E-commerce Transactions



John Elliott

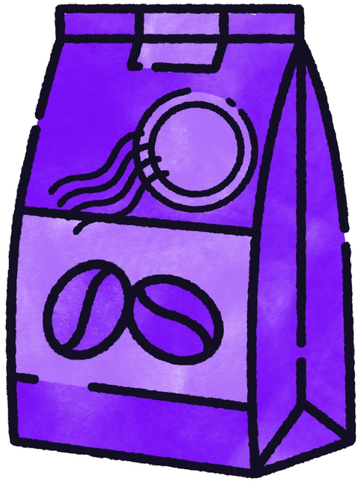
Payments, Security, Privacy, and Risk Specialist

@ withoutfire | pci.rocks

Ordering Coffee



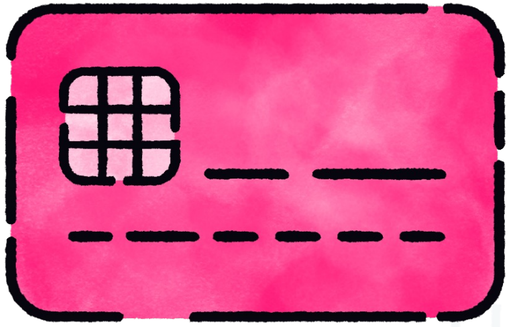
I love the coffee so much



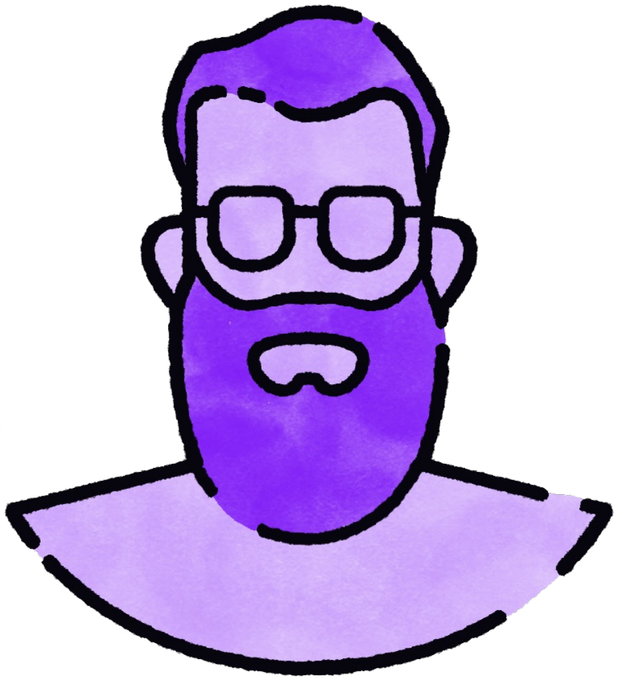
I want to get some beans



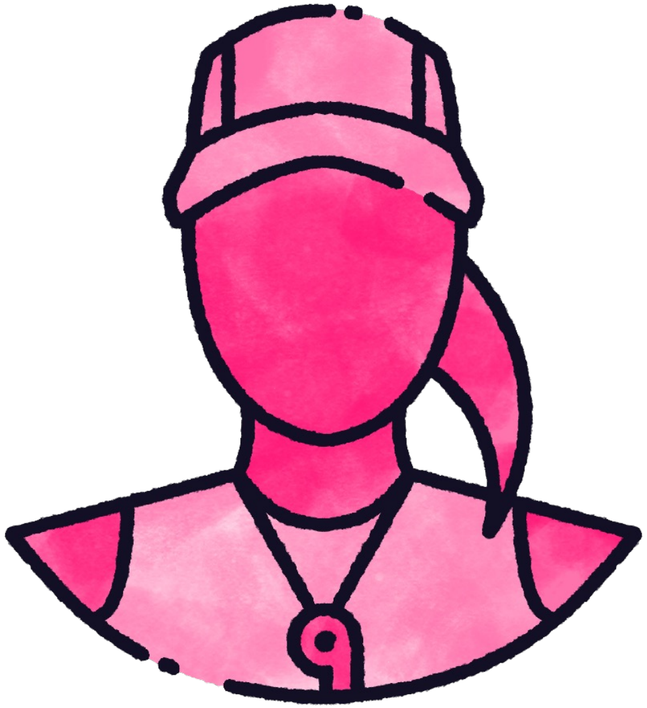
From the Wired Brain Coffee website



“I’ll pay by card...”



If we send the coffee to Alice, will Wired Brain Coffee be paid for this?



I hope those coffee beans arrive



1. Is it really Alice making that transaction?
2. Is it the real card?
3. Does Alice have enough money or credit?
4. Is it an allowed transaction?

The Data on a Traditional Payment Card



The Data on a Traditional Payment Card



Card Verification Values

Chip	Magnetic Stripe	E-commerce
iCVV	CVV	CVV2

All three will be different values

The Data on a Traditional Payment Card



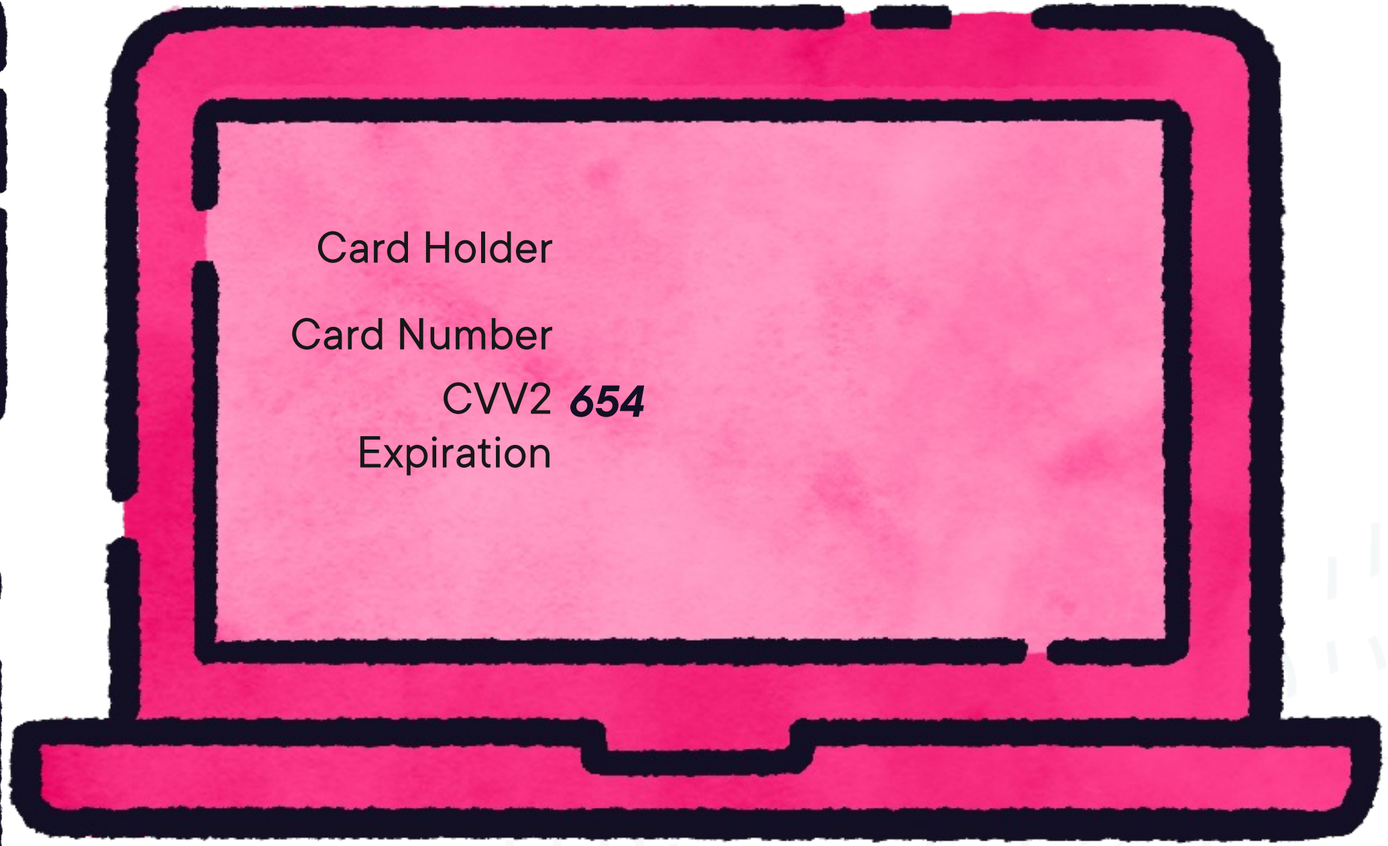
The Data on a Payment Card (AmEx Only)



E-commerce Authorization







Authorization Request



PAN	Exp. Date	CVV2	Amount	Merchant Code & ID

Authorization Request

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Authorization Request



1. Is it really Alice making that transaction?

Authorization Request

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Authorization Request

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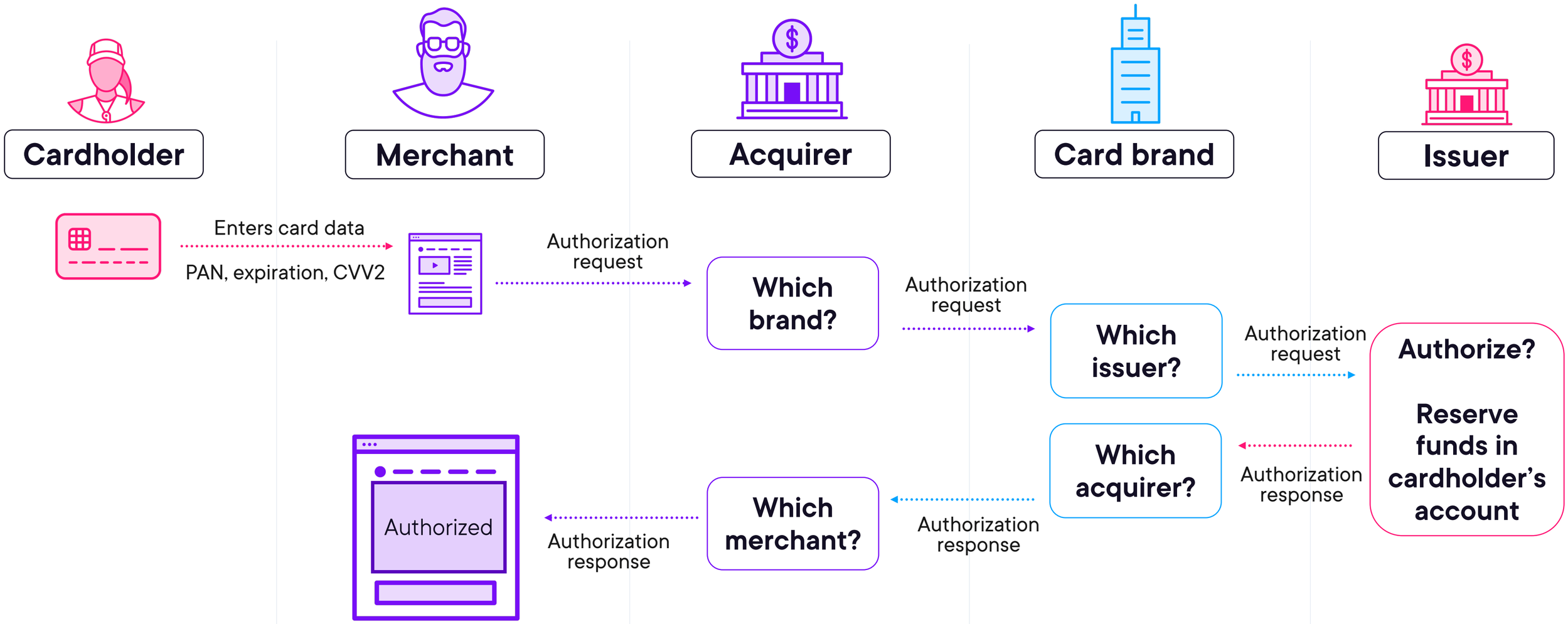
1. Is it really Alice making that transaction?
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4. **Is it an allowed transaction?**

E-commerce Authorization Request

PAN	Exp. Date	CVV2	Amount	Merchant Code & ID

1. Is it really Alice making that transaction?	
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Message Flow: E-commerce Authorization



Two-step Authorization

Authorize

When order placed

Funds reserved by issuer

Can not be cleared

Capture

When order fulfilled

Can be cleared

Message Flow: E-commerce Capture



Cardholder



Merchant



Acquirer



Card brand

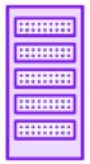


Issuer



Ships goods





Capture message

Which brand?

Capture message

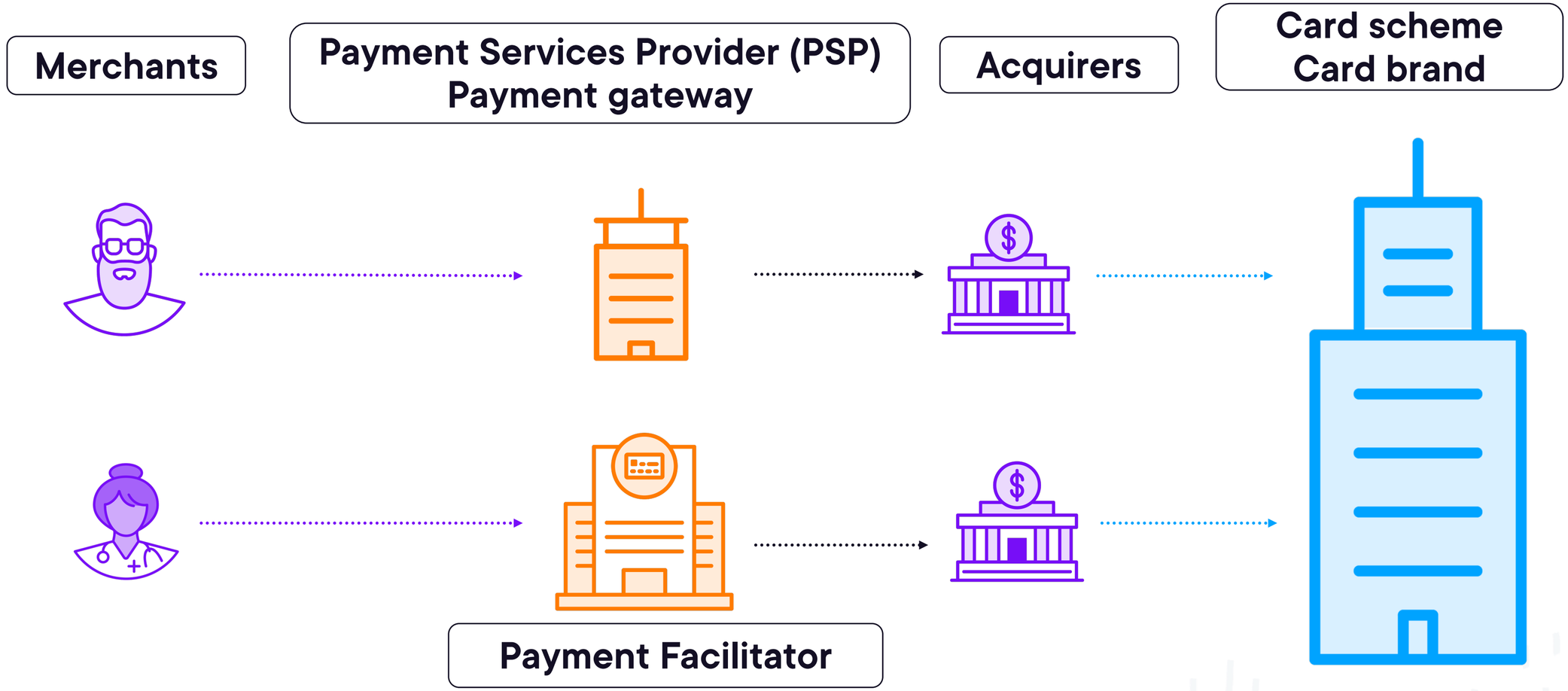
Which issuer?

Capture message

Debit funds from cardholder's account

Clearing and settlement happens in the same way as it does for in-person transactions.

Other E-commerce Ecosystem Members



Payment Service Provider (PSP)



Also called a payment gateway

Interface between a website and the ecosystem

Ways to accept e-commerce payments

- API
- IFRAME
- Full payment page

Can route transactions to one or many acquirers

Transparent to the transaction

Payment Facilitator



Is the actual merchant of record

Their customers are sub-merchants

Supply e-commerce solutions

- IFRAME
- Full payment page

A Changing Ecosystem

PSPs and
payment facilitators
became acquirers

Acquirers bought PSPs



3D Secure (3DS) Securing E-commerce Transactions

What Chip (& PIN) did for face-to-face transactions

E-commerce Authorization Request

PAN	Exp. Date	CVV2	Amount	Merchant Code & ID

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3D-Secure (3DS) : Is It Really Alice?



Have Alice confirm to the issuer that it is her

Need separate channel

- Alice → Issuer

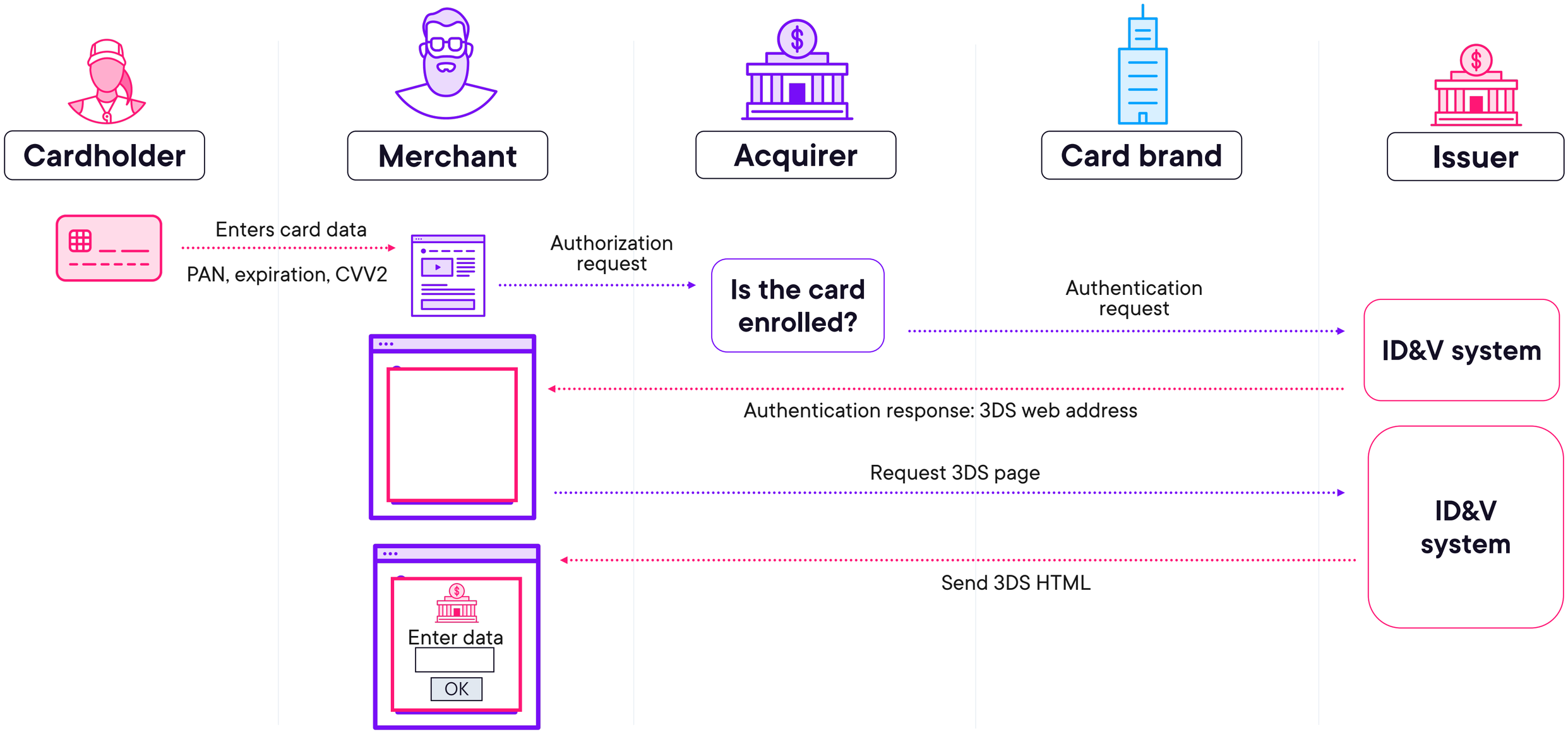
Need a way of issuer being able to positively identify Alice

- Add second factor for authentication

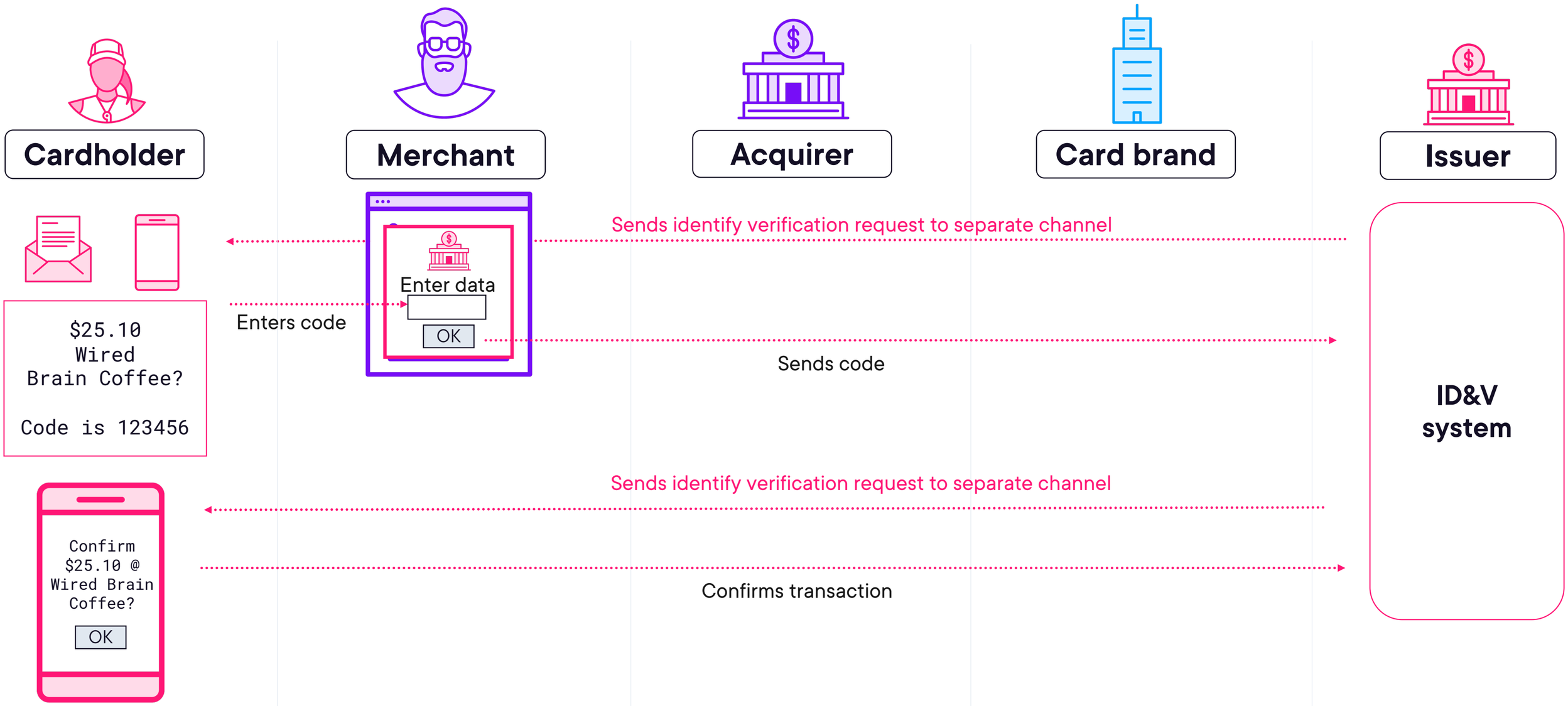
Need Alice not to give up

- “Frictionless”

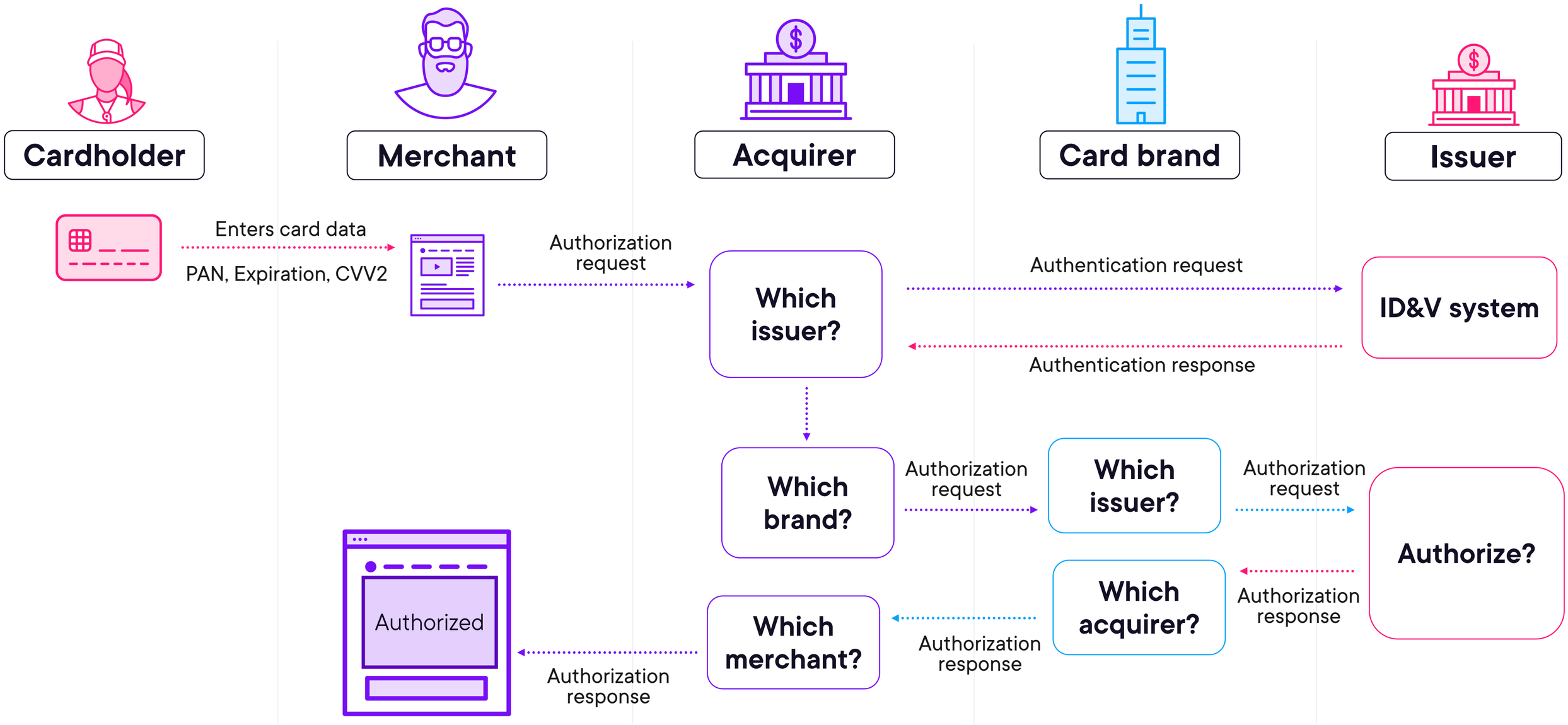
Message Flow: E-commerce Authorization with 3DS



Message Flow: E-commerce 3DS Authentication



Message Flow: E-commerce Authorization with 3DS



E-commerce Authorization Request with 3D Secure

Out-of-band second factor authentication				
PAN	Exp. Date	CVV2	Amount	Merchant Code & ID

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Steps in an E-commerce Transaction

Order

Cardholder → Merchant

Authenticate

Cardholder → Issuer

Authorize

Merchant → Issuer
(via acquirer and brand)

Capture

Merchant → Issuer
(via acquirer and brand)

Clearing

Merchant → Issuer
(via acquirer and brand)

Settlement

Issuer → Merchant
(via brand and acquirer)

Summary

Authorization flow is same as for in-person transactions

Unauthenticated e-commerce is higher risk

- Cannot validate cardholder
- Cannot validate card

3D Secure (3DS) adds out-of-band authentication

- Cardholder → Issuer
- Validates cardholder identity & intent

3DS is mandatory in Europe