoring using  
SparkSQL

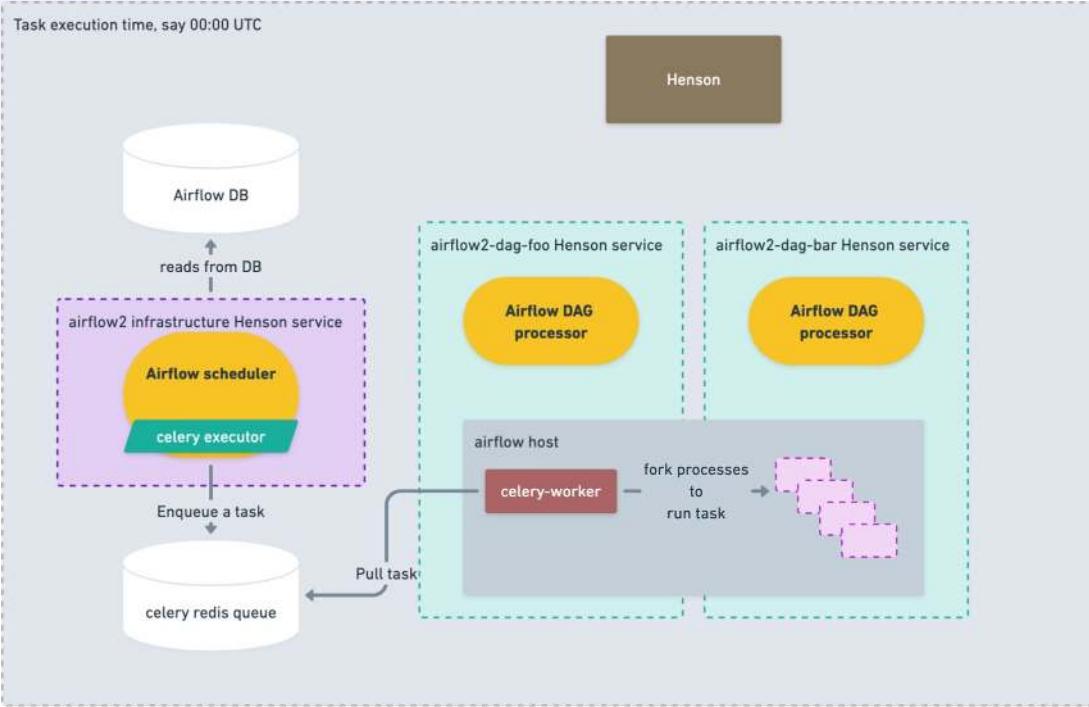
## Pipeline Studio:

no code task  
authoring using SQL

# User Scope Mode



Key: production inputs, non-production outputs



## Improvements

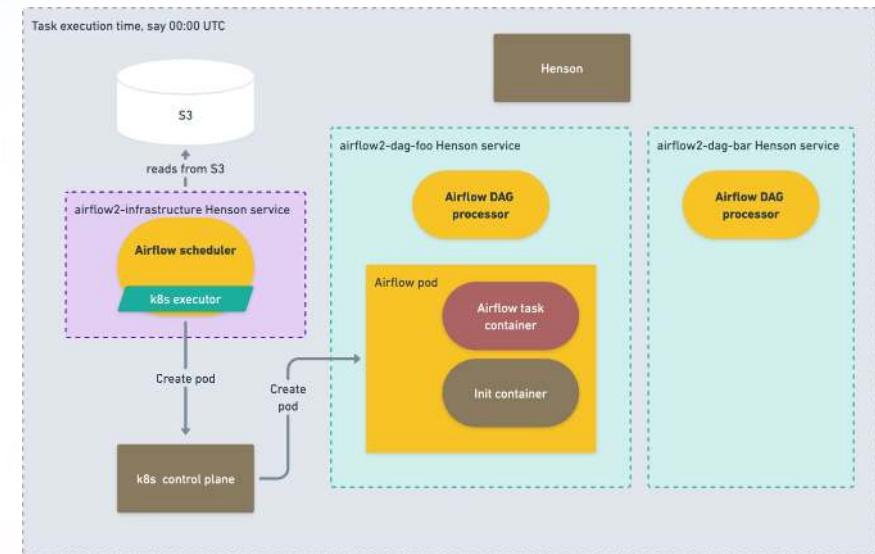
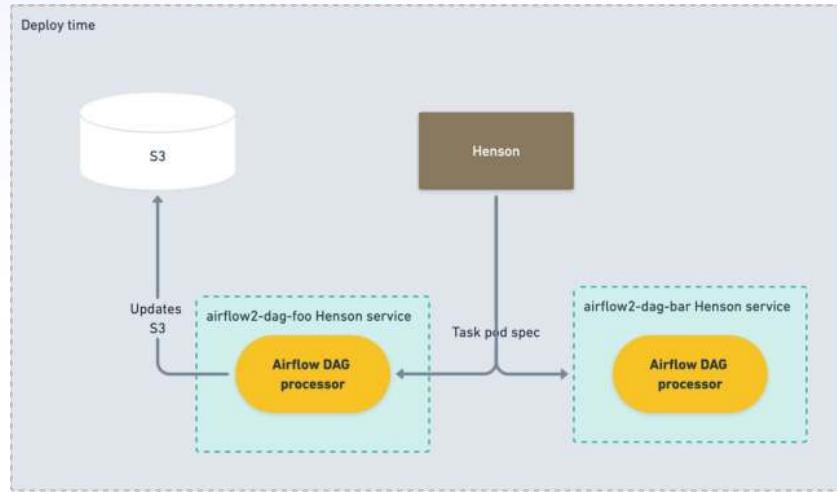
- 1 project : 1 service : 1 dag processor : 1 owning team

## Weaknesses

- Hard to scale deployments
- Manual Celery shard management
- Shared workload identity

# Step 1 to multitenancy with EC2 and Celery

# Multitenancy with KubernetesExecutor



Independent execution and configuration

# Customizations with the KubernetesExecutor

- **[scalability]** Multi-shard support
  - One executor per Kubernetes shard
  - We add a `cluster_context` attribute to the `kube_client`
  - Dedicated Kubernetes shard for Airflow workloads
- **[compliance]** SOX controls for workloads that touch financial data
  - Separate Kubernetes namespaces
  - Lifecycle management for long-running, stateful workloads
- **[efficiency]** Semi-managed compute
  - API for requesting CPU and memory
  - Automatic bin-packing for short-lived tasks

... and much more!

**... but we haven't  
won yet!**



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