Cloud Computing Project
(Team Panda)

By Ting Er, Beng Huat, Lijia, Derrick

Content Page

User Interview

How might we improve after sales customer service support for adult working executives so that they are satisfied and become loyal users of the e-commerce platform

Describe good/poor experience

Can you help us understand the working adults' current experience with the after sales customer service support on e-commerce platform

Tell me the worst after sales customer service experience you had from e-commerce platform

Process

Tell me what are the steps that you do to get the after sales customer service support?

Area of improvement

Can you tell us what areas can be improved on for the current after sales customer service support of the e-commerce platform

Challenges

Tell us what are the obstacles you encountered when your face with the after sales customer service

Competitor's Platform Examples

What other e-commerce platform after sales customer service support have you tried?

Factors that determine good customer service experience

What are the factors that contribute to an excellent after sales customer service support?

Feelings

Share with us your feelings about the recent after sales customer service support on e-commerce platform

Ideal online platform

Share with us what are the ideal experiences that you want to get from the after sales customer service support

Which ecommerce platform after sales customer service support that you are most satisfied with and why

Reasons for using CS

What are the reasons that require you to reach out to the after sales customer service support after making a purchase on e-commerce platform?

Frequency of using CS

Out of your purchases experience how many times do you need to reach out to the after sales customer service for support

Decision on platform based on customer service

How likely are you going to buy from the same e-commerce platform based on the experience with the after sales customer service support?

service/support options

Share with us where and what channels you used to reach the after sales customer service support?

Duration to address issue

From your past experience, how long does it take on average for the after sales customer service support to fully address your issue?

What is your expected timeline for after sales customer service support to resolve your issue after you reach out to him/her

Empathy Map (P1)

Encounter Positive Experience

- only encounter issue with out of stock, reach out to the after sales CS support, seller credit back, informed when new stocks arrived and gave discount
- Good Customer service such as Lazada, Shopee etc
- Customer service good 'cause direct seller.
- etsy, quite lucky to have good experience
- some proactive sellers take pictures to prove they have shipped

Encountered Negative Experience

- ecom platform have official sellers which instills more confidence, improve legitimacy of products
- had experience with 1 wrong order sent, asked for exchange
- Bought Furniture, got a discount after complaining
- will never buy from the platform if had negative experience
- reason to reach out css: item does not match purchase picture
- hard to get e-commerce contact details
- worst experience - 1. no response, hard to reach, 2. want to return product but request was rejected

Receives wrong goods

- wrong item sent, received something that is different from picture
- receive something different from what was purchased, damage product, expired food
- Return wrong item base on Quality of supplier service

Comparison of Merchants

- Lazada platform
- Preferred: Shopee
- COmplicated: Taobao, Qoo10 (Too many products presentation)
- Negative experience: E-bay
- no ebay & paypal anymore, long time ago bad experience
- like Lazada, buy tennis ball every month, only ~$2 difference with physical stores, apparals

Satisfaction of Customer Experience

- Will repurchase again if after sales CS support experience is great

Awaiting Period too long

- expect to deliver within a specific window
- Long waiting time for the new stock when the product is shown out of stock
- Wait for 2-3 days for refund for wrong or damage product

Encounter Neutral Experience

- cause most of the purchase product are safe, not bulky item. less fragile
- no bad experience
- so far no issues with ecom platform that needs to reach out to after sales customer service support

E-commerce usage

- use ecom once a month

E-commerce platform improvement

- Didn't asked to be included in mailing list but was added in the mailing list

Purchase Habit

- Always checking buyer review before purchasing

Product Status (Fresh, Broken, Matching?)

- food item close to expiry date but not a need to reach out to css

Responsiveness is important

- responsiveness very important, working adults are very busy
- Customer service ranking depends on faster response time
- ideally, after sales CS support should reply within one day
- response time very important
- thinks that prompt response is an important factor of excellent customer support
- Prompt Shresponse to customer query;

Responsible ecom platform

- responsible after sales CS support very important
- Improvements Assign responsibility between seller and buyer currently, ideal platform person ought to be involved (e.g. ebay some overseas e-platforms)
- thinks the platform need to take responsibility to settle issues between buyer and seller
- ideally, after sales CS support should protect buyer from horrible sellers
- ecom's mission and business objectives is very important - provide great service to customers to build loyalty, not only focus on sales

Quality of after sales CS support agent

- Customer thinks the good customer service as Qoo10, providing good agents attend, follow up and give advise to buyer
- helpful after sales CS support is important

Hassle-free and quick refund process

- prefer the platform to send sms if refund completed or rejected. Allow user to give feedback on why a refund is rejected
- ideally, after sales CS support should process refund within 3-5 days
- DO refund within 3-5days
- Send sms to inform update ; give ID for the case reported for refund of item
- thinks platform should make the refund process easier, need to trust buyer instead of having to asking buyer to provide tons of evidence
- (improve) Way to show proof for refund of damage/wrong item
- (improve) Duration of refund
- Suggest to add an option to specify reason for refund (instead of scrolling the pre-defined list of reasons)
- Show evidence/ photo and give order reference number should be good enough.
- the ecom platform should make it a breeze for customer instead of making the experience even more unpleasant
- Being a responsible e-platform status, ensure easier for buyer to resolve any purchase refund issue.
- It is convenient the e commerce platform shows the timeline clearly
- Wrong item is Challenges, wasting time to return item

Easy and quick to reach after sales CS support

- must be easy to contact after sales customer support
- Too many navigation options on the virtual assistant
- "3-5 mins is appropriate awaiting time on hand
- Customer concerns the how to contact to the customer service stuff from seller

On time delivery is important

- Ideal after sale customer service is delivery on time

For eg: My dad says

Says

Thinks

Tip: 1 sticky 1

Empathy Map (P2)

Does   **Feels**

Platform used

- Lazada, Amazon, Shopee, Fairprice
- only tried Lazada
- (convenience used) Lazada, Taobao, Ezybuy, Popmarco, Redmart

Items bought

- buy food, watch ,book
- buy food, books
- (buy) usually clothings, stationary, perfume.

Quantity bought

- buy in small qty, if good buy again

- Buy perfume from USA.

steps and modes of CS used

- steps to contact after sales CS - click on items bought, click on contact seller, shopee interface quite intuitive for a user who is not tech savvy
- Steps to contact after sales. Shopee click here , then press on contact details of vendor, interface is intuitive, user friendly
- mode of contact: in the shopping app itself
- Deal directly with supplier instead of after sale support
- Used email to contact after sales CS support
- normally call the after sales customer service
- call, find contact details from search
- contacted after sales CS support through the app
- use call option to reach after sales customer service support
- (steps to reach out customer service)
- (channel used to reached customer service)
- Shopee/lazada (chatbot lead to email)
- 1 out of 8 time
- check with seller first before ordering

Obstacles encountered when using CS

- Obstacle: no product stock to be replaced for the purchased watch, refund of money was done in the last minute. Awaiting time for refund was long for buyer.
- was asked the whole series of questions to answers.
- took a few days to resolve, provided regular update beyond user's expectation
- from shopee have to quickly check the condition before releasing payment on platform
- often have to search for the contact detail of the after sales CS support
- (Obstacles) Language barriers (eg taobao)
- Local retailer (Easier to claim disputes vs Overseas Retailer is more tedious in dispute process

Reasons to use CS

- received a different watch from picture
- bought watch, seller was in clear not responsive, very hostile denied sending wrong item, waited 2 weeks and replied no stock, offered to sent replacement or refund, took 2 weeks to refund, almost waited to result came shopee after sales CS support to help
- need to reach out coz not satisfied with product quality or want to return product
- use food delivery, sent food with all the soup spilled, sent feedback and restaurant packed differently next time, satisfied with prompt action taken
- bought a branded fake handbag , pay via paypal, sell bag back to seller, then no bag for buyer
- Positive experience : Bought a cake that tasted sour and she reached out e-commerce support for them to contact the vendor
- bought a branded handbag on ebay, but received a fake paid via paypal
- was asked to send the bag back to seller without yet getting a refund.
- had to pay for an appraisal to validate the authenticity of bag.
- finally got money back after 4mths of to and fro exchanges.

All good experience

- SHopee: A smooth experience due to the release of money from buyer online after the purchase
- Customer service staff is clear about the issue and is pleasant.
- a lucky buyer does not use after sales service very often
- A fair bit of experience (with after sales customer service support)
- Redmart (customer service is the best, actual customer hotline) (perished/Spoilt foods will be refund)
- Shopee (most straight forward, safest and happier because of fast refund)
- one day to one week (Average 3-5 days for full closure)

Response time required

- Speed of response
- a day at best, expects something faster than the mentioned
- Response time required
- respond in 5-2 days. Faster will be even better
- Prompt response
- Obstacles - hard to find the contact details and time is busy
- How fast the response time and wrong item return process of seller
- feel that response time can be improved on
- hard to contact them
- not quick response

Difficulties about buying small value items

- if spending amount is low, then dont ask for refund , only give bad rating feedback
- feels that if purchased item was very small amount, will just leave it even if item not up to expectations, at most give bad review.
- too troublesome and no time to pursue for small value purchase

How to prevent buying item from bad seller

- don't let buyer face another unpleasant experience when it is already bad enough that buyer had to contact after sales CS support
- have many sellers on ecom platform, won't buy from the unpleasant one but will choose others

Using App during buying items

- prefer to reach after sales CS support through the app as it is easier

All bad experience

- Extremely disappointed wasting time to return wrong item
- It is so disappointed long time for calling to customer service over 30 mins
- will not be happy with a voice machine after sales customer service support
- This process took around 4 months, paypal to buyer and seller ; horrible experience
- if product does not meet expectation but can still be used, user will not complain but if it relates to poor food quality, it is unacceptable
- (sharing of feelings about after sales support) A month ago, Wrong item delivered. Wait for 1-2 days for response. Was given option to use/send user refund. Seller lelulelulala and give no response).
- ezybuy (not so good (option for refund rigid)
- sometimes platform don't take responsibility, ask buyer to contact seller directly unless buyer make a big fuss
- Will still buy from same platform but from different vendors.
- May take a risk to buy same buyer even first purchased experienced is negative.
- hard to press for refunds

Bad feeling during buying items from Overseas

- Feels it is pointless to contact after sales customer service support for products dropped from overseas coz they won't resolve
- Feels fine when she buys some things/items local company
- It is difficult to return item back Overseas
- Feeling mad if paying for a lousy item from Overseas

Prefer human touch

- prefer to talk to some one
- Don't like to use Feedback in dialogue box/ chat (esp)
- Prefer phone call to facilitate faster response, human touch
- dislike chatbot, prefer human touch
- Enjoys human touch

Need to improve

- feel satisfied in general with after sales CS support but think there are rooms for improvement
- feels that good attitude of customer service staff is important
- Customer hates about how communication, such as staff who are not focus on customer needs
- will repurchase if experience with after sales CS support is good
- Helpline (hotline) - easy to communicate and response
- Tone
- Duration to resolve.
- Quality of help
- 2 (most likely not buy)(unlikely and 5 most likely) if service no good (eg took too long to resolve)

Persona

Name	Haiying

Profile

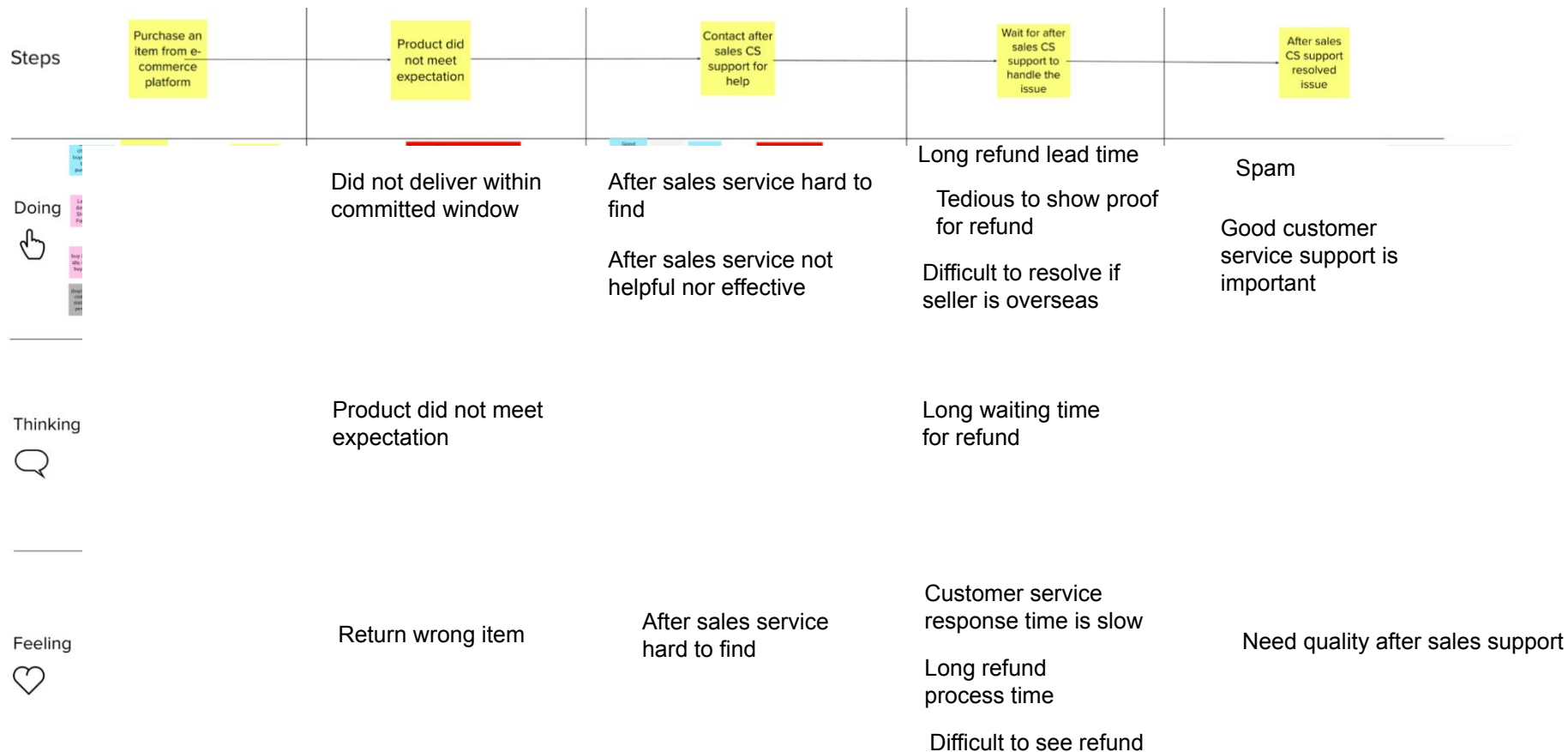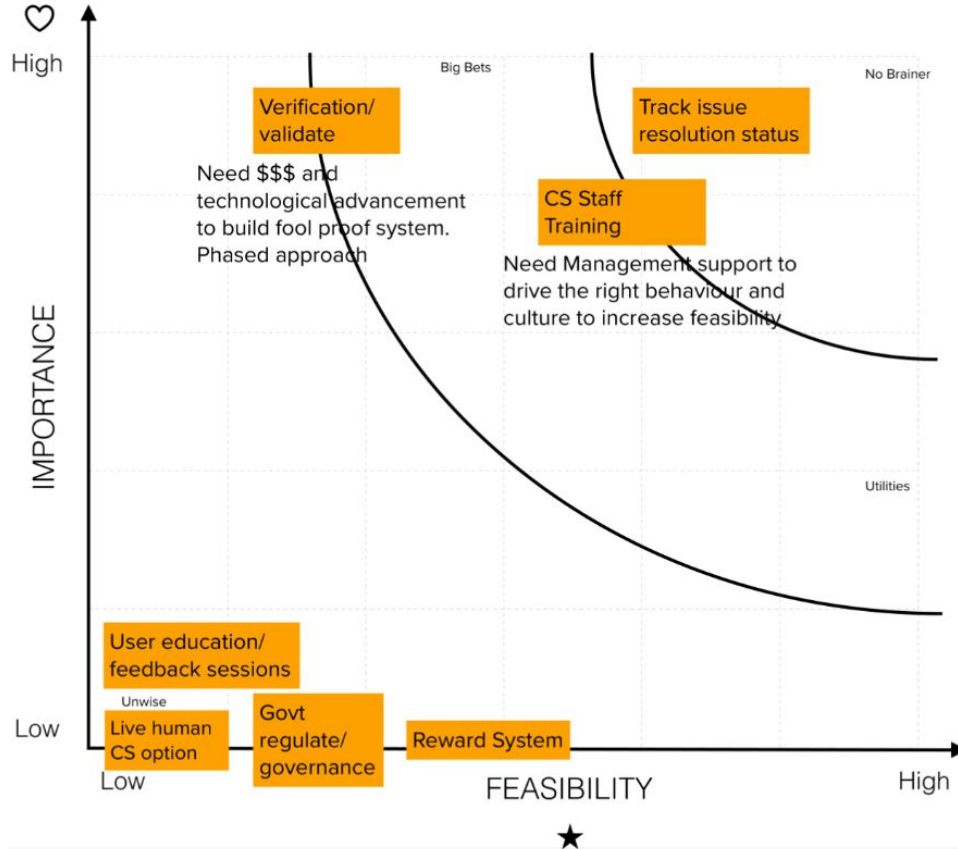| Age	40s
Location	Singapore
Education	Tertiary
Job	Social work
Family Work experience Technical literacy	Married 10+ years Knows how to navigate typical mobile apps and websites but not saavy with sophisticated apps

As-in Scenario Map

Steps	Purchase an item from e-commerce platform	Product did not meet expectation	Contact after sales CS support for help	Wait for after sales CS support to handle the issue	After sales CS support resolved issue
Doing		Did not deliver within committed window	After sales service hard to find After sales service not helpful nor effective	Long refund lead time Tedious to show proof for refund Difficult to resolve if seller is overseas	Spam Good customer service support is important
Thinking		Product did not meet expectation		Long waiting time for refund	
Feeling		Return wrong item	After sales service hard to find	Customer service response time is slow Long refund process time Difficult to see refund	Need quality after sales support

Prioritization Grid

Pain Points

1) Product did not meet expectations
2) Poor quality after sales customer service support
3) Long waiting time to resolve issue

Hills

Who	What	Wow
Specific user	Specific enablement	Specific market value/differentiation

Who column:
- Product did not meet expectations
- is able to receive correct product from verified sellers
- resulting in her to be a satisfied and loyal customer, and more time to do other more important matters in life.
- Poor quality after sales CS support
- can now easily reach a well-trained human CS to get her refund in 3-5 days, along with a personalized apology video and voucher
- resulting in a very satisfying online purchase experience
- Long waiting time to resolve issue
- can now collect, verify and immediately process any returns and refund at a one stop booth
- resulting in Haiying to reduce awaiting refund duration and being satisfied loyal user of e-commerce platform
- Haiying, the working executive,

What column:
- is able to receive correct product from verified sellers
- can now easily reach a well-trained human CS to get her refund in 3-5 days, along with a personalized apology video and voucher
- can now collect, verify and immediately process any returns and refund at a one stop booth
- can now receive gift voucher and personalised e-video apologies from CS staff
- can now have access to well trained and certified CS staff
- is now highly likely to receive the right purchased product as advertised otherwise she would be getting her refund promptly

Wow column:
- resulting in her to be a satisfied and loyal customer, and more time to do other more important matters in life.
- resulting in a wonderful after sales CS experience and her becoming an avid supporter of Shopper app
- located in close proximity to her home
- human touch
- resulting in a very satisfying online purchase experience
- resulting in Haiying to reduce awaiting refund duration and being satisfied loyal user of e-commerce platform

Top note cards (What): Are not Have, Often start with, Can..., Will..., Is able to...

Top note cards (Wow): Are from the perspective of your user, Are market differentiating, Are measurable, Often focus on, Time, Resources, Skill Level, Processes, Location, Dependencies

Red labels (top right): Product did not meet expectations; Poor quality after sales CS support; Long waiting time to resolve issue

Prototype

One stop booth

Laz
Shopee
Qoo10
shopper
Singpost cloud
Verification Capsule

Step 8a: For item rejected, platform informs seller
- seller confirm to discard or pay to ship back.
- drop seller rating, if rating is less than min requirement, ban seller for 12mths

Step 8b: Seller rating will be updated

Step 7a: Singpost cloud transmits status and evidence to ecom platforms

Step 7b: Accept/Reject status and evidence updated on Shopper app.

Step 7c: Refund is processed immediately for Haiying

Step 6: Verification capsule updates parcel acceptance/reject status and camera images/video are transmitted to Singpost cloud

Verification using a combination of
1. reverse 3D printing technology to check if the product is the same as original listing.
2. xray to check for damage and qty

Chatbot

Step 5: If short/damage/wrong, Haiying taps on the panel to reject. If any issues, Haiying can speak with the AI chatbot that has been trained with deep learning. For more complicated issues, she can connect to CS, who already has all the available info about the buyer and order details

Step 4: Haiying will check on a panel located in the capsule to verify her products. It will display images captured via the X-ray/reverse 3D printing technology, without the need for Haiying to open the parcel

Step 2: Machine located in the verification capsule auto retrieves parcel from locker

Step 1: Haiying scan order QR code on the panel

Step 3: Capsule door opens for Haiying to enter, with parcel waiting for her

App

Login page
Seller verification
Delivery status
One Stop Booth Availability
Order summary
CS credentials
Issue resolution status
shopper
Username
Password
Seller X
Seller Y
Seller Z
Order xxxxx
Qty 1
Connect to CS
You are speaking to CS Andy Lim
Issue resolution status - Resolved
Day 1
Day 3
Day 5
Seller replied, Agreed to refund

Personalized video call (Live or Prerecorded) to offer apology and voucher to Haiying

How might we improve the purchase and after sales customer service support experience for working executives so that the refund duration is shortened

Product did not meet expectations

Poor quality after sales CS support

Long waiting time to resolve issue

CS Training

AI system will continue to track actual CS calls, rate performance, and provide feedback

Staff Training
Patience
Communication
Emotional intelligence
Attentiveness
Problem Solving
AI

Seller Pre-qualification

Seller X
Seller Y
Seller Z

'Haiying is satisfied and becomes a regular buyer on the e-commerce platform.'

Haiying the working executive is able to receive correct products from verified sellers, resulting in her having more time to do other important matters in life.

Haiying the working executive can now easily reach a well-trained human CS to get her refund in 3-5 days, along with a personalized apology video and voucher, resulting in a very satisfying online purchase experience

Haiying the working executive can now collect, verify and immediately process any returns and refund at a one stop booth, resulting in a shortened refund duration.

One stop booth process

Step 1: Haiying scan order QR code on the panel

Step 2: Machine located in the verification capsule auto retrieves parcel from locker

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Step 8b: Seller rating will be updated

Business Case

Our app have many participating companies that uses our refund services. Individual can choose any of our participating companies in our app and click on refund to do refund with them. As individuals choose to do refund with us, we give them incentives such as cashback. We hope to be able to scale our business from here.

Assumptions

Some businesses do not have the resources to do a seamless and fast refund, therefore requires our service.

It would be too costly for them to built their own.

We are able to get data from participating companies for analysis.

Participating companies got huge transaction data, so much so that they have 1000 complains in a month.

Assumes we have an agreement with participating companies that once we approved refund, they will send the money to the user.

Risk

Web attack on payment

New order details not updated at client's DB for us to process refund effectively

Participating company does not release funds timely to the user

Hypothesis Statement

If we provide shoppers with fast refund*, we will observe:

1. Less complaint. Of the 1000 complaints, 90% and above were refunded within 5 mins.

*5 mins instead of current 7 days.

2. Higher user retention. Of the 1000 customers who did refund on our app, we will have data from participating companies to see if the same 1000 customers, if they do refund again, do they still use our app.   (90% of the 1000 continues to use our app)

Final MVP Statement

If we provide shoppers with fast refund*, we will address the risk of unhappy shoppers by measuring the number of complaints and numbers of users retained. We'll know we've arrived when we observed:

1. Less complaint. Of the 1000 complaints, 90% and above were refunded within 5 mins)

2. Higher user retention. Of the 1000 customers who we on-boarded onto our app, 90% have continued to use our app as a refund mechanism

*within 5 mins instead of current 7 days.

MVP 1	MVP 2	MVP 3
CHAT BOT, API CREATION, SECURITY	DATA ANALYSIS, REPORT GENERATION	Reward System

ROADMAP

MVP	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	WK12
MVP 1												
MVP 2												
MVP 3												

Multi Channel

- Interact with clients in several ways
  - App
  - Website
  - Call center
  - Social Media

DevOps

- **Used AWS pipelines**
    a. **AWS CodeCommit**
    b. **AWS CodeBuild**
    c. **AWS CodeDeploy**
    d. **AWS CodePipeline**

Agile (Scrum Methodology)

- ***Individuals and interactions*** *over processes and tools*
- ***Working software*** *over comprehensive documentation*
- ***Customer collaboration*** *over contract negotiation*
- ***Responding to change*** *over following a plan*
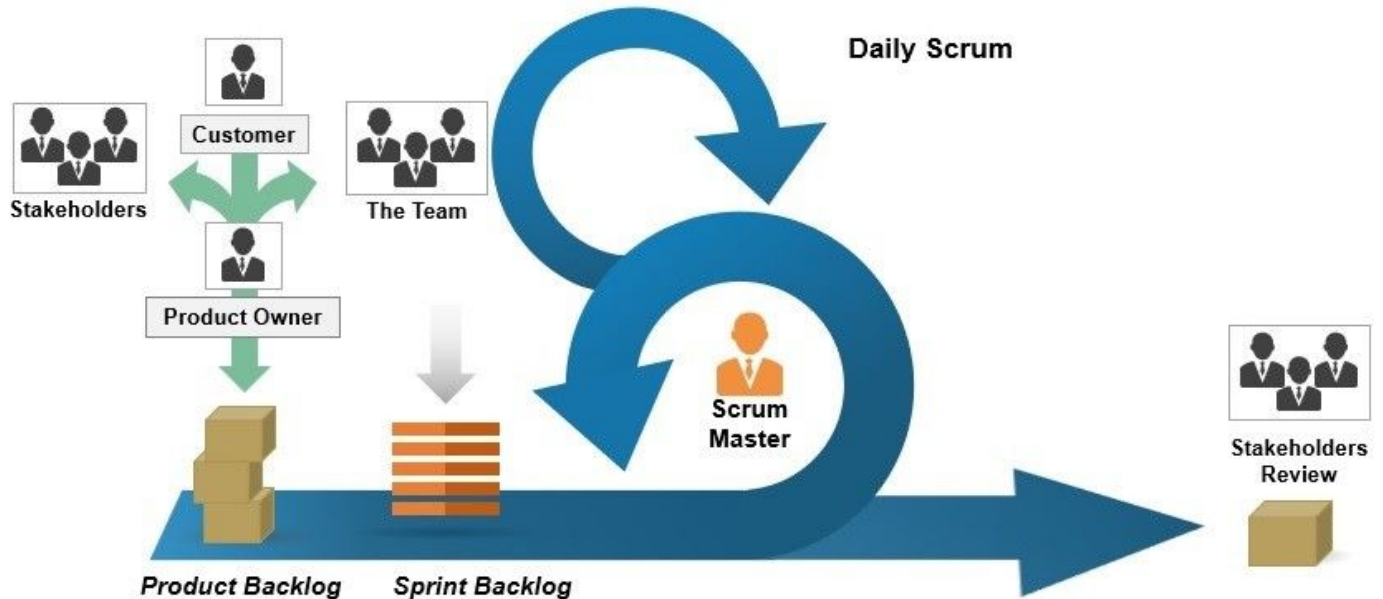
Type of system- PAAS

- Platform as a Service
- Removes the need for your organization to manage the underlying infrastructure (usually hardware and operating systems).
- Allows you to focus on the deployment and management of your applications.
- helps you be more efficient as you don't need to worry about resource procurement, capacity planning, software maintenance, patching, or any of the other undifferentiated heavy lifting involved in running your application.

Hybrid Cloud

- To connect infrastructure and applications between cloud-based resources and existing resources that are not located in the cloud.

- The most common method of hybrid deployment is between the cloud and existing on-premises infrastructure.

- To extend, and grow, an organization's infrastructure into the cloud while connecting cloud resources to the internal system.

Cloud Architecture
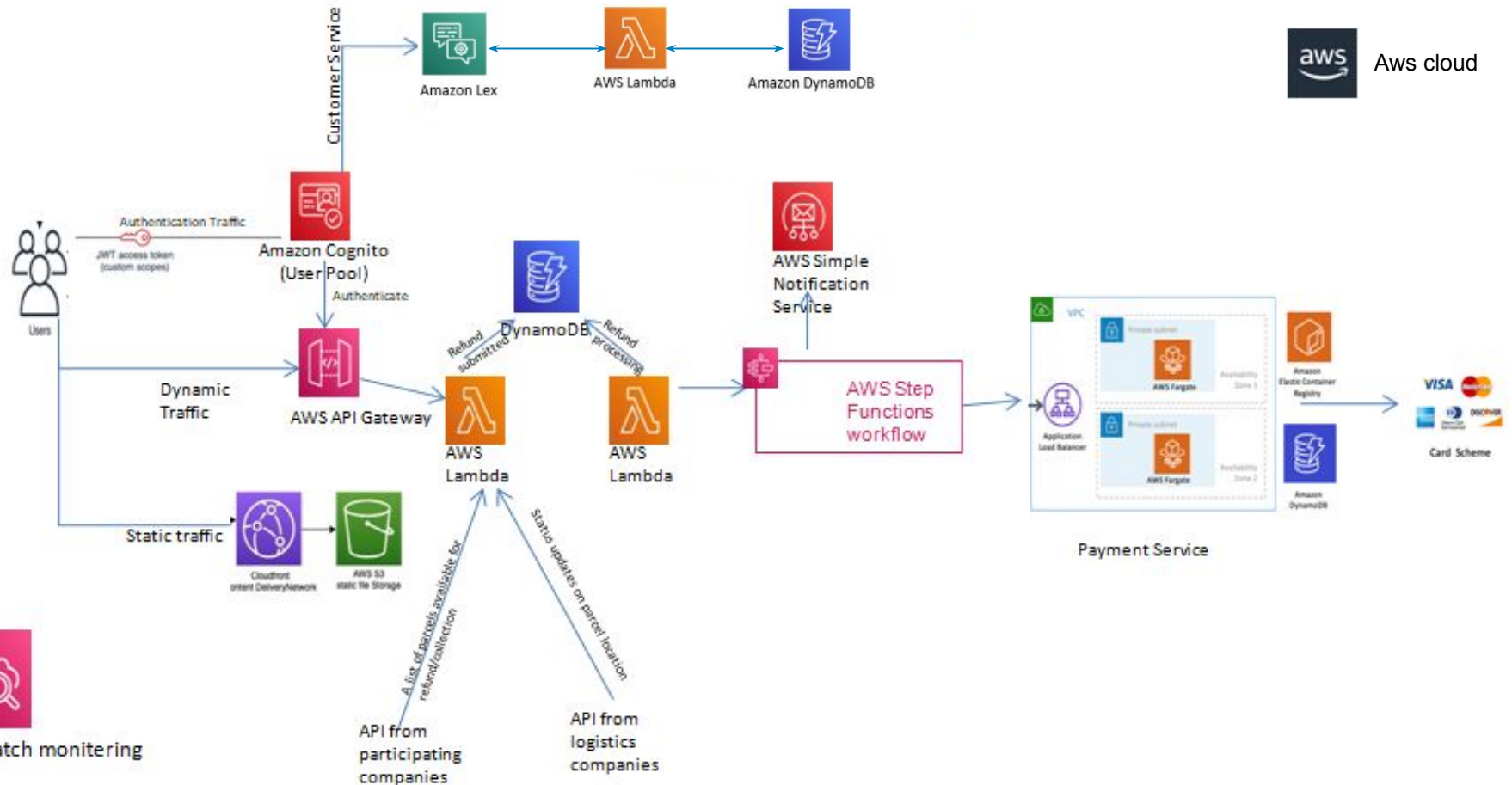
Static Traffic - *Cloudfront and aws s3*

If you have a website, application, or another web resource, you probably have static content. Static content includes files like images, videos, or music.

AWS S3 *Object Storage Service*

When you put your content in an S3 bucket in the cloud, a lot of things become much easier.

1) **Flexible and Scalable -** You don't need to plan for and allocate a specific amount of storage space because S3 buckets scale automatically.

2) **Easy to use** - Because S3 is a serverless service, you don't need to manage or patch servers that store files yourself; you just put and get your content. Even if you require a server for your application (for example, because you have a dynamic application), the server can be smaller because it doesn't have to handle requests for static content.

3) **Readily available** - It is designed to store and retrieve any number of files or objects from anywhere.

Cloudfront *Delivers content on S3*

1) **Content delivery network** - CloudFront is a content delivery network (CDN) service that delivers static and dynamic web content, video streams, and APIs around the world, securely and at scale.

2) **Multiple servers worldwide** - CloudFront serves content through a worldwide network of data centers called Edge Locations. Using edge servers to cache and serve content improves performance by providing content closer to where viewers are located. CloudFront has edge servers in locations all around the world, as you can see from the following map:
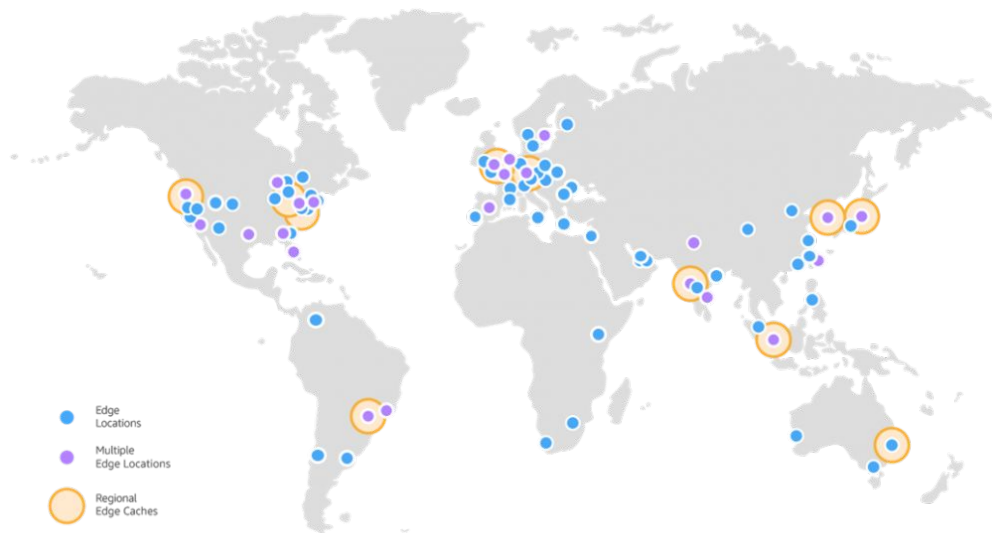
3) **Inbuilt security function** - By using CloudFront, we can set up additional access restrictions like geo-restrictions, signed URLs, and signed cookies, to further constrain access to the content following different criteria.

Edge Locations

Multiple Edge Locations

Regional Edge Caches

Authentication with Cognito

1. Authenticate and get tokens

User pool

2. Exchange tokens for AWS credentials

Identity pool

App

3. Access AWS services with credentials

Other AWS services

AWS Cloud
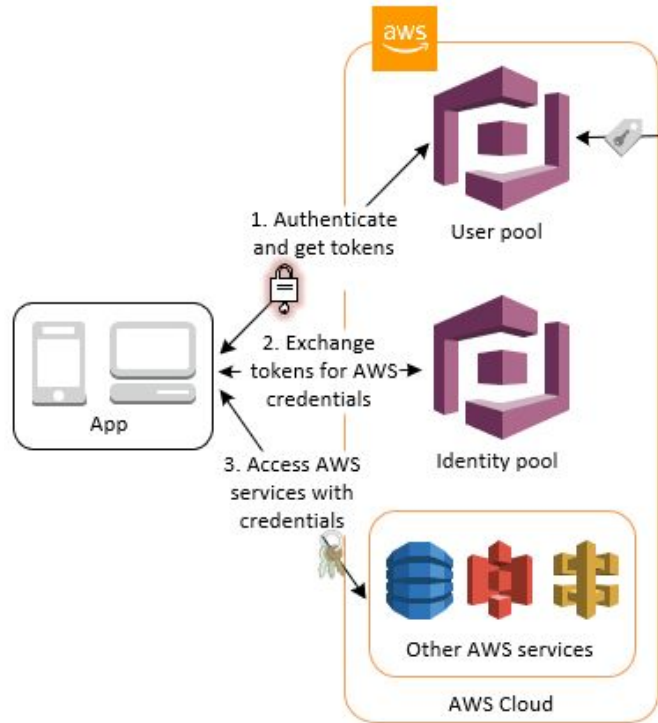
User pool + Identity pool - *Two main components of Cognito*
User pool: User create and account ID and password with us.
Identity pools: provide AWS credentials

Enable or disable unauthenticated identities - Amazon Cognito Identity Pools can support unauthenticated identities by providing a unique identifier and AWS credentials for users who do not authenticate with an identity provider. If your application allows users who do not log in, you can enable access for unauthenticated identities

Credentials sent with Json Web Token
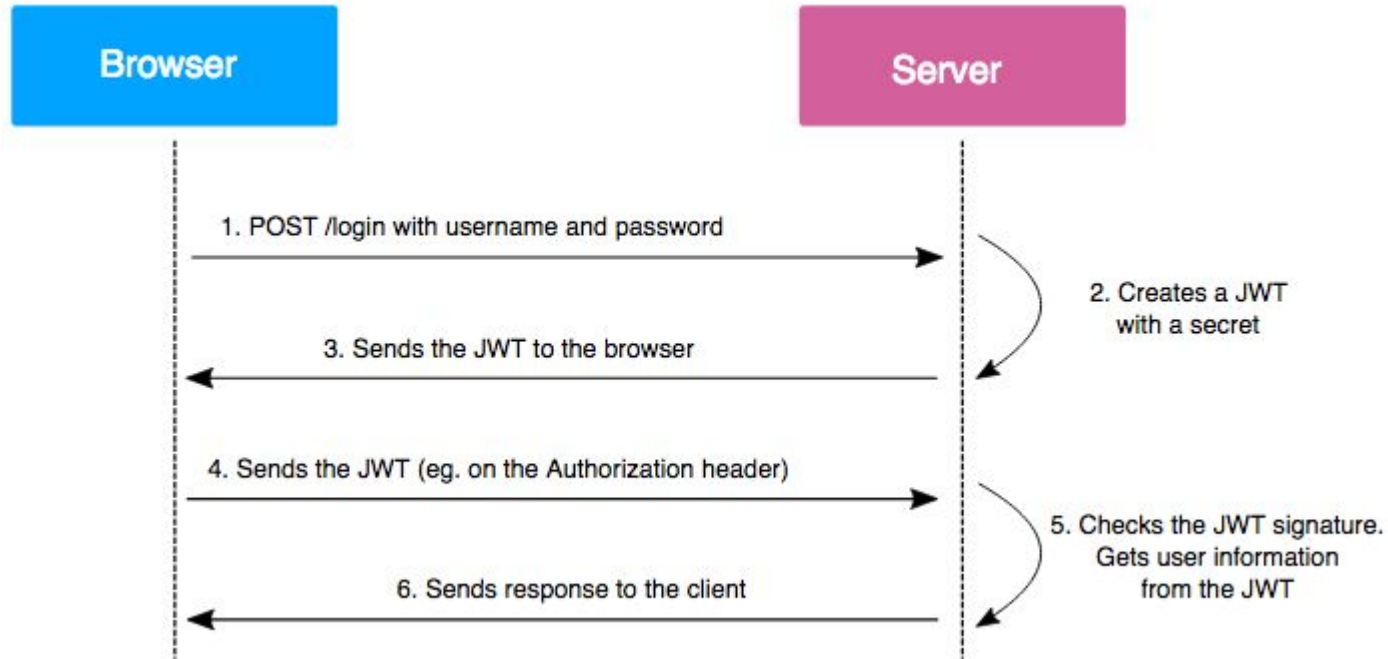
AWS API Gateway
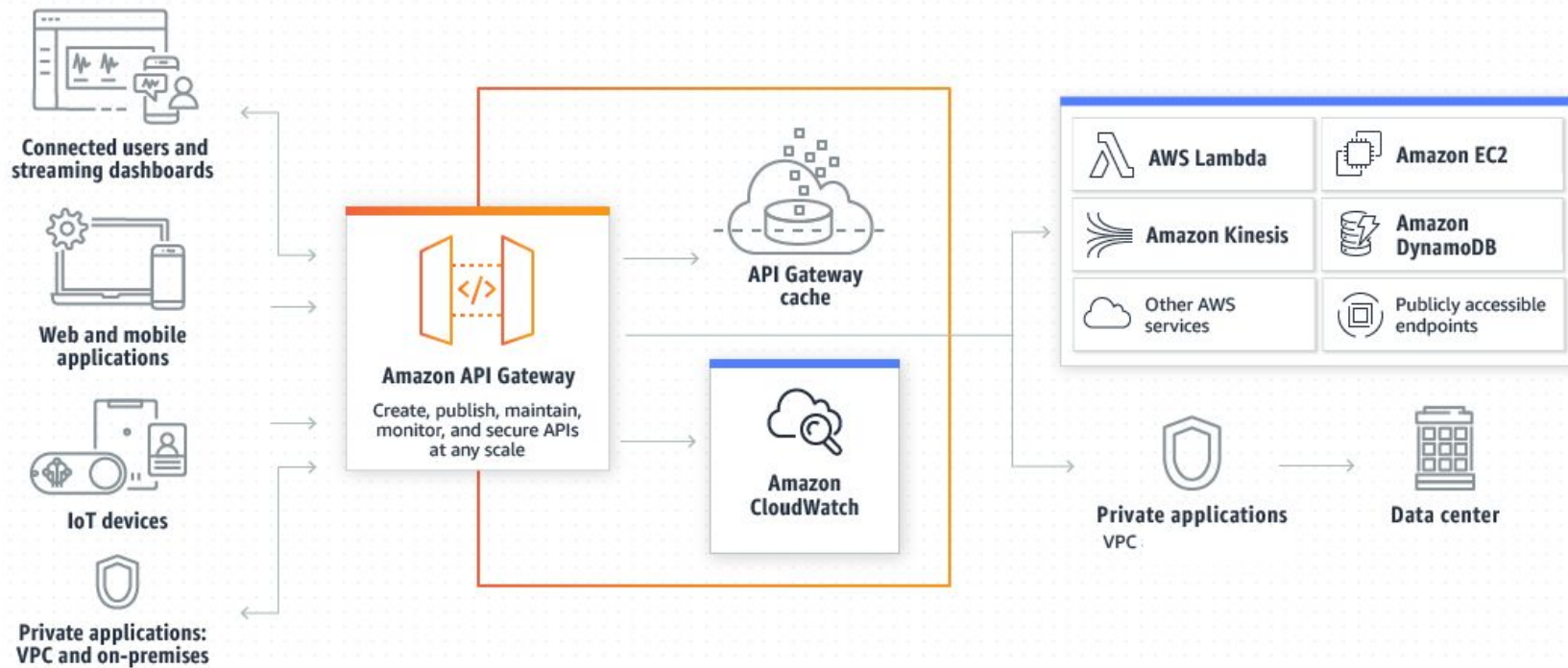
Control access to API

A Lambda authorizer is an API Gateway feature that uses a Lambda function to control access to your API.
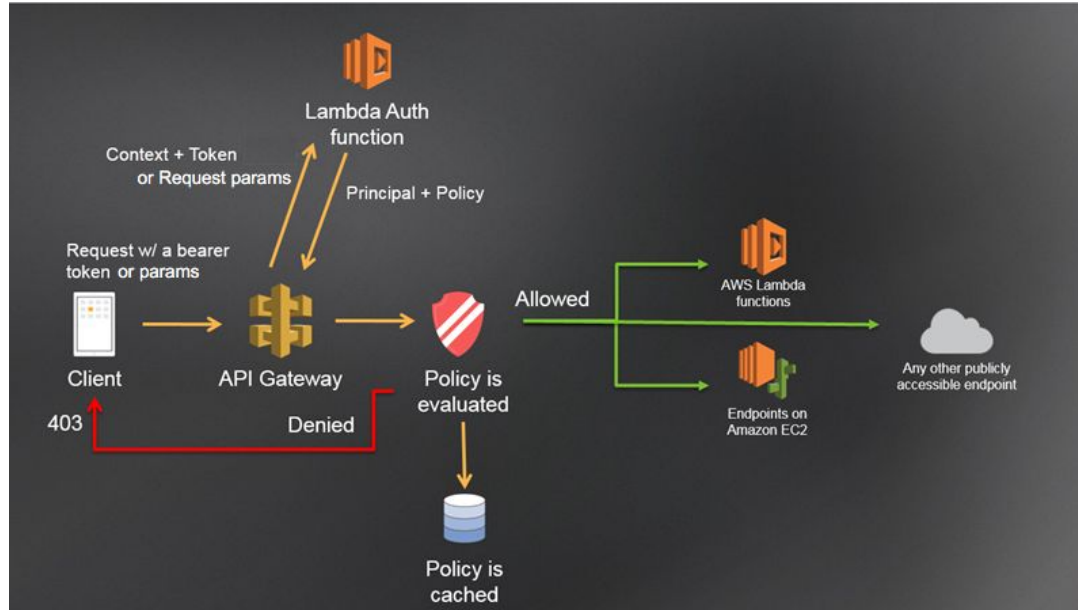
The Lambda function authenticates the caller by means such as the following:
1) OAuth provider to get an OAuth access token.
2) SAML provider to get a SAML assertion.
3) IAM policy based on the request parameter values.

Retrieving credentials from a database.
1) If the call succeeds, the Lambda function grants access by returning an output object containing at least an IAM policy and a principal identifier.
2) API Gateway evaluates the policy.
3) If access is denied, API Gateway returns a suitable HTTP status code, such as 403 ACCESS_DENIED.
4) If access is allowed, API Gateway executes the method.

Microservices

Characteristics of Microservices

- Autonomous

- Specialized

- Agility

- Flexible scaling

- Easy Deployment

- Technological Freedom

- Resilience
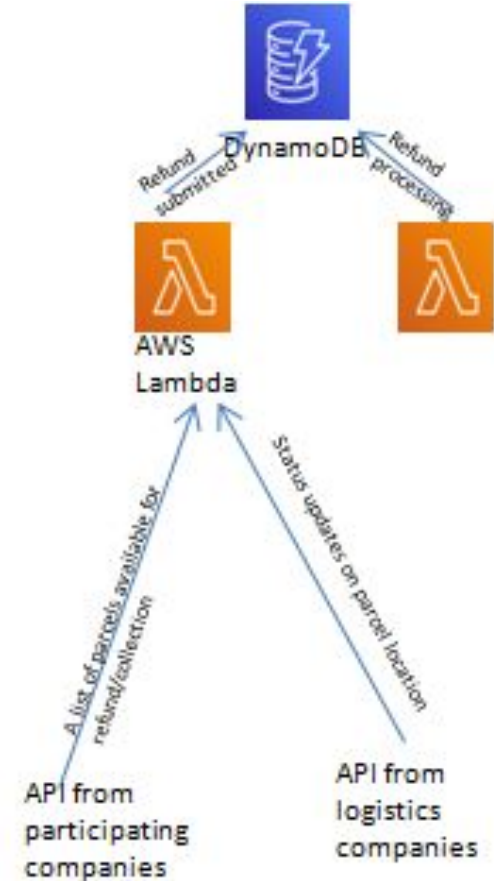
AWS steps function flow and Emailing service

Orchestrate microservices - Use Step Functions to combine multiple AWS Lambda functions into responsive serverless applications and microservices.

AWS Simple Notification Service

AWS Step Functions workflow

Application Load Balancer

VPC

AWS Fargate

AWS Fargate

Amazon Elastic Container Registry

Amazon DynamoDB
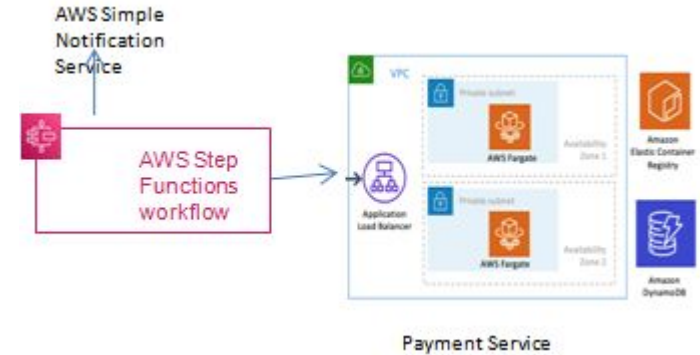
Payment Service

Payment service Part 1

The flow in vpc payment service
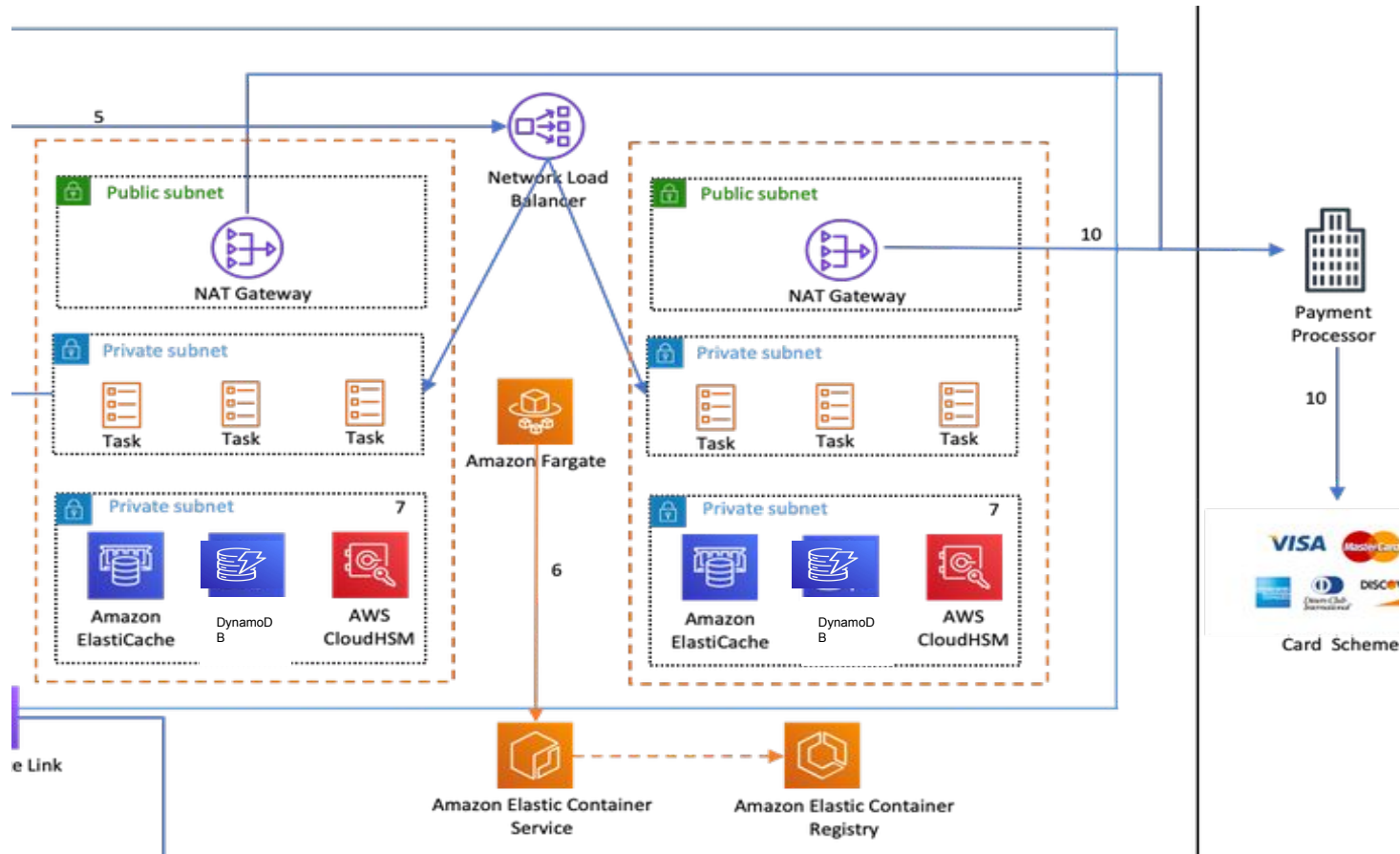
Payment service part 2

Why VPC is needed?

Amazon virtual private cloud (VPC)
- Sensitive data and information of our customers are required to store in our cloud database.
- A virtual network dedicated to our AWS account, logically **isolated** from other virtual networks in the AWS Cloud.
- **Multiple layers of security**, including security groups* and network access control lists (ACL) to protect AWS resources
- **Complete control** over virtual networking environment, including resource placement, connectivity, and security.
- We can define rules and policies for your services
- Setting up subnets, IP ranges, and network configurations as required.
- **VPC endpoints** enable us to privately connect your VPC to services hosted on AWS without requiring an Internet gateway, a NAT device, VPN, or firewall proxies.

DynamoDB Feature	Benefit
Serverless	Fully managed, fault tolerance
Highly Available	99.99% availability SLA
NoSQL type of database with Name/Value structure	**Flexible schema**, good for when data is not well structured or unpredictable.
Horizontal scaling	Seamless scalability to any scale with push button scaling or Auto Scaling
Transaction Options	**Strongly consistent** or **Eventually consistent** reads, support for ACID transactions
Backup	**Point-in-time** recovery down to the second in last 35 days; **On demand** backup and restore.
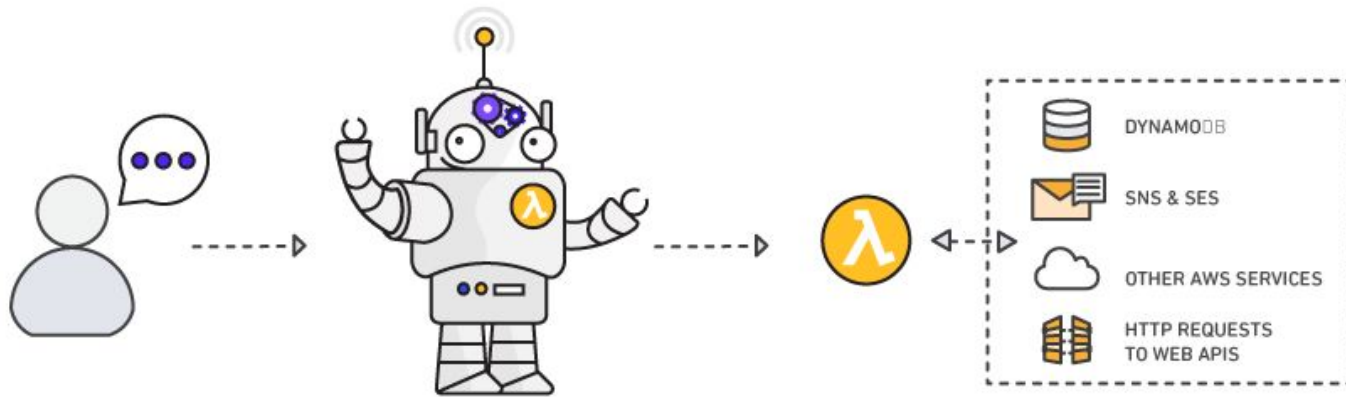
A user converses with the chatbot to request information.

The chatbot can understand user requests. It can reply with answers, perform actions, ask for more inputs, or respond with error-handling prompts.

The chatbot fulfills user requests by triggering AWS Lambda. Lambda retrieves the requested information or performs other types of actions.

AMAZON LEX

Deep learning functionalities

Natural language understanding

Automatic speech recognition

AWS LAMBDA

Runs bot code with serverless compute

Executes code only when triggered by Lex

Scales automatically per request

Data Analysis (Part 1)

User → Amazon Lex → Conversation Logs → Amazon CloudWatch → CloudWatch Log Insights and Dashboard
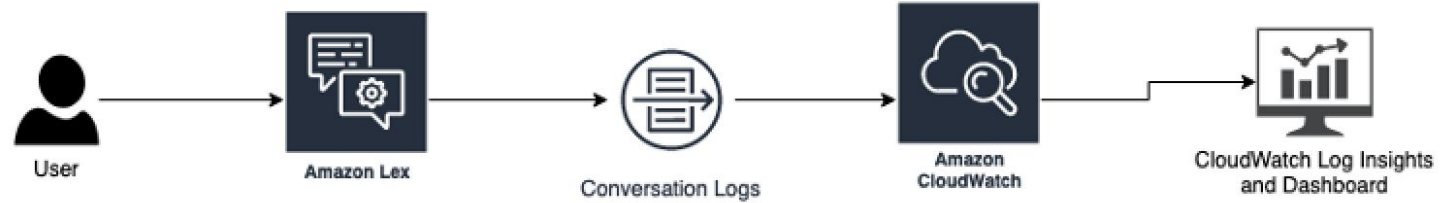
LEX conversation logs

Data Analysis (Part 2)
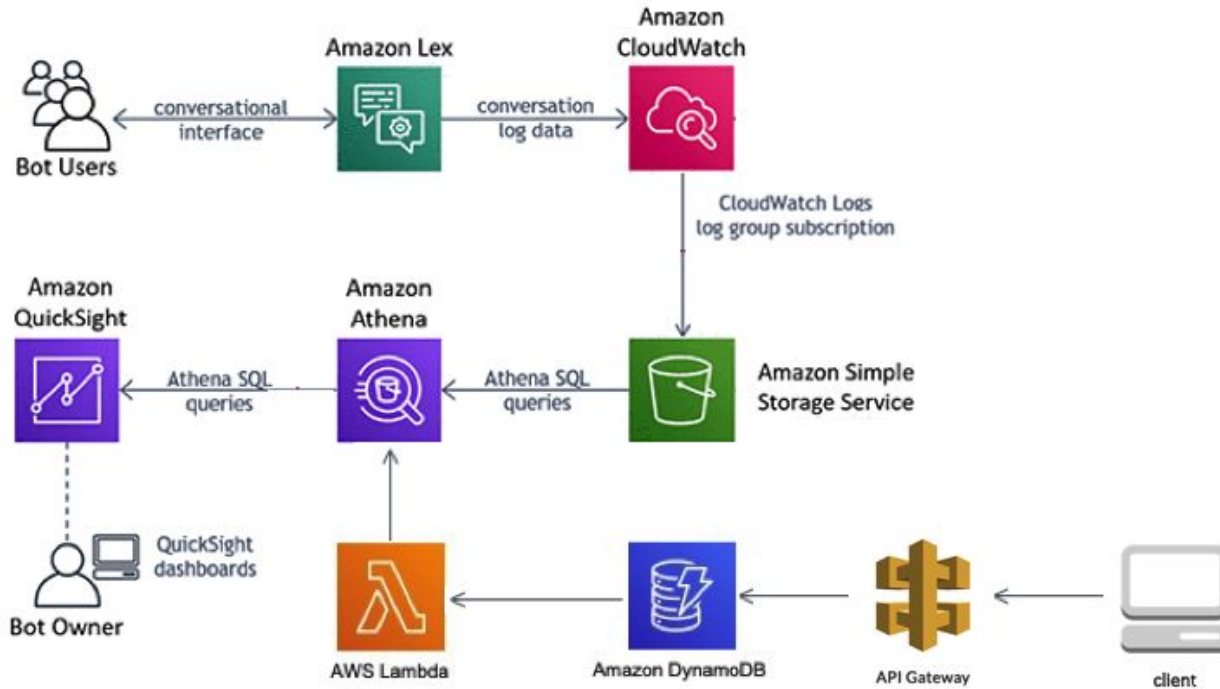
Data Analysis (Part 3)
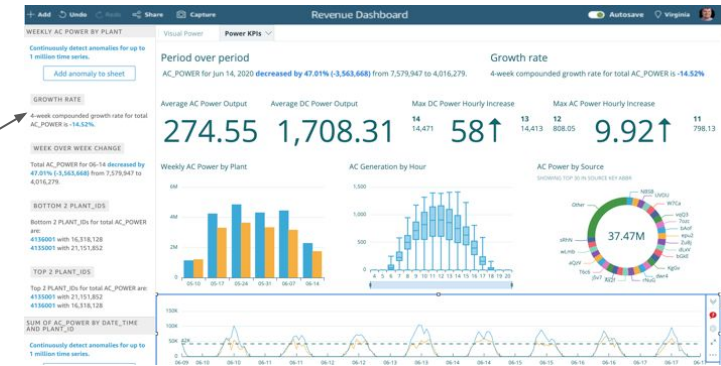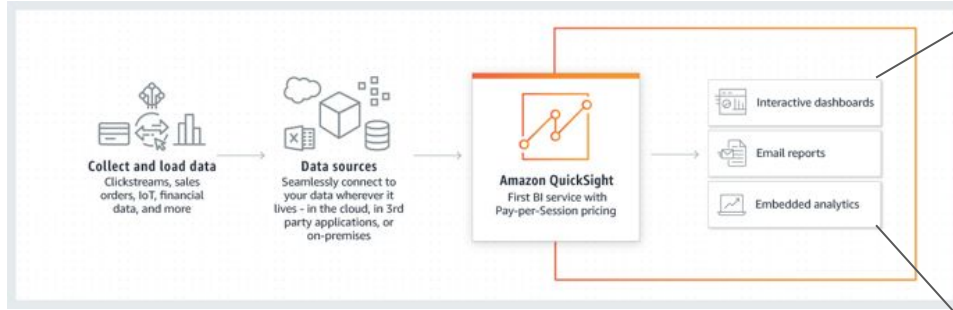
Data to analyse (Client):
- Item name
- Frequency of refund
- Reasons
- Time frame

Security

Threats	Countermeasures to mitigate and protect
Insecure Application Programming Interface (API)	*Include access controls, authentication and encryption on APIs *Regular code tests and review *Web Application Scanning *Penetration Test *Use of secure coding methodology/practices (e.g. validate input, authentication/password management, session management, cryptographic, etc) *AWS Web Application Firewall (WAF)
Insufficient identity, credential and access management	*Identify who should access to what. *Grant access, privileges and permissions on a need to basis. *Use Access Control List (ACL) if needed. *AWS Identity and Access Management (IAM) tool.
Distributed Denial of Service (DDoS)	*AWS Shield (DDoS protection service to safeguards applications running on AWS) *Intrusion detection and prevention *Network monitoring

Security

Threats	Countermeasures to mitigate and protect
System/Application/Network vulnerabilities	System/Network vulnerabilities *Managed by AWS Application vulnerabilities *Application/Security Patches *Regular vulnerability scanning *AWS Web Application Firewall (WAF)
Data loss	*Backup Solution
Data breaches	*Password Policy (e.g. complex password, password history, etc) *Two-factor authentication (2FA) *Data encryption (Use of AWS Key Management Service (KMS) to encrypt data) *Security awareness and training, *Timely security patching *Security Information and Event Management (SIEM) *Incident Response

Security

Threats	Countermeasures to mitigate and protect
Account hijack	*Security Awareness and Training *Antivirus software and firewall
Abuse and nefarious use of cloud services	*High level of infrastructure security and protection. (Managed by AWS) *Business Continuity Plan *Disaster Recovery Plan
Shared technology vulnerabilities	*Isolation from other tenants with firewalls and networking. (Managed by AWS) *Perimeter security to isolate traffic and stop vulnerabilities from other tenants. (Managed by AWS)

Security

Threats	Countermeasures to mitigate and protect
Malicious insiders	*Security Information and Event Management (SIEM) *Network monitoring *Incident response *Timely removal of resigned/terminated staff id. Additional controls to minimize data theft by insiders *Data Loss Prevention (DLP) Solution *Encrypt sensitive/confidential data *Restrict access to sensitive/confidential data
Advanced Persistent Threat	We are a small start-up company. The likelihood of this threat is very low as most of APT attacks are sponsored by state/nation and is targeted at governments and large organisations for the purpose of stealing data, intellectual property, etc.
Insufficient due diligence	Due diligence were performed with regard to technical, business, legal and compliance implication. And there were no known implications.