NYC Citi Bike

Improving our “Customer” Experience

Analytics Application Engineering

MSDS434 - Christine Byron

Agenda

1. Overview
2. Project Charter
3. Timeline & 10 Week Roadmap
4. Methodology
5. Environment & Development
6. Data & Analytics
7. Monitoring & Performance

A fun and affordable way to get around town

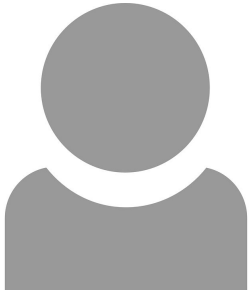
With Annual Memberships & Day Passes

Citi Bike is New York City's bike share system that launched in May 2013. It offers users a transportation network that is both healthy and good for the environment.

Citi Bike consists of a fleet of specially designed, sturdy and durable bikes that are locked into a network of docking stations throughout the city. The bikes can be unlocked from one station and returned to any other station in the system. People use bike share to commute to work or school, run errands, get to appointments or social engagements, and more.

Citi Bike is available for use 24 hours/day, 7 days/week, 365 days/year, and riders have access to thousands of bikes at hundreds of stations across Manhattan, Brooklyn, Queens and Jersey City. Riders can select either from short-term or annual membership pass options.

Overview of Short Term Pass Riders



Total Number of Rides

32,800

Total Number of Stations

607

Average Ride time

22.9 Minutes

Average Distance

1.33 Miles

Our short term pass riders are defined as our Customer user type. Historically, they have made up around only 0.11% of our overall riders.

Today, Customers have the option of selecting from the following pricing options:

- **Single Ride:** $3 for one trip under 30 minutes. If a bike is kept out for 30 minutes or longer, usage fees apply.
- **Day Pass:** $12 for a 24-hour period. The first 30 minutes of each ride are included in the price of the pass. Customers can take as many rides as they want while their pass is active. If a bike is kept out for more than 30 minutes at a time, there will be a charge of $4 per additional 15 minutes.
- **3-Day Pass:** $24 for a 72-hour period. The first 30 minutes of each ride are included in the price of the pass, and riders can take as many rides as they want while their pass is active. An extra $4 will be charged per additional 15 minutes after 30 minutes

* Metrics identified using the NYC Citi Bike Trips public dataset hosted in Google BigQuery

Project Charter

Innovating to Customer Retention

Problem Statement

As part of the organizational commitment towards expanding access to Citi Bike, a $3 single ride option across its 12,000-bike system has been announced. With the arrival of springs temperatures, the goal of this offering will be to introduce both residents and tourists to the bike share program. As this user type increases, the organization recognizes that its “Ride Insights” capabilities are missing features that would improve the overall experience. Primarily, non-members are missing purchasing guidance as they select from the single ride, one, or three day pass options.

Business Case

The Data Intelligence team is encouraged to develop an application that would leverage predictive capabilities to deliver purchasing suggestions to the Customer user type.

Goal Statement

Introducing application features geared towards our “Customer” riders will not only provide a better user experience, but also increase our collection of valuable rider data.

Constraints

- Tight project timeline
- Team capacity
- Access to necessary/various systems

Assumptions

- Project scope is finalized
- Decisions will be made in a timely manner
- Data will be available by the project start date

Issues & Risks

- Customer acquisition and retention rates may not be properly understood without a solution
- Behavioral product information may not be recognized without a solution

Team

This Project will be lead by the Strategy & Growth Data Intelligence team. The team will collaborate with product owners and EDW leads.

Timeline	Start Date	End Date
10-Week Analytics Application MVP	January 10, 2020	March 15, 2020

Project Methodology

Project Execution Phases

Strategy & Plan

Conduct a thorough analysis and definition of the requirements, proposed solution, impacts and cross-team coordination.

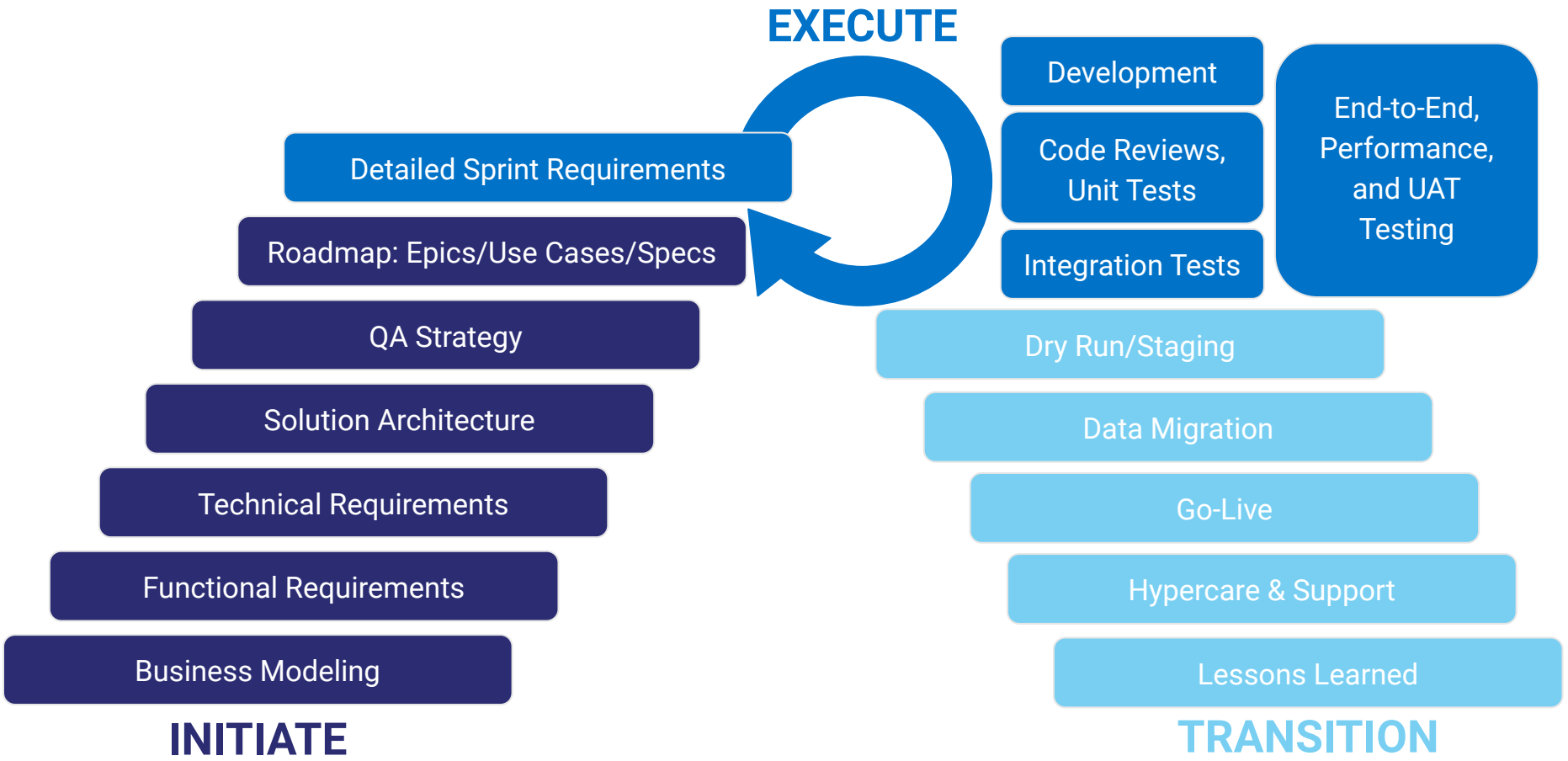
Design, Build, & Test

Perform continuous design and development of required functionality.

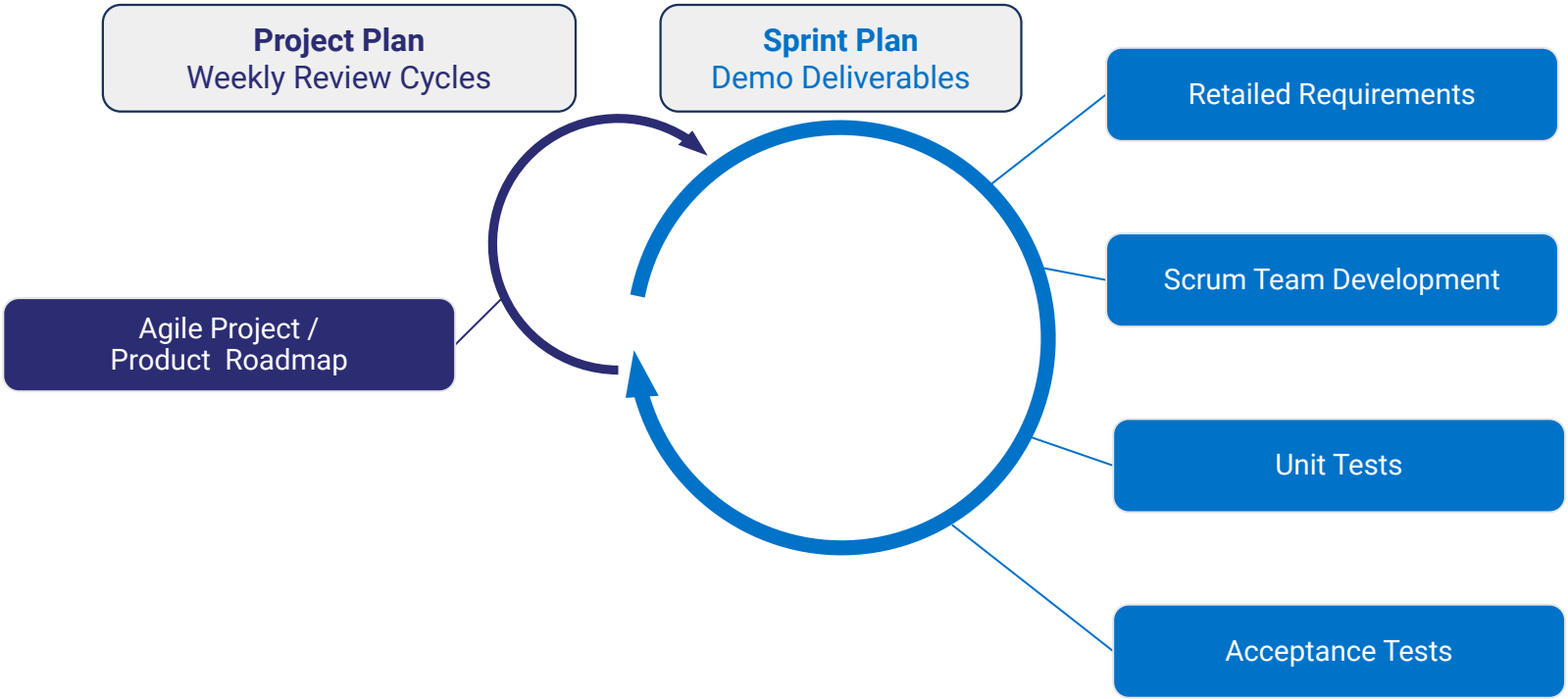
Deploy & Monitor

Deploy solution and transition project delivery activities ownership to operations

Project Execution Methodology



Agile Execution Approach



Project Plan

10 Weeks to MVP

High Level Schedule, Phasing, Release Approach

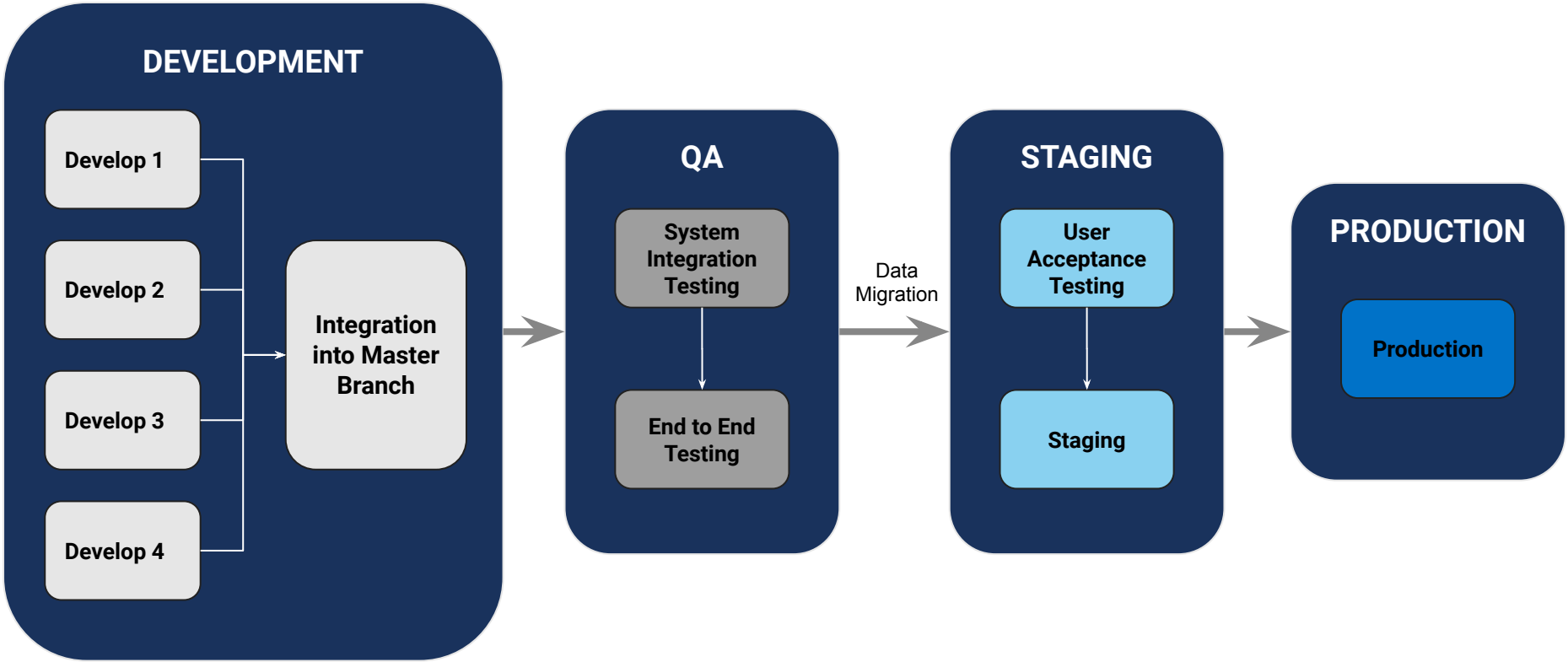
Milestone	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Week End Date:	1/12/20	1/19/20	1/26/20	2/2/20	2/9/20	2/16/20	2/23/20	3/1/20	3/8/20	3/15/20
Initiate Phase										
Scope, Processes, Requirements, & Architecture										
Execute Phase										
Build, Test, & Review										
Transition Phase										
Train, Close, & Monitor										

Weekly Demo Schedule

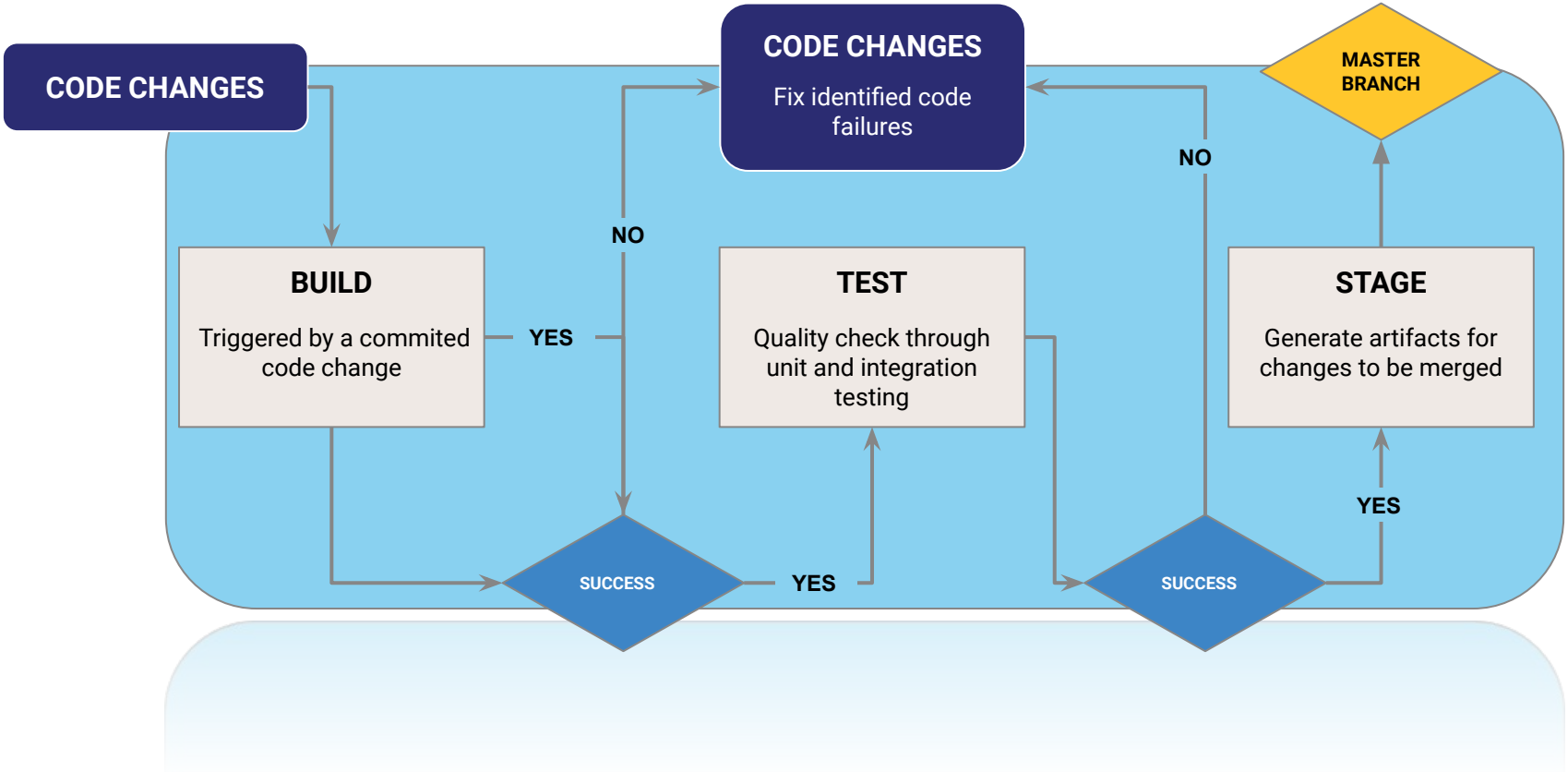
Week	Deliverable	Scope
1	Project Kick Off	Review Project Charter, Problem Statement, Scope, and Timeline
2	Environment Creation	Execute the project environment strategy
3	Continuous Deployment	Demonstrate approach for integrating code into a shared repository
4	Setup GCP	Create Google Cloud Project and produce skeleton for the application
5	Setup BigQuery	Enable BigQuery in the GCP to run queries, load data, and export data
6	Modeling & Prediction	Evaluate and transform variables with BigQuery ML
7	Setup AutoML	Produce predictions using AutoML Tables
8	Setup Stackdriver	Show performance and diagnostics monitoring capabilities
9	Integrate API & Manage Billing	Verify integration of the application with Google Cloud Platform Billing API
10	Deploy MVP	Reveal final analytics application and release to production

Environment & Development Strategy

Environment Management Approach

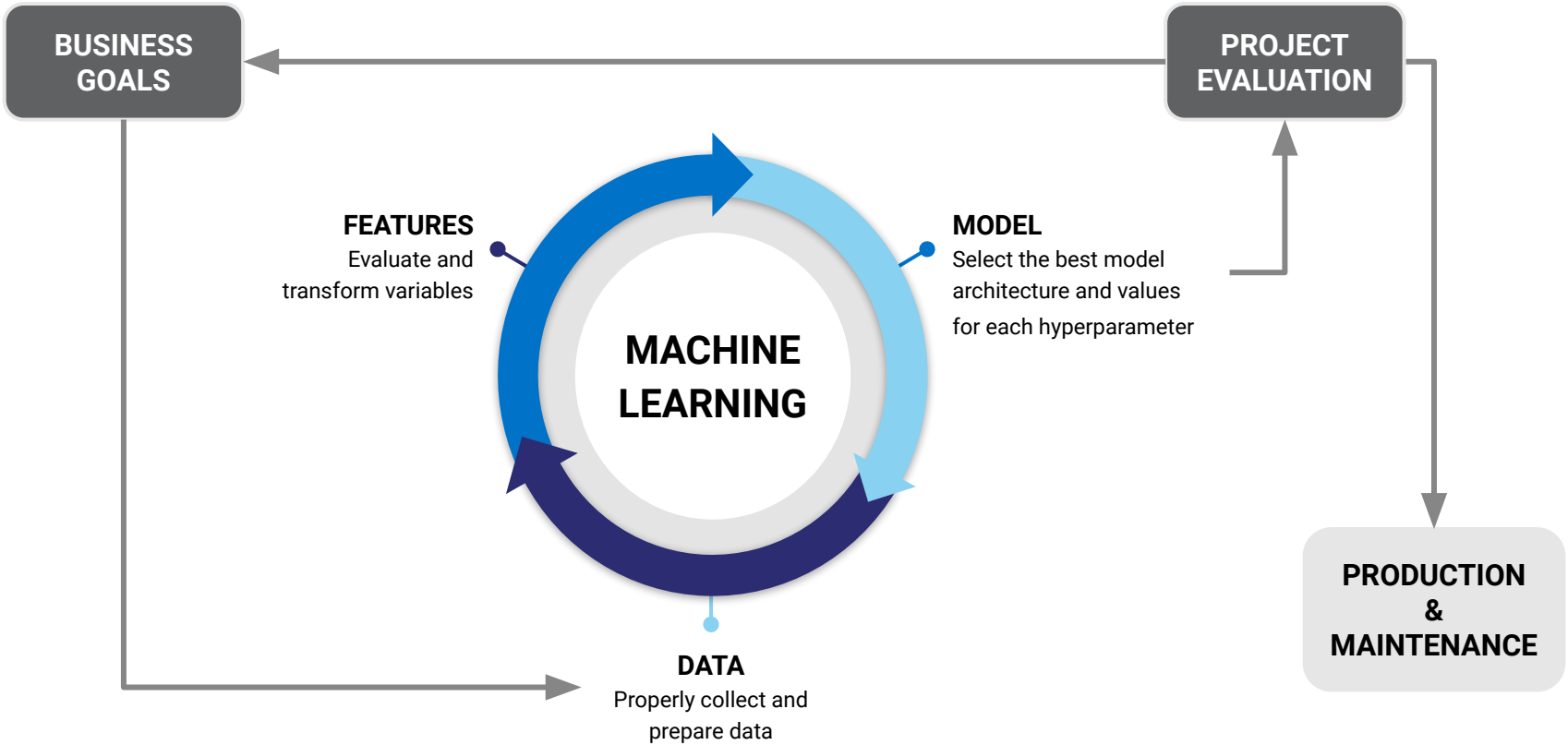


Application Development Lifecycle

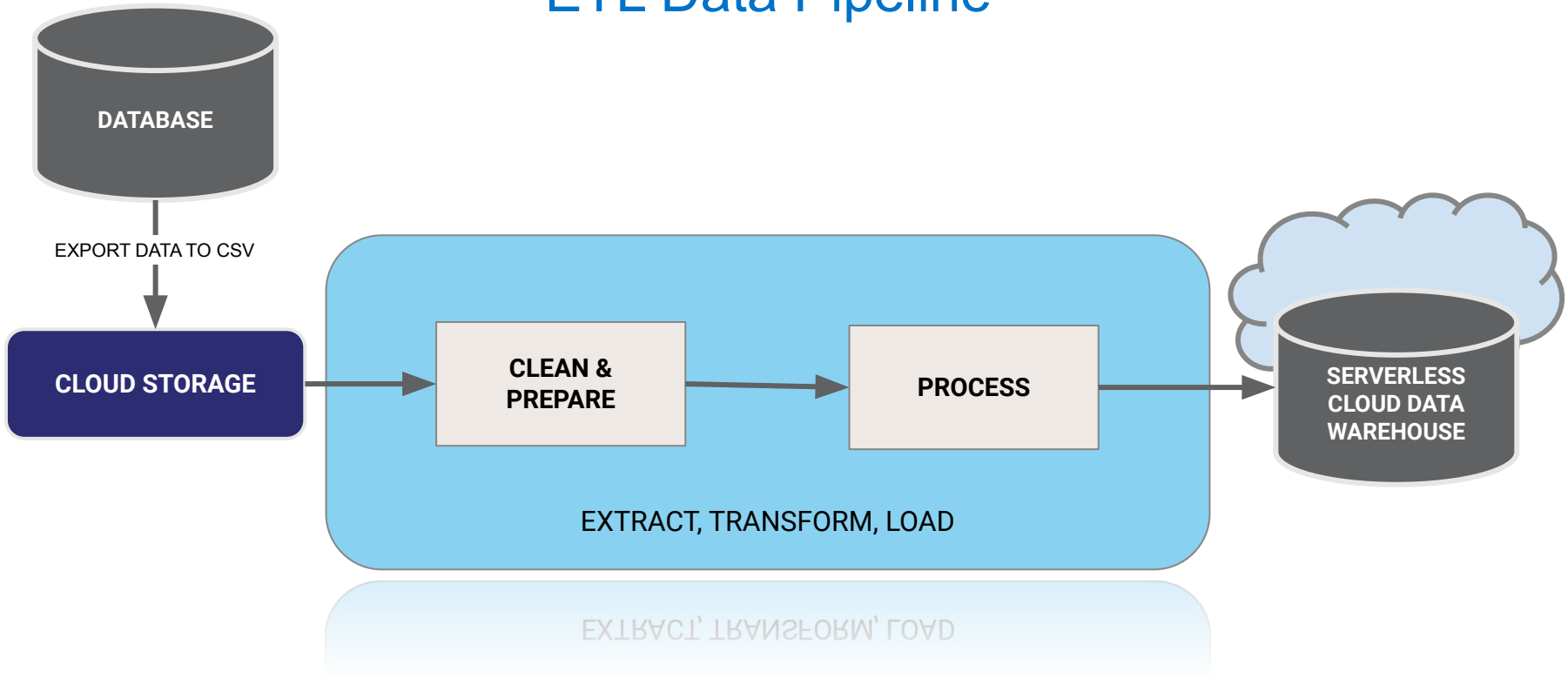


Data &
Machine Learning Strategy

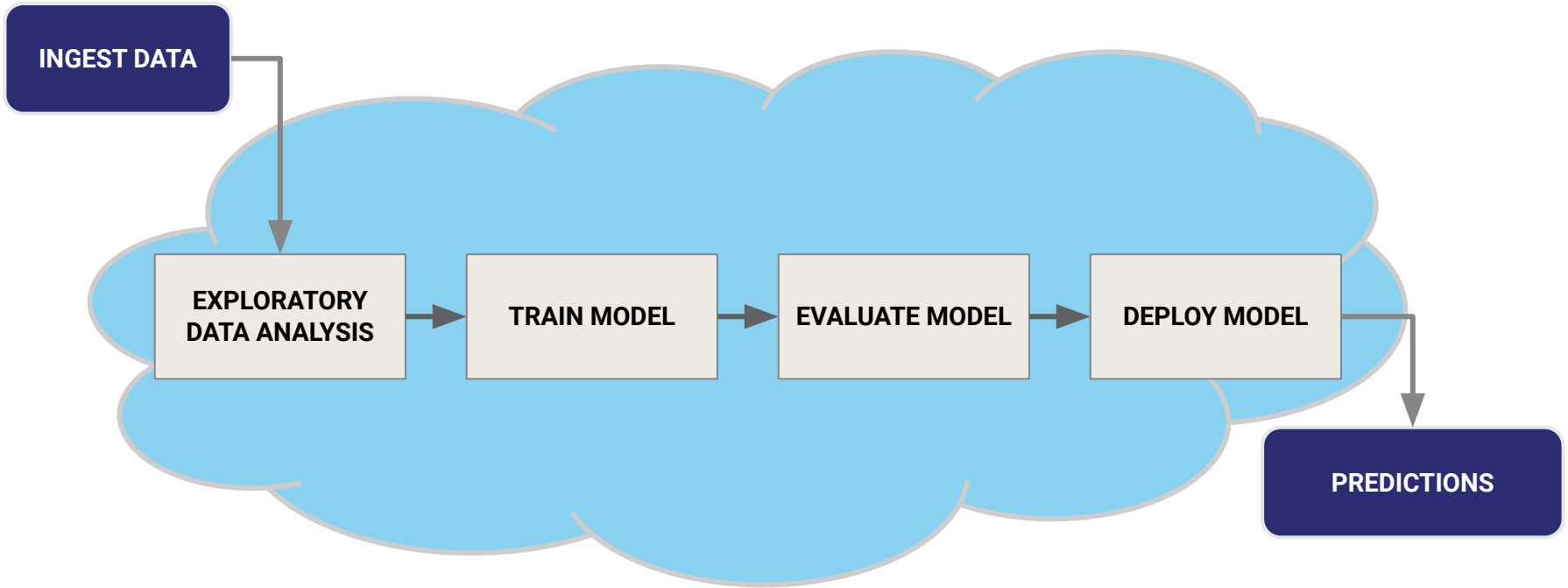
Building a Predictive Analysis Pipeline



ETL Data Pipeline

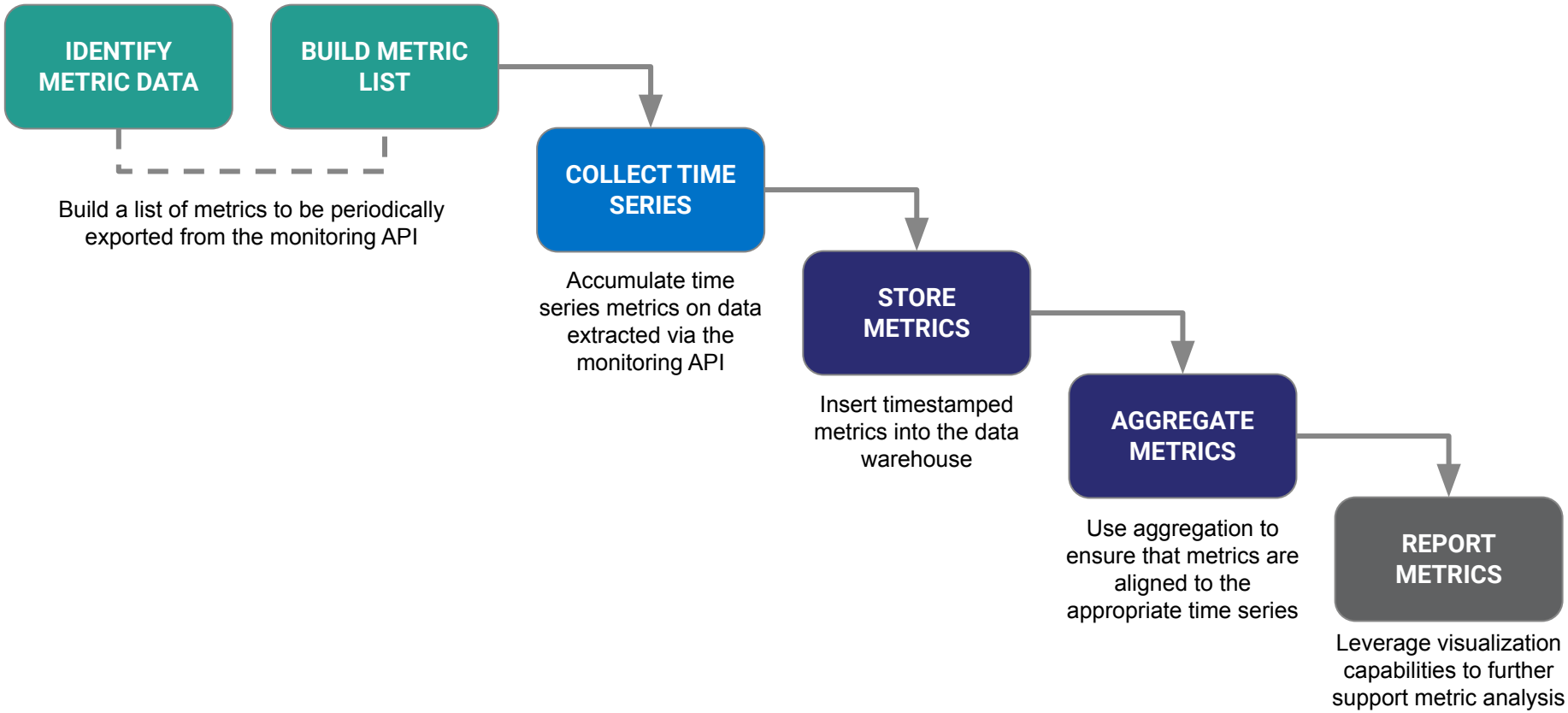


Cloud Machine Learning Approach

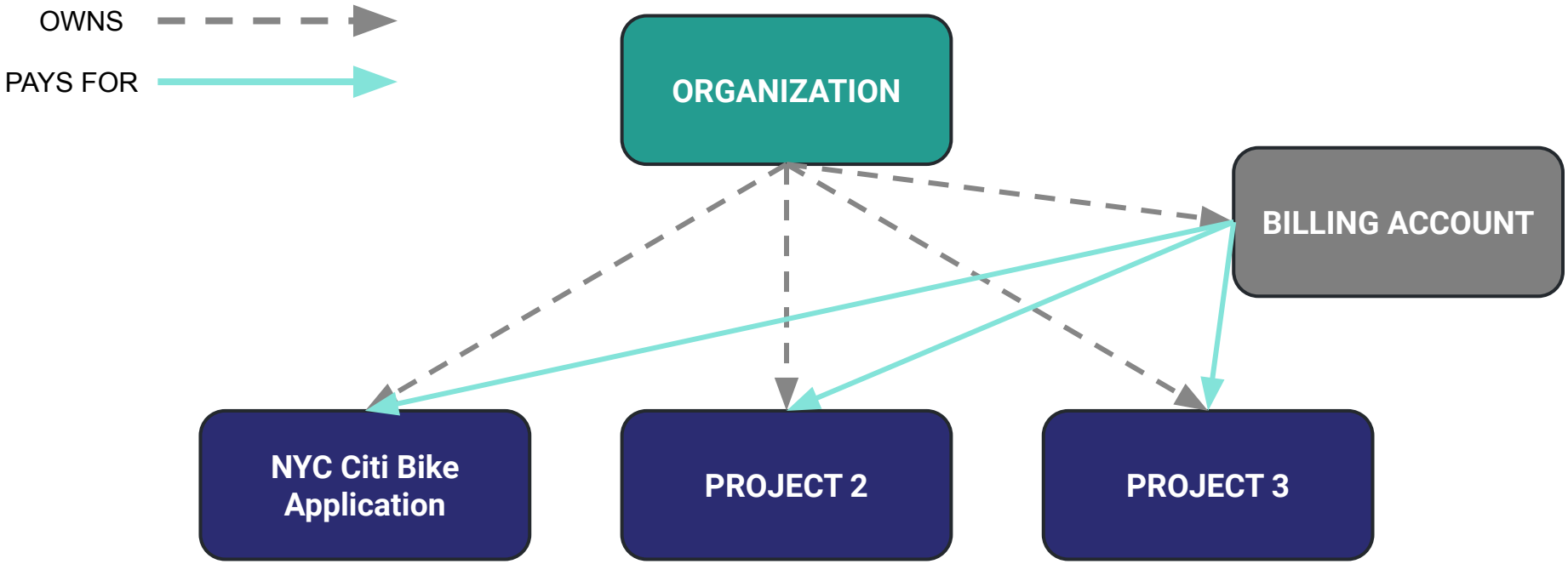


Monitoring & Performance Strategy

Cloud Monitoring Metrics Workflow

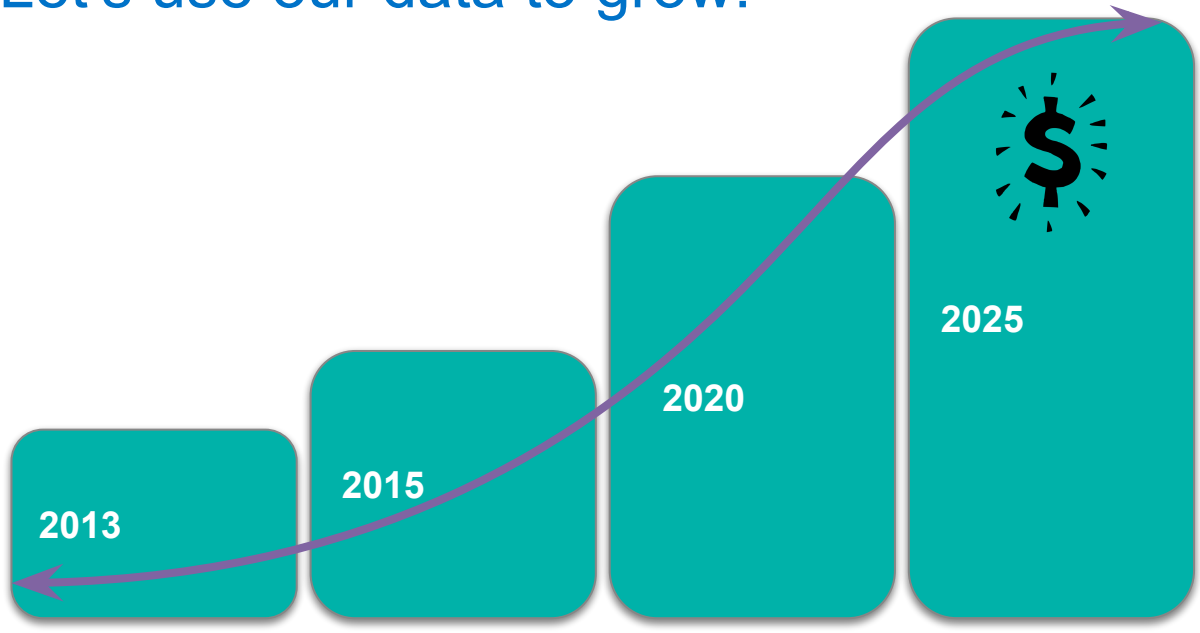


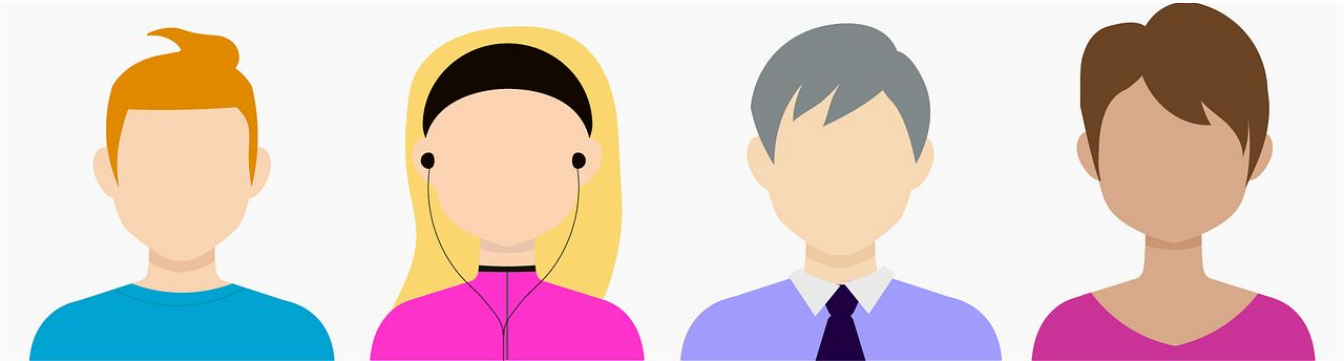
Cloud Billing Access Control



Questions?

Let’s use our data to grow!





Using improved analytics we aim to make more informed product decisions and offerings in order to improve the customer experience and increase revenue. Findings will especially be useful when answering questions around:

1. Annual Revenue
2. Customer Retention
3. Customer Acquisition


Thank You!