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Open Banking Payment Processing Platform

Market Size and Market Pain

- Total purchase transactions on global cards in 2017 was…

  VISA 147.9 bil, MC 75.8 bil, UnionPay 58.6 bil, AMEX 7.5 bil, JCB 3.4 bil, Discover 2.5 bil

- Behind every swipe is a profoundly more complex procedure than what meets the eye

- Payment processing represents one of the biggest costs that merchants must confront

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Current Payment System Participants

- **Cardholder**: The person buying goods or services at the store.

- **Merchant**: This is the store or vendor who sells goods or services to the cardholder.

- **Acquiring Bank/Merchant's Bank**: The acquiring bank is responsible for receiving payment authorization requests from the merchant and sending them to the issuing bank.

- **Acquiring Processor/Service Provider**: This third-party entity is sometimes an arm of the acquiring bank. A processor provides a service or device that allows merchants to accept credit cards as well as send credit card payment details to the credit card network.

- **Credit Card Network/Association Member**: These entities operate the networks that process credit card payments worldwide and govern interchange fees. Examples of credit card networks are Visa, MasterCard, Discover and American Express.

- **Issuing Bank/Credit Card Issuer**: This is the financial institution that issued the credit card involved in the transaction.
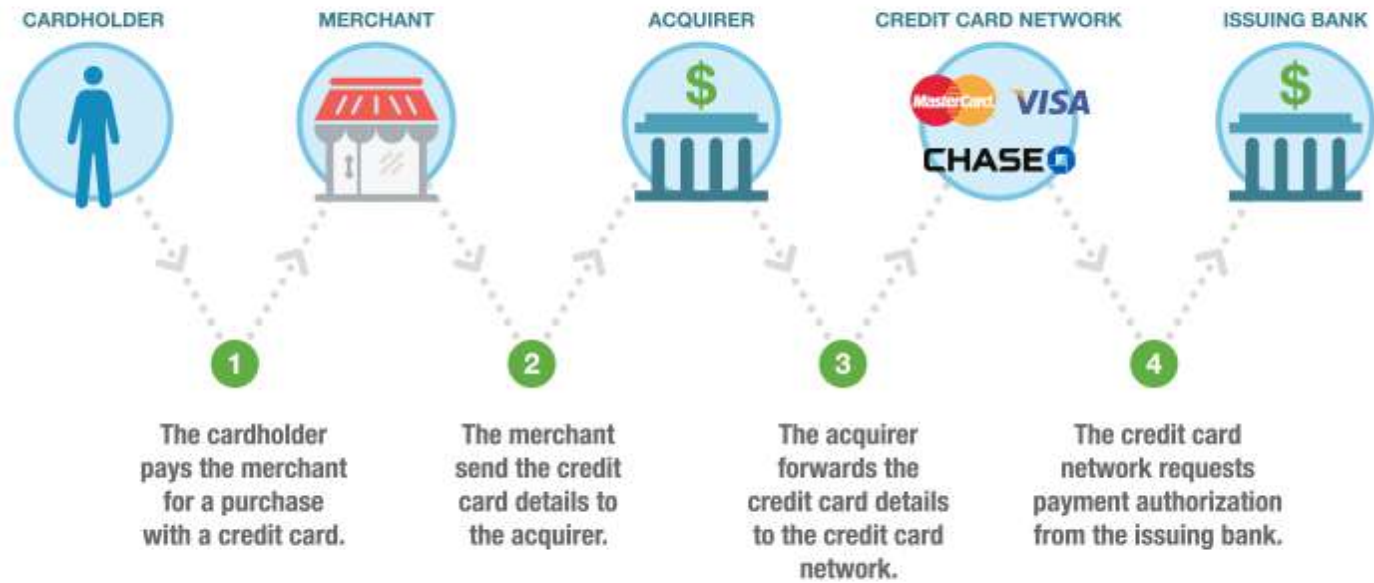
Current Process: Authorization

1. The cardholder presents their credit card for payment to the merchant at the point of sale.

2. After swiping their credit card on a point of sale (POS) terminal, the customer's credit card details are sent to the acquiring bank (or its acquiring processor) via an Internet connection or a phone line.

3. The acquiring bank or processor forwards the credit card details to the credit card network.

4. The credit card network clears the payment and requests payment authorization from the issuing bank. The authorization request includes the following:
   - Credit card number
   - Card expiration date
   - Billing address — for Address Verification System (AVS) validation
   - Card security code — CVV, for instance
   - Payment amount

Current Process
Expensive & Complicated

① Authorization

CARDHOLDER	MERCHANT	ACQUIRER	CREDIT CARD NETWORK	ISSUING BANK

1 The cardholder pays the merchant for a purchase with a credit card.

2 The merchant send the credit card details to the acquirer.

3 The acquirer forwards the credit card details to the credit card network.

4 The credit card network requests payment authorization from the issuing bank.

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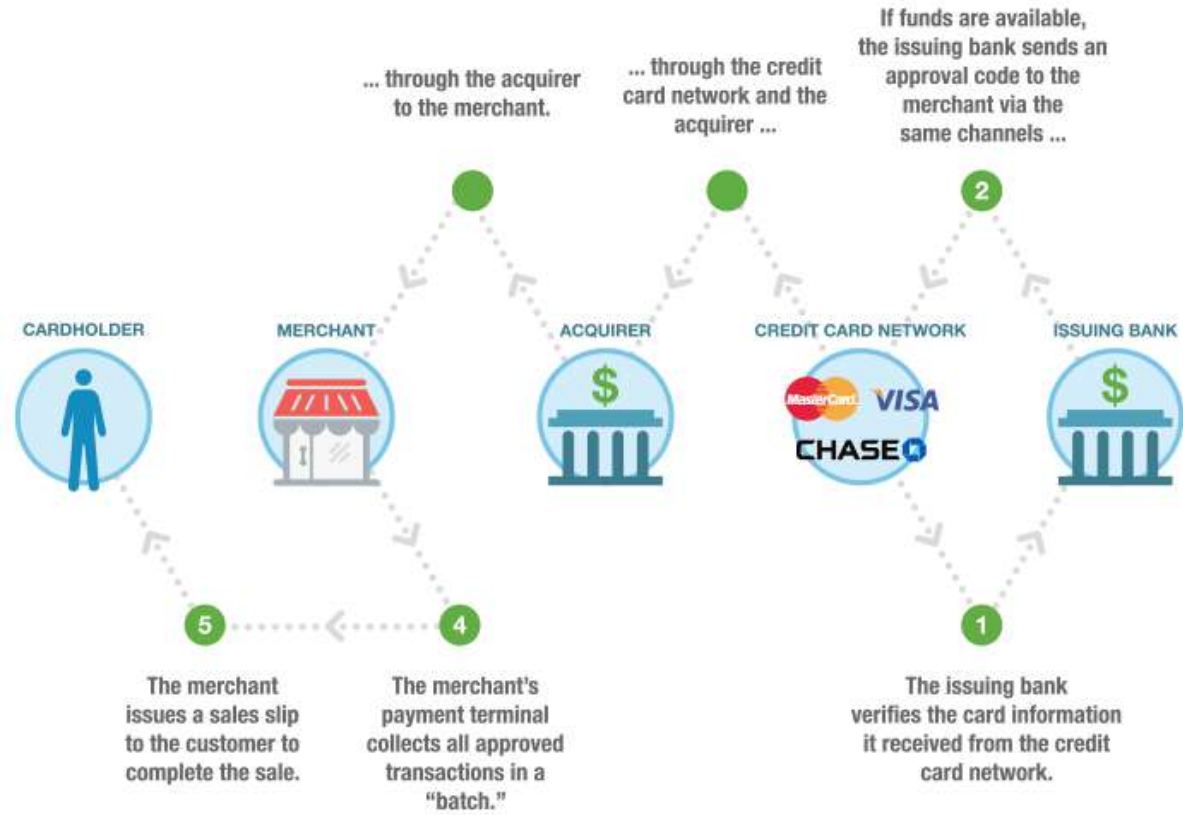
Current Process: Authentication

1. The issuing bank receives the payment authorization request from the credit card network.

2. The issuing bank validates the credit card number, checks the amount of available funds, matches the billing address to the one on file and validates the CVV number.

3. The issuing bank approves, or declines, the transaction and sends back the appropriate response to the merchant through the same channels: credit card network and acquiring bank or processor.

4. Once the merchant receives the authorization, the issuing bank will place a hold in the amount of the purchase on the cardholder's account. The merchant's POS terminal will collect all approved authorizations to be processed in a "batch" at the end of the business day.

5. The merchant provides the customer a receipt to complete the sale.

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Current Process
Expensive & Complicated

2 **Authentication**

... through the acquirer to the merchant.

... through the credit card network and the acquirer ...

If funds are available, the issuing bank sends an approval code to the merchant via the same channels ...

CARDHOLDER

MERCHANT

ACQUIRER

CREDIT CARD NETWORK

ISSUING BANK

5 The merchant issues a sales slip to the customer to complete the sale.

4 The merchant's payment terminal collects all approved transactions in a "batch."

1 The issuing bank verifies the card information it received from the credit card network.

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Current Process: Clearing & Settlement

1. At the end of each business day, the merchant sends the approved authorizations in a batch to the acquiring bank or processor.

2. The acquiring processor routes the batched information to the credit card network for settlement.

3. The credit card network forwards each approved transaction to the appropriate issuing bank.

4. Usually within 24 to 48 hours of the transaction, the issuing bank will transfer the funds less an "interchange fee," which it shares with the credit card network.

5. The credit card network pays the acquiring bank and the acquiring processor their respective percentages from the remaining funds.

6. The acquiring bank credits the merchant's account for cardholder purchases, less a "merchant discount rate."

7. The issuing bank posts the transaction information to the cardholder's account. The cardholder receives the statement and pays the bill.

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Current Process
Expensive & Complicated

3 Clearing & Settlement

7 The issuing bank posts the transaction to the cardholder's account, and the cardholder pays the bill.

6 The acquirer credits the merchant less a "merchant discount rate."

5 The credit card network pays the acquirer its percentage of the remaining funds.

4 The issuing bank transfers the funds to the acquirer less an "interchange fee."

CARDHOLDER   MERCHANT   ACQUIRER   CREDIT CARD NETWORK   ISSUING BANK

1 The merchant sends the batch of approved transactions to the acquirer.

2 The acquirer forwards the batch to the credit card network for settlement.

3 The credit card network sends each approved transaction to the appropriate issuing bank.

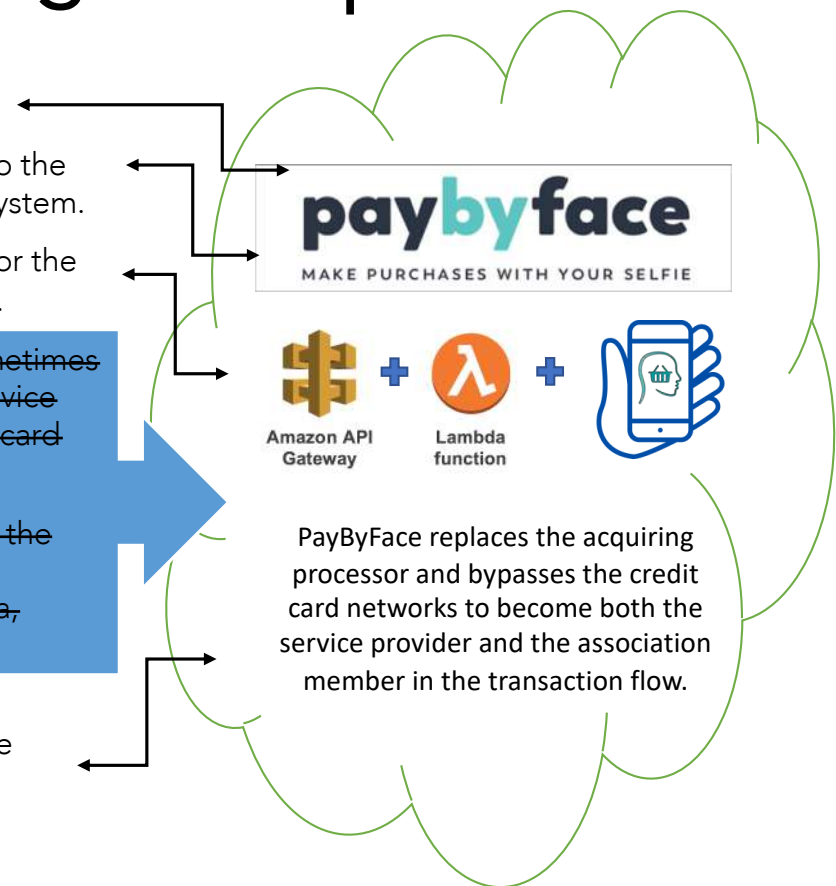**paybyface**
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Current Process: Fees & Costs

- Merchants must pay a price to accept credit card payments. They usually are charged as flat fees, per-transaction fees or volume-based fees.

- It's usually between 2% and 3% (online merchants pay the higher end) — to as much as 5% — of the total purchase price after sales tax is added.

- This rate comprises of several cost components:

  1. **Interchange Fee**: This is a percentage to the issuing bank and a fixed transaction fee to the credit card network. For instance, the per-swipe fee might be 2.35% plus $0.15

  2. **Assessment Fee**: Assessments generally are charged per transaction but can vary depending on the pricing model the merchant follows. For instance, Visa might charge a 0.11% assessment plus $0.0195 processing or usage fee for each card swipe. Assessment amounts may change periodically. Combined with the interchange fee, assessments constitute between _75% and 80% of total card-processing costs_.

  3. **Markup Fee**: Acquiring banks and acquiring processors usually will include a markup over interchange fees and assessments partly as profit and partly to cover the cost of facilitating credit card transactions. It constitutes between _20% and 25% of total card-processing costs_.

- Therefore, most will seek the cheapest credit card processing rates or mark up the prices of their products so customers' payments can absorb the card-processing cost.

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PayByFace + Open Banking Participants

- **Customer**: The person buying goods or services at the store.

- **Merchant**: This is the store or vendor who sells goods or services to the customer. The transaction is initiated on their point of sale (POS) system.

- **Merchant's Bank**: The merchant's bank is the destination account for the payment requested by the POS from the customer's bank account.

- ~~Acquiring Processor/Service Provider: This third-party entity is sometimes an arm of the acquiring bank. A processor provides a service or device that allows merchants to accept credit cards as well as send credit card payment details to the credit card network.~~

- ~~Credit Card Network/Association Member: These entities operate the networks that process credit card payments worldwide and govern interchange fees. Examples of credit card networks are Visa, MasterCard, Discover and American Express.~~

- **Customer's Bank**: This is the financial institution that issued the customer's bank/credit card and the source of funds involved in the transaction to pay for the goods or services purchased.

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Amazon API Gateway + Lambda function +

PayByFace replaces the acquiring processor and bypasses the credit card networks to become both the service provider and the association member in the transaction flow.

PayByFace Process: Authorization & Authentication

1. The customer uses their PayByFace mobile app to authorize payment at the merchant's point of sale (POS) terminal using the in-app face recognition engine.

2. The PayByFace mobile app sends the transaction details to the PayByFace API Gateway for processing.

3. The PayByFace API Gateway sends the customer's card details to their issuing bank and checks for available funds through a sequence of Open Banking API calls. The authorization request includes the following:
   - Credit card number
   - Card expiration date
   - Billing address — for Address Verification System (AVS) validation
   - Card security code — CVV, for instance
   - Payment amount

4. The customer's bank approves/declines the payment; and in the case of an approval, the bank queues up the fund transfer request from the customer's account directly to the merchant's account and sends the authorization code back to the PayByFace API Gateway.

5. The PayByFace API Gateway relays the bank's response back to the merchant POS system and the customer's mobile app; and in the case of an approval, provides the customer a receipt to complete the sale.

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MAKE PURCHASES WITH YOUR SELFIE

PayByFace Process
Innovative & Streamlined

1 Authorization&Authentication

CUSTOMER

MERCHANT

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Amazon API Gateway + Lambda function

CUSTOMER BANK

1 Customer uses the PayByFace app to validate their identity and authorize the payment

2 Merchant POS integrates with the PayByFace API Gateway to transmit transaction details

3 PayByFace API Gateway has a secure and trusted communication channel with the customer's bank via Open Banking APIs

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MAKE PURCHASES WITH YOUR SELFIE

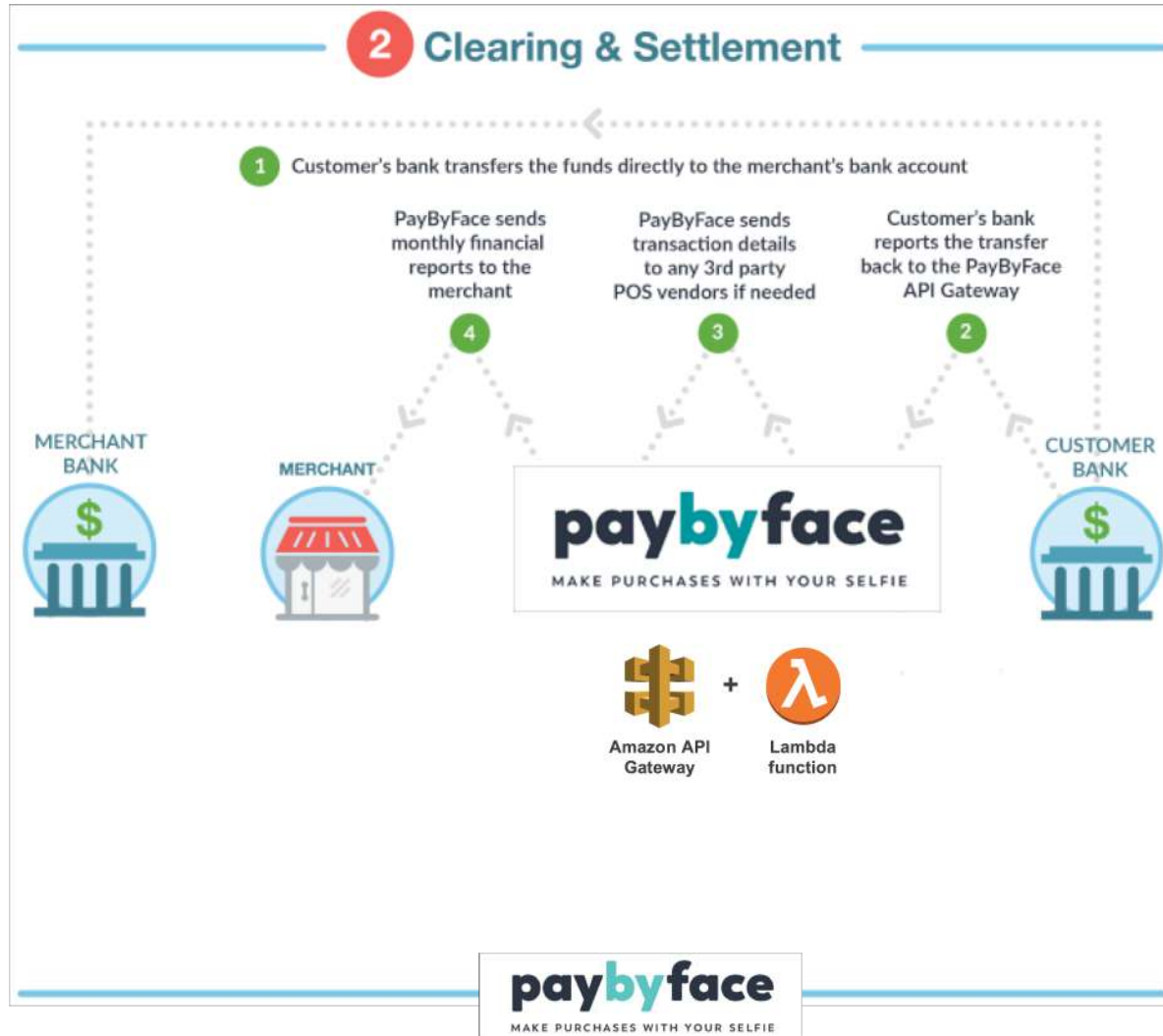# PayByFace Process: Clearing & Settlement

1. Usually within 24 to 48 hours of the transaction, the customer's bank will transfer the funds directly to the merchant's bank account.

2. The customer's bank posts the transaction information to the customer's account. The customer receives the statement and pays the bill.

    SIMPLE & EFFICIENT COMPARED TO THE COMPLICATED SYSTEM WE HAVE NOW !!!

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PayByFace Process: Fees & *SAVINGS!*

- Merchants will still have to pay a price to use PayByFace as an alternative method but the cost savings will be **reduced significantly**.

- PayByFace will cost a **flat USD $0.05-$0.12 convenience fee per transaction depending on daily volume.**

- The huge savings on payment processing to the merchants can be put back into reduced cost for goods and services for the customers who choose to pay with PayByFace and **receive an additional discount at the time of purchase instantly!**

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