

BUS HUB

Serving community

Group 2

Juilee Salunkhe
Pranav Radhakrishna

Akshay Bhala

Nishit Nakhrani

Krupal Vora

Prankur Garg



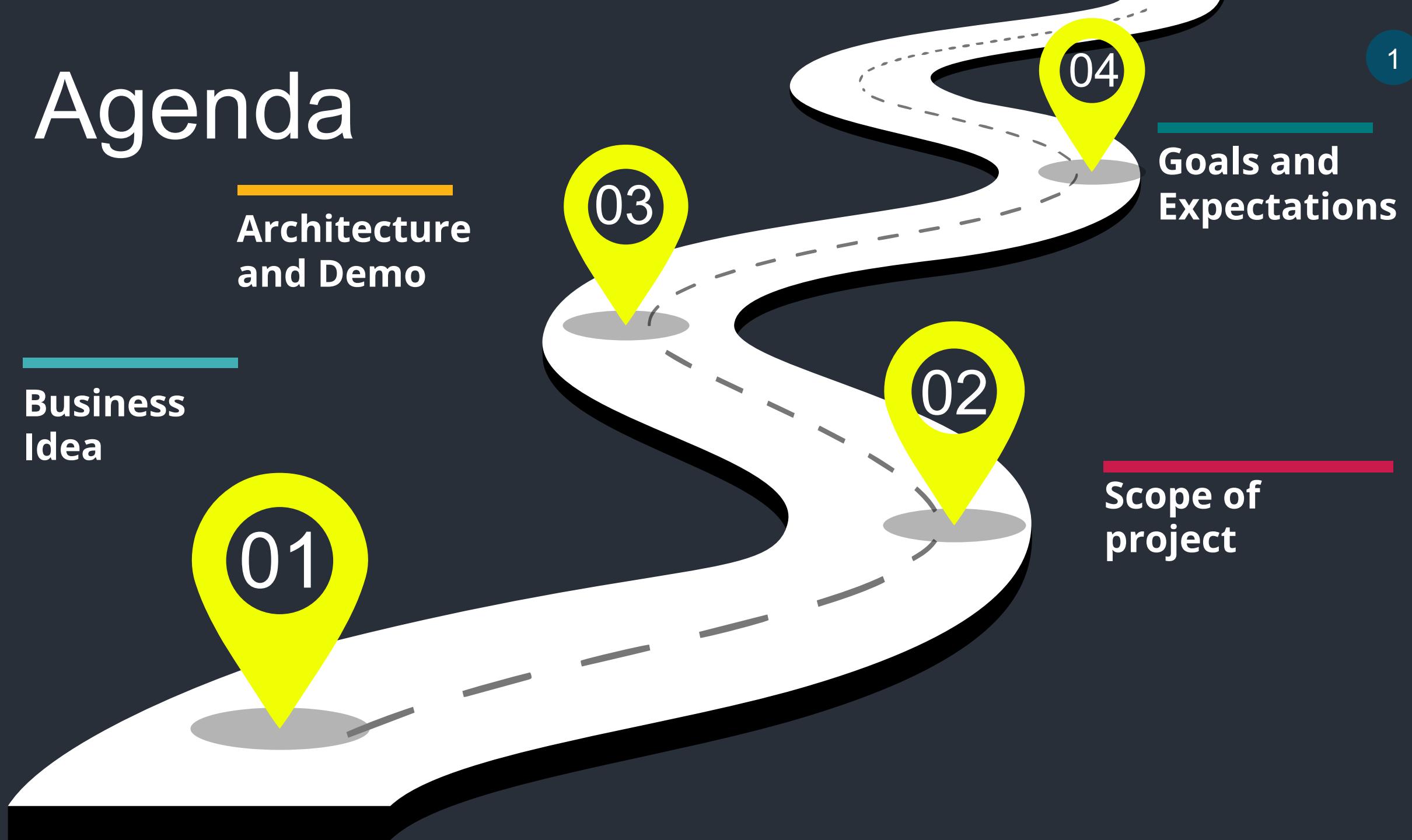
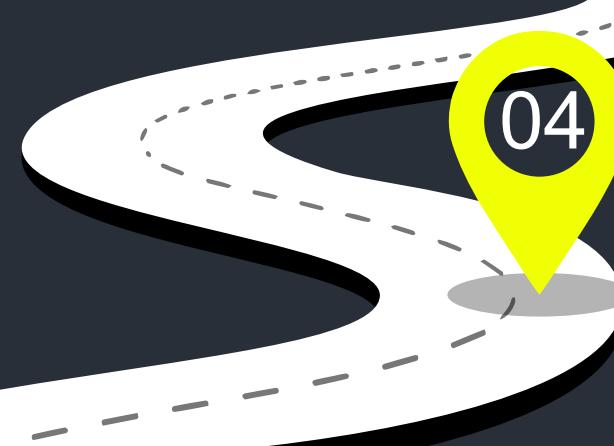
Agenda

Business
Idea

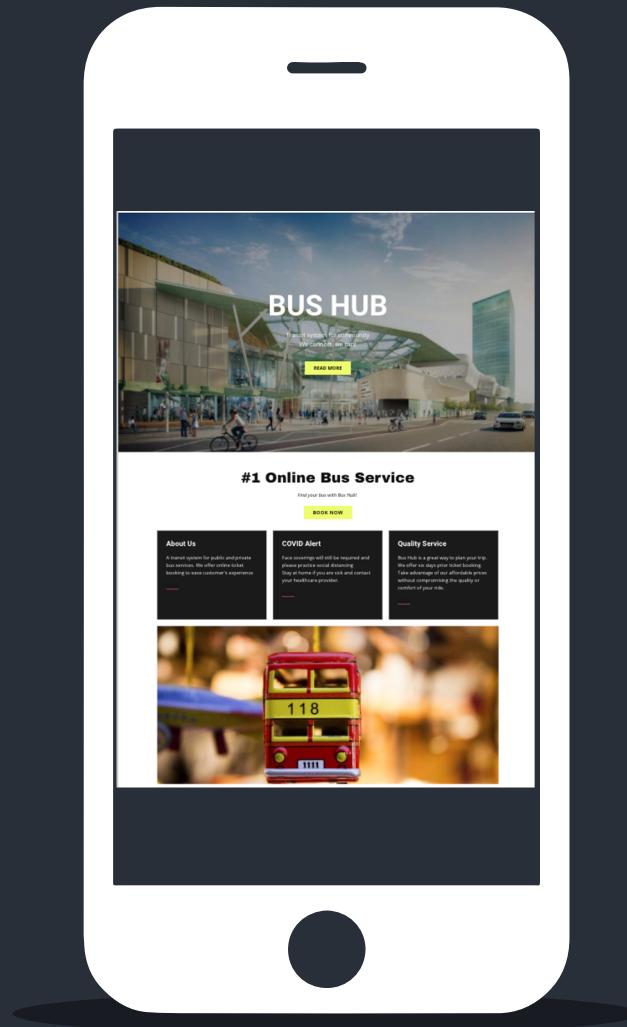
Architecture
and Demo

Goals and
Expectations

Scope of
project



Business Idea



Digitization and automation of bus pass system. This project is intended to enhance and streamline the current manual bus pass system for community bus service e.g. Centro



- Manual passes -> E-pass system
- More convenience
- Cost saving

Competitor Analysis



01

02

03

NJ Transit have an online option of selling tickets. Taking the system as an inspiration we are developing an online system for Centro Bus service. Transforming physical bus pass to online bus pass system.

We are Public bus service initiative. Competitor like **Bus bud** only compares private bus services.

Proposing a system of dynamic price comparison for all the private bus services. E.g. Megabus, Greyhound

Stakeholders



Investors



**Public/Private
Authorities**



Developers

Functionalities

01

Sale of weekly/monthly/yearly online bus passes and tickets through a website/mobile application.

02

Generating unique barcodes for tickets/passes

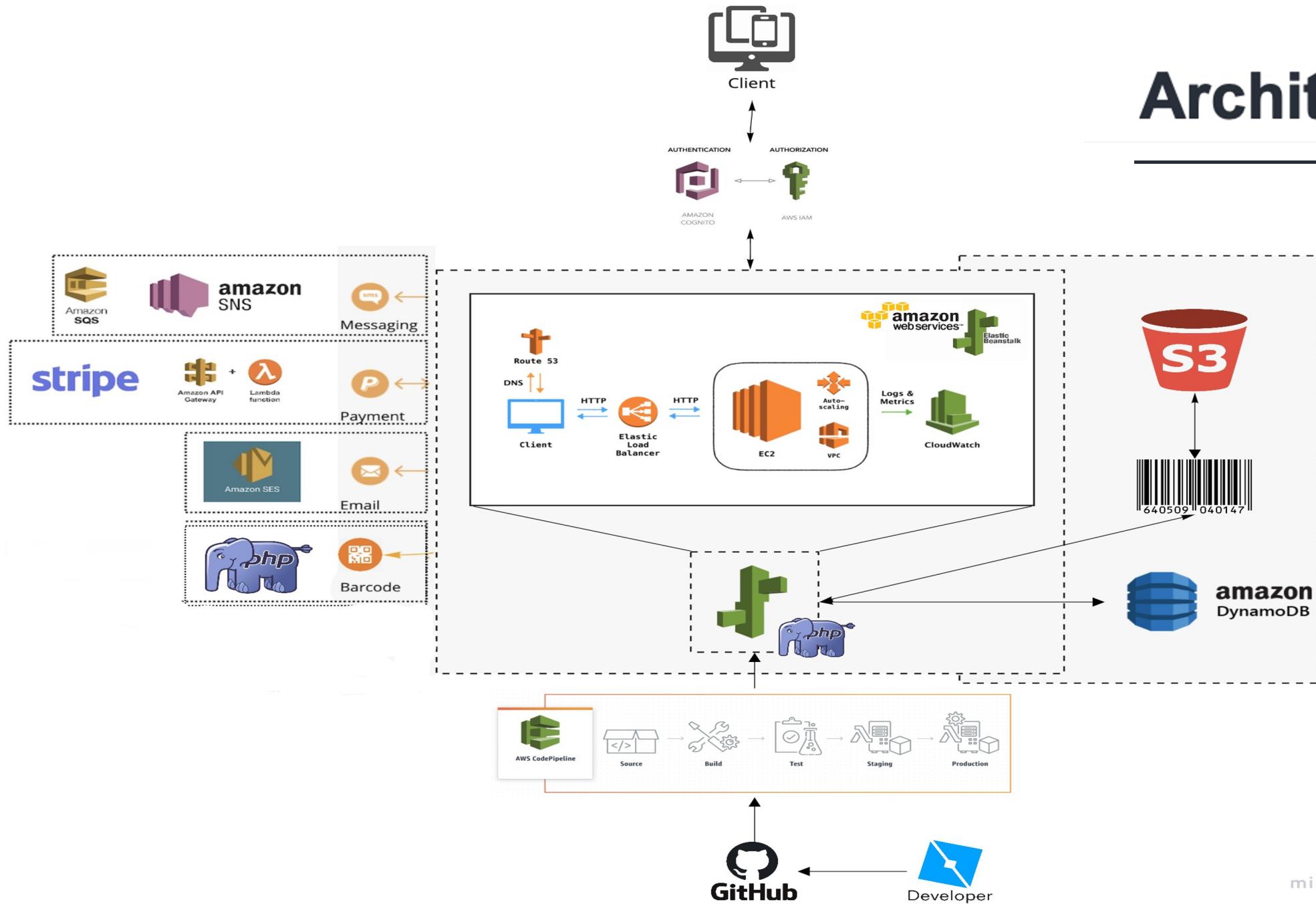
03

Add a device to scan the barcode generated on the bus pass or ticket in every bus

04

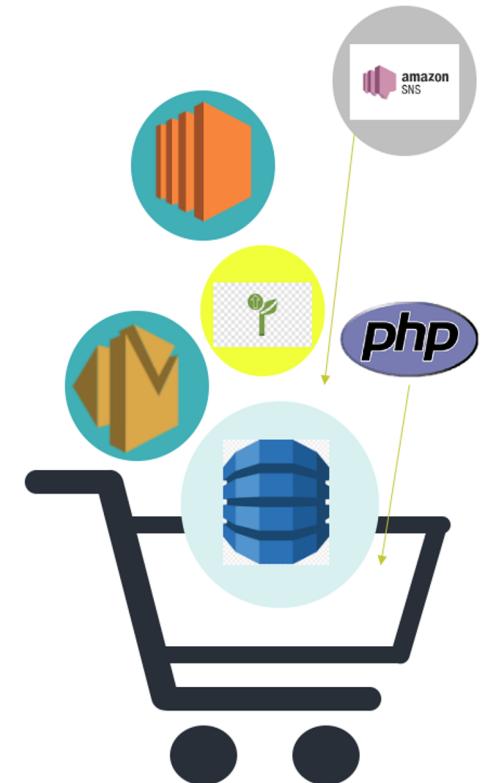
Comparing prices across different private bus companies.

Architecture



Cost Model for AWS services

| | | |
|--------------------------|--|---|
| Amazon S3 | First 50 TB / Month - \$0.023 per GB | \$0.115/month (5GB approx /month) Although it will grow exponentially every month with increase in customers. Expected to be around \$10-\$15 at the end of first year. |
| Amazon DynamoDB | 25 GB of data storage, \$0.25 per GB-month thereafter Read/Write request are \$0.25/mil and \$1.25/mil respectively | Free for initial years since our dataset is small |
| Amazon Elastic BeanStalk | Using windows with sql standard. T3a.xlarge with 4 CPUs, 16 GiB memory, AWS EBS Only 0.704 per Hour. | \$500/month approx. per instance or \$6,000/Year |
| Amazon CodePipeline | 1 free pipeline per month in free tier | Free since we are only using 1 pipeline. |
| Amazon Cognito | First 50,000 MAUs - \$0.050, Next 50,000 MAUs - \$0.035 Next 900,000 MAUs - \$0.020 | \$4,250 for the first year(for approx. 100,000 customers). Expected to increase in the future. (Expected to be \$400-\$500 approx. for first month based on 8,000 customers.) |
| Amazon SNS | \$0.00645 per SMS(First 100 SMS are free) | \$1,548 (for 8,000 customers/month) We calculated as 1 SMS per day per customer |
| Amazon SES | \$0 for the first 1,000 emails you receive, and \$0.10 for every 1,000 emails you receive after that. | \$700/month. Every month the price may vary with the increase in customers |
| Amazon Lambda | \$0.20 per 1 Mil Requests, \$0.0000166667 for every GB-sec (1M free requests per month and 400,000 GB-sec of compute time) | Free for initial years since our dataset is small |
| Amazon gateway | 1M Rest API calls, 1M HTTP API calls, 1M messages each received and 750,000 connection minutes per month | Free for initial years. May increase with increase in customers. |



Cost Model for Non AWS services

| | | |
|-----------------------------------|--|--|
| Stripe (third party) | pay-as-you-go pricing, 2.9% + 30¢ per successful card charge | May vary depending on the price of bus tickets (Paid by the customer) |
| Equipment cost(RFID installation) | For a total of 234 buses. This cost will include installation charges as well. This is a one time cost | \$70,200 |
| Maintenance cost for equipment | | \$300/month |
| Developer's cost | | Revenue - total cost (aprrox 10K/ month/ employee) |
| Maintenance cost for website | | \$300/Month |
| Advertisement from centro | | 1%-2% of the ad amount |

\$75k



First Month Cost

| | | |
|------------------|-------------------------|-----------------------|
| First Month cost | Includes equipment cost | Approx. \$75,000 |
| Monthly cost | Excludes equipment cost | Approx. \$4,800/month |

Revenue Model

5%

Commission Model

- We estimate 8,000 customers will use our website per month spending \$20 on an average.
- This will generate \$8,000 revenue per-month from commissions considering the Centro Price Model
- Considering the total expenditure we estimate to generate \$53,000 profits.



30%

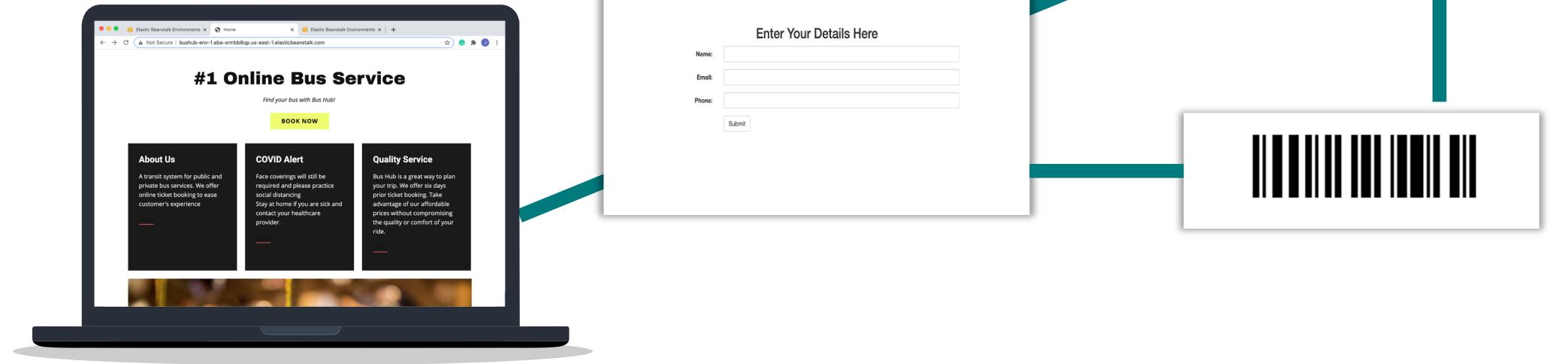
Advertisement Model

- We plan to implement Click-Per-Cost (CPC) model which get an average of 10,000 clicks per month. The average cost is \$0.50 to \$3.00
- We currently have 3 webpages and we estimate to generate \$50,000 revenue per - month from advertising

Implemented Functionality

Demo:

1. Customer chooses a ticket on website
2. Selects the ride and fills out the form
3. Barcode is generated
4. The data gets stored in DynamoDB table
5. Barcode gets stored in S3 Bucket



Our Functionality

01



Elastic
beanstalk

02

Code
Pipeline



03

DynamoDB



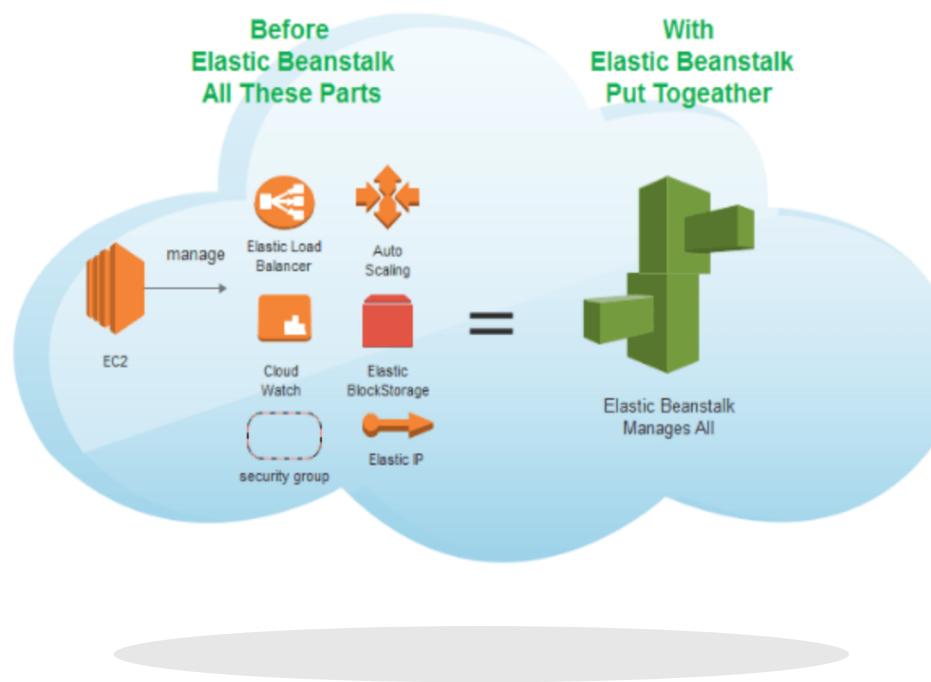
04

S3 Bucket



Elastic Beanstalk

Deployment & Scaling



1

AWS Elastic Beanstalk is an easy-to-use AWS service for deploying and scaling web applications and services developed with PHP.

2

With Elastic Beanstalk, you just have to upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring. At the same time, you retain full control over the AWS resources powering your application and can access the underlying resources at any time.

Elastic Beanstalk

Difference b/w EC2 and Elastic Beanstalk

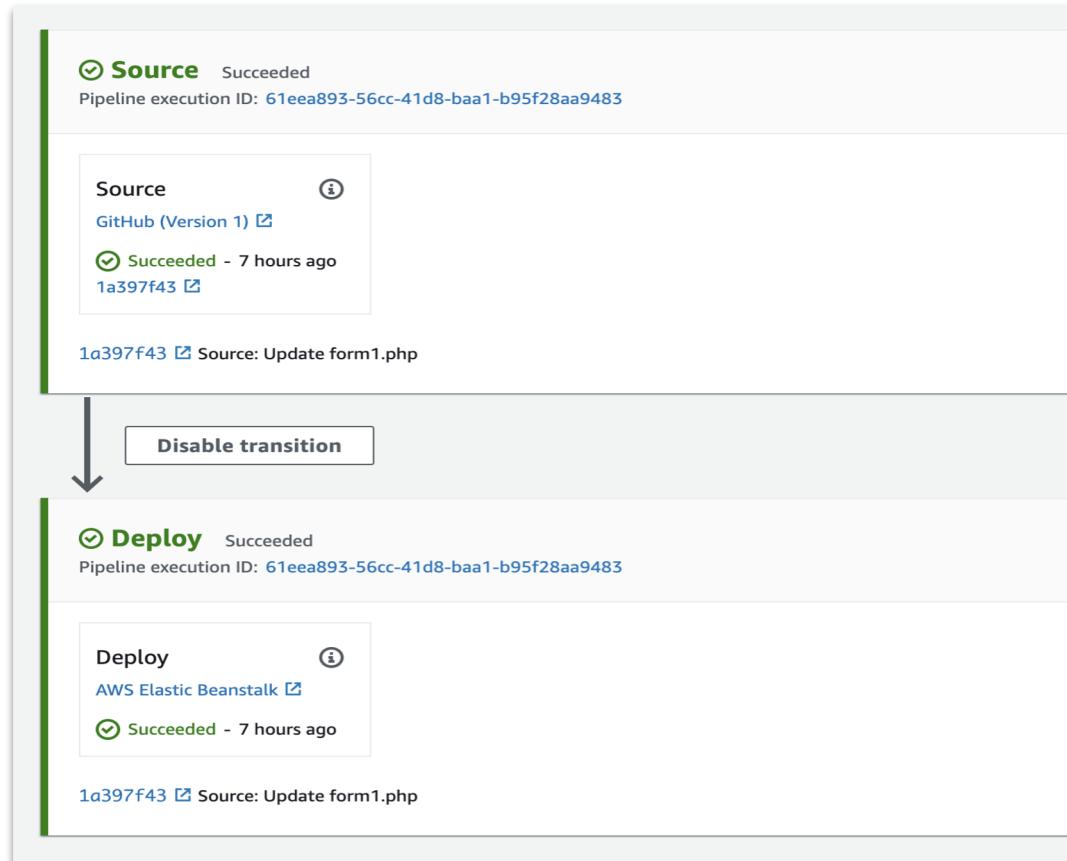
| Environment name | Health | Application name | Date created |
|------------------|--------|------------------|---------------------------------|
| Bushub-env-1 | Ok | bushub | 2020-11-15 11:48:13 UTC-0500 |

| Bushub-env-1 | | |
|---|---|--|
| Health | Running version | Platform |
|  Ok | code-pipeline-1605640748448-1a397f43943c40a7d13a2e833aa d2ddb9c9de51b |  PHP |
| Upload and deploy | PHP 7.4 running on 64bit Amazon Linux 2/3.1.3 | Change |

| EC2 | AWS Elastic Beanstalk |
|--|---|
| EC2 is a service of Amazon which helps you to create and launch servers in the Amazon cloud. | A Beanstalk infrastructure contains EC2 instances, databases, security and scaling groups and many more AWS components. |
| These servers are called instances and they are configured behind a load balancer when we create a Beanstalk application | It is beneficial for the purpose of deploying elastic cloud applications. |
| With a single instance, we can launch n number of instances. | Beanstalk doesn't charge for the additional resources you have been provided with. |
| You pay for the time and for what you have used. | Elastic Beanstalk supports a PHP stack. You can keep your site in version control and easily deploy to your environment whenever you make changes |

Code Pipeline

Automates the build, test, and deploy phases



1

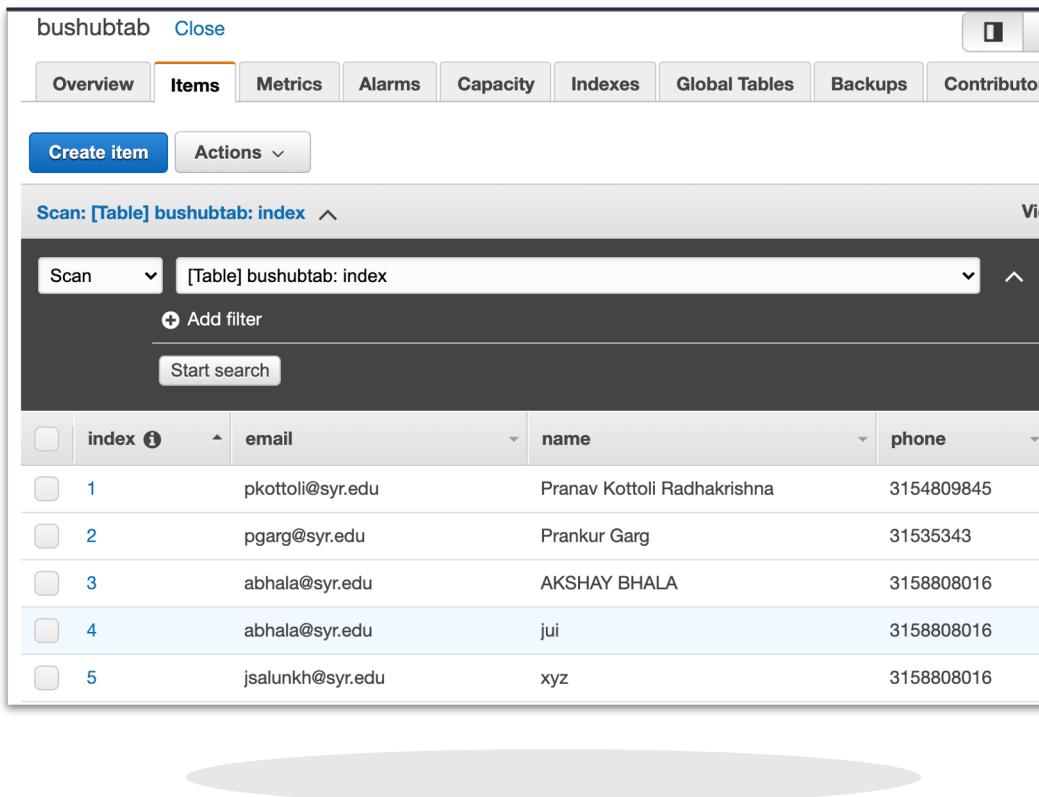
AWS CodePipeline is a fully managed [continuous delivery](#) service that helps you automate your release pipelines for fast and reliable application and infrastructure updates.

2

AWS CodePipeline starts with a GitHub repo. It automatically creates a trigger action for any commits to the GitHub repository, so that you don't have to automatically trigger the pipeline release.

AWS DynamoDB

Fully managed NoSQL database



The screenshot shows the AWS DynamoDB console for a table named "bushubtab". The "Items" tab is selected. The table has four columns: "index", "email", "name", and "phone". There are five items listed:

| index | email | name | phone |
|-------|------------------|-----------------------------|------------|
| 1 | pkottoli@syr.edu | Pranav Kottoli Radhakrishna | 3154809845 |
| 2 | pgarg@syr.edu | Prankur Garg | 31535343 |
| 3 | abhala@syr.edu | AKSHAY BHALA | 3158808016 |
| 4 | abhala@syr.edu | jui | 3158808016 |
| 5 | jsalunkh@syr.edu | xyz | 3158808016 |

1

With DynamoDB, you can create database tables that can store and retrieve any amount of data and serve any level of request traffic.

2

On-demand backup and restore. DynamoDB automatically spreads the data and traffic for your tables over a sufficient number of servers to handle your throughput and storage requirements, while maintaining consistent and fast performance.

AWS S3

Store and retrieve any amount of data!

The screenshot shows the 'Bucket overview' section of the Amazon S3 console. It displays the following information:

| Region | Amazon resource name (ARN) | Creation date |
|---------------------------------|----------------------------|--------------------------------------|
| US East (N. Virginia) us-east-1 | arn:aws:s3:::bushubbucket | November 16, 2020, 16:25 (UTC-05:00) |

Below this, the 'Objects (8)' section lists two files:

| Name | Type | Last modified | Size | Storage class |
|--------|------|--------------------------------------|---------|---------------|
| 21.png | png | November 17, 2020, 13:11 (UTC-05:00) | 156.0 B | Standard |
| 22.png | png | November 17, 2020, 13:22 (UTC-05:00) | 158.0 B | Standard |

1

Amazon S3 has a simple web services interface that you can use to store and retrieve any amount of data, at any time, from anywhere on the web. It gives any developer access to the same highly scalable, reliable, fast, inexpensive data storage infrastructure that Amazon uses to run its own global network of web-sites. .

2

In our application Elastic Beanstalk uses this bucket to store barcode, that are required for the proper operation.

Demo

www.bushub.com

Future Goal

- 01 Dynamic Pricing
- 02 Geolocation
- 03 Online Seat Selection
- 04 Including other services such as Airline

Thank You

Questions?