

Improving Web Payments

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Overview

- Who is involved
- Benefits of Web payments standards
- What we are doing
- Status of implementation and standardization
- More W3C Activities to enhance commerce on the Web

Who is W3C



The World Wide Web Consortium (W3C) is an international community that, since 1994, develops open standards to ensure the long-term growth of the Web.

Web Payments Working Group



- Airbnb
- Alibaba
- **American Express**
- Apple
- BarrierBreak
- Blockstream
- Bloomberg
- Camara Interbancaria de Pagamentos
- Capital One
- Canton Consulting
- CDT
- China Mobile
- Department of Human Services
- Deque Systems
- Deutsche Telekom
- Digital Bazaar
- ETRI
- Facebook
- **Federal Reserve Bank of Minneapolis**
- Google
- GROUPE BPCE
- GS1
- GSMA
- HM Government
- IBM
- INRIA
- Inswave
- Intel
- IFSF
- ISO 20022 Registration Authority
- Klarna
- Knowbility
- KPN
- LGE
- Lyra Network
- **Mastercard**
- **MAG**
- Microsoft
- Mozilla
- NACS
- NIC.br
- Opera
- Oracle
- Orange
- Paciello Group
- PayCert
- PayGate
- Ripple
- Samsung
- **Shift4**
- Shopify
- Spec-Ops
- Stripe
- Telenor
- Tencent
- Unify
- **Worldpay**

Web Authentication Working Group

- Airbnb
- Alibaba
- Bloomberg
- Canton Consulting
- Deutsche Telekom
- ETRI
- Federal Reserve Bank of Minneapolis
- Google
- HM Government
- IBM
- Intel
- Intuit
- Microsoft
- MPOG
- Mozilla
- NIST
- New Zealand Government
- Nok Nok Labs
- Opera Software
- Orange
- PayGate
- PayPal
- Qualcomm
- SoftBank
- Tencent
- Thomson Reuters
- Trust1Team
- Yubico

Benefits of Web Payments Standards

Improved user experience

Increased conversions

Lower cost of front end development

Reduced PCI DSS exposure

Strong consumer authentication

Reduced fraud risk

Payment innovation built on standards

Interop =

Write once,
run in any
browser!

W3C[®]

Why Important Now

- Mobile (hardware capabilities, device connectivity, etc.)
- Regulation (e.g., PSD2)
- Payment innovation (digital wallets, blockchain, faster payments, etc.)
- EMV migration (fraud moves online)

W3C is enhancing the Web platform to meet evolving payments industry needs.

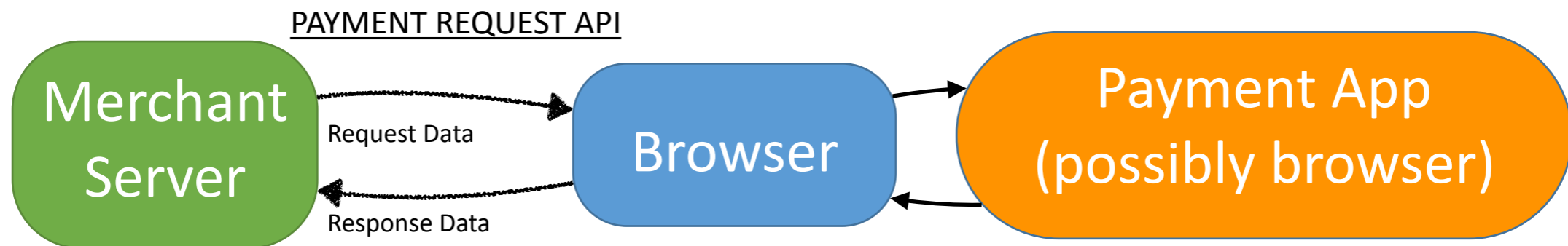
What We Are Doing

1. Streamlined user experience upon clicking the “buy” button
2. Secure card payments

Note: The API is payment method agnostic, but we have an early focus on card payments.

3. Strong authentication on the Web
4. Payment app innovation

Payment Request Ecosystem



Payment method

***Data** exchanged between merchant and payment app via the browser.*

Example: Basic Card Payment Method describes card data returned to merchant.

Payment app (aka digital wallet)

***User software** to make a payment, implementing one or more payment methods.*

Example: browser, native mobile app, or Web site.

1. Streamlined User Experience

MERCHANT-SIDE FORMS

Bighorn Canyon NRA Annual Pass

Before You Begin

1 Complete Agency Form

2 Enter Payment Info

3 Review & Submit

4 Confirmation

Please provide the payment information below. Required fields are marked with an *.

* Payment Amount:

\$30.00

* Cardholder Name

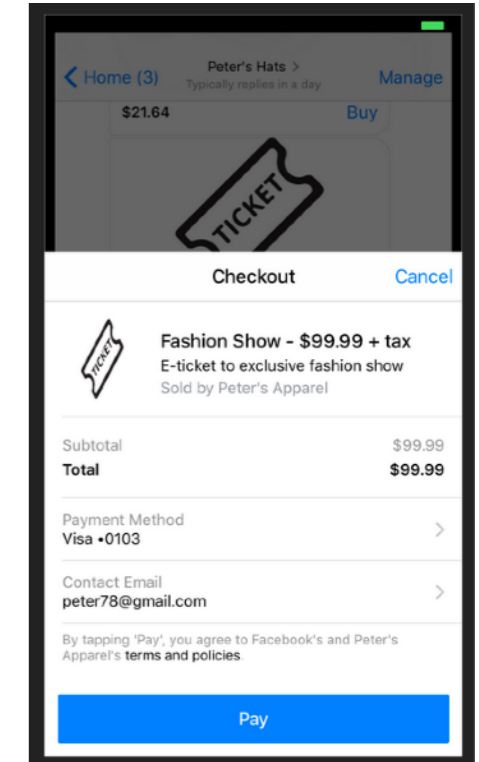
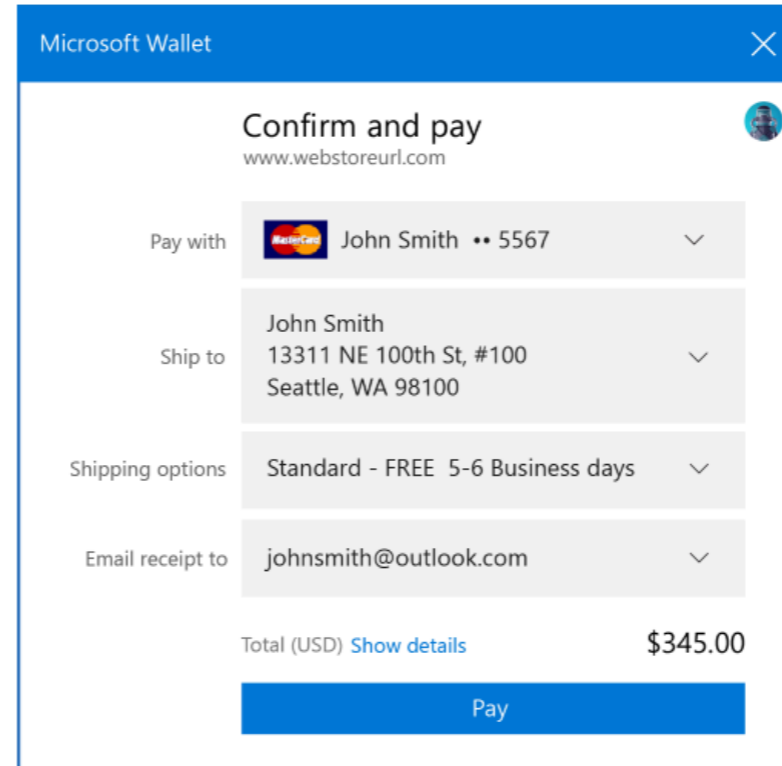
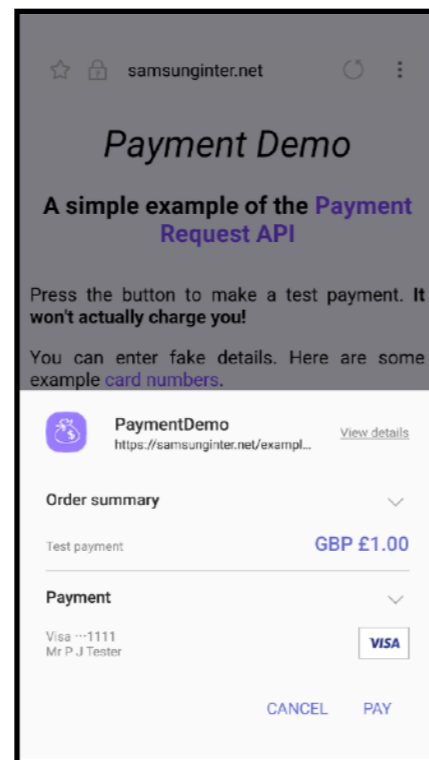
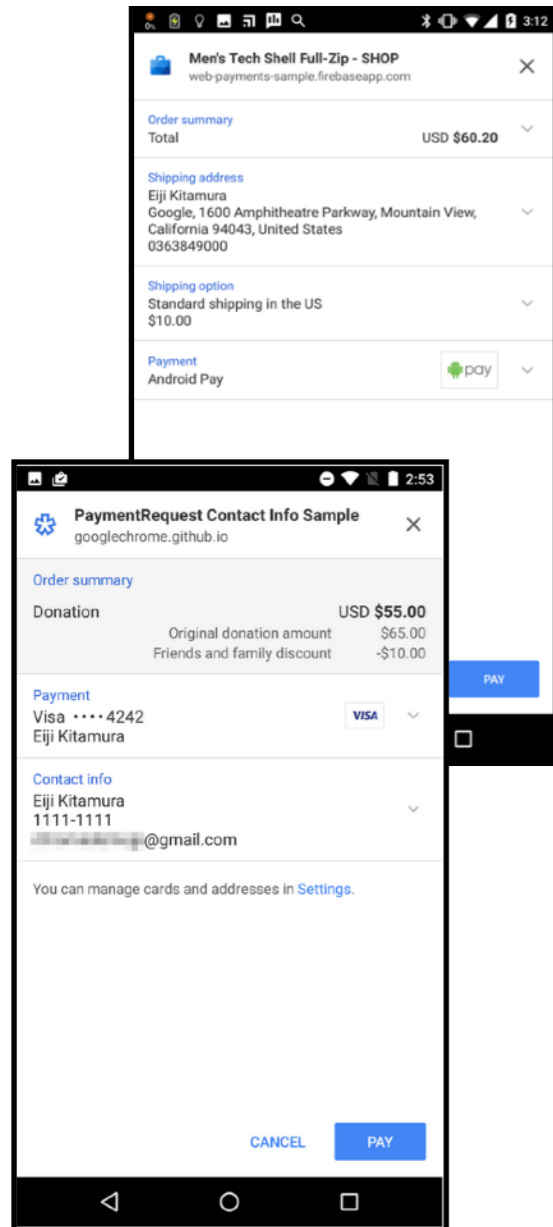
Ian Jacobs

* Cardholder Billing Address:

1600 Pennsylvania Ave NW

Streamlined User Experience

Reuse Stored Information

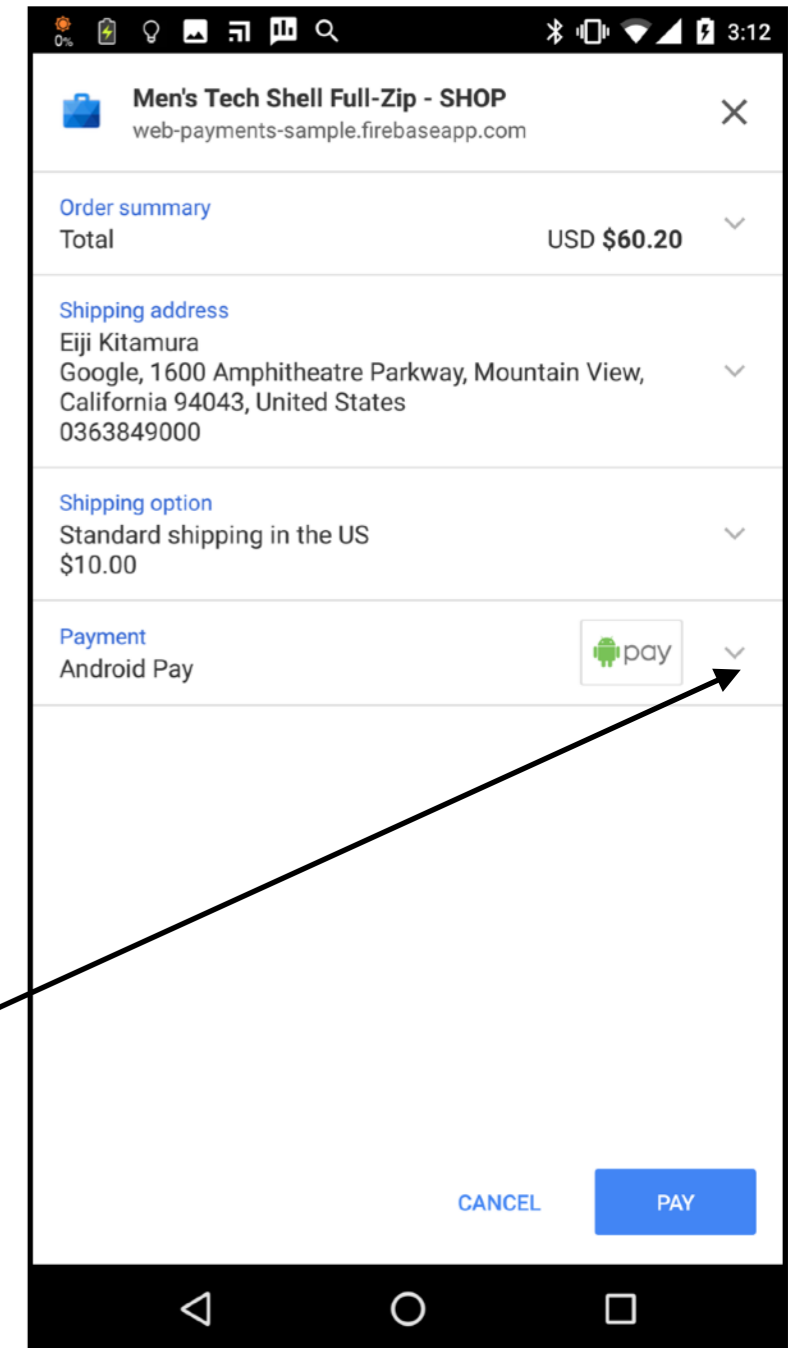
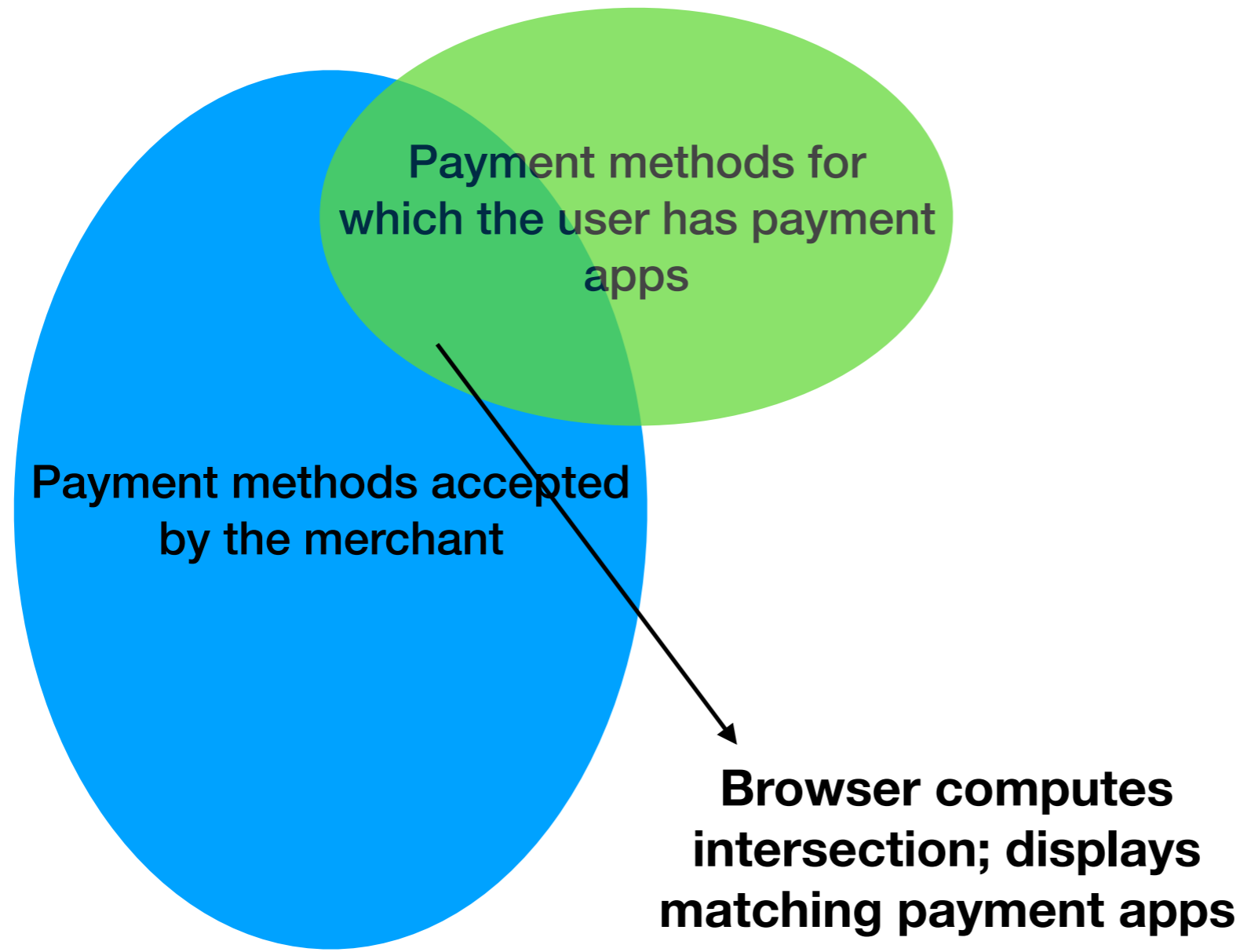


NEW native browser UI.

Note: how data stored is an implementation detail.

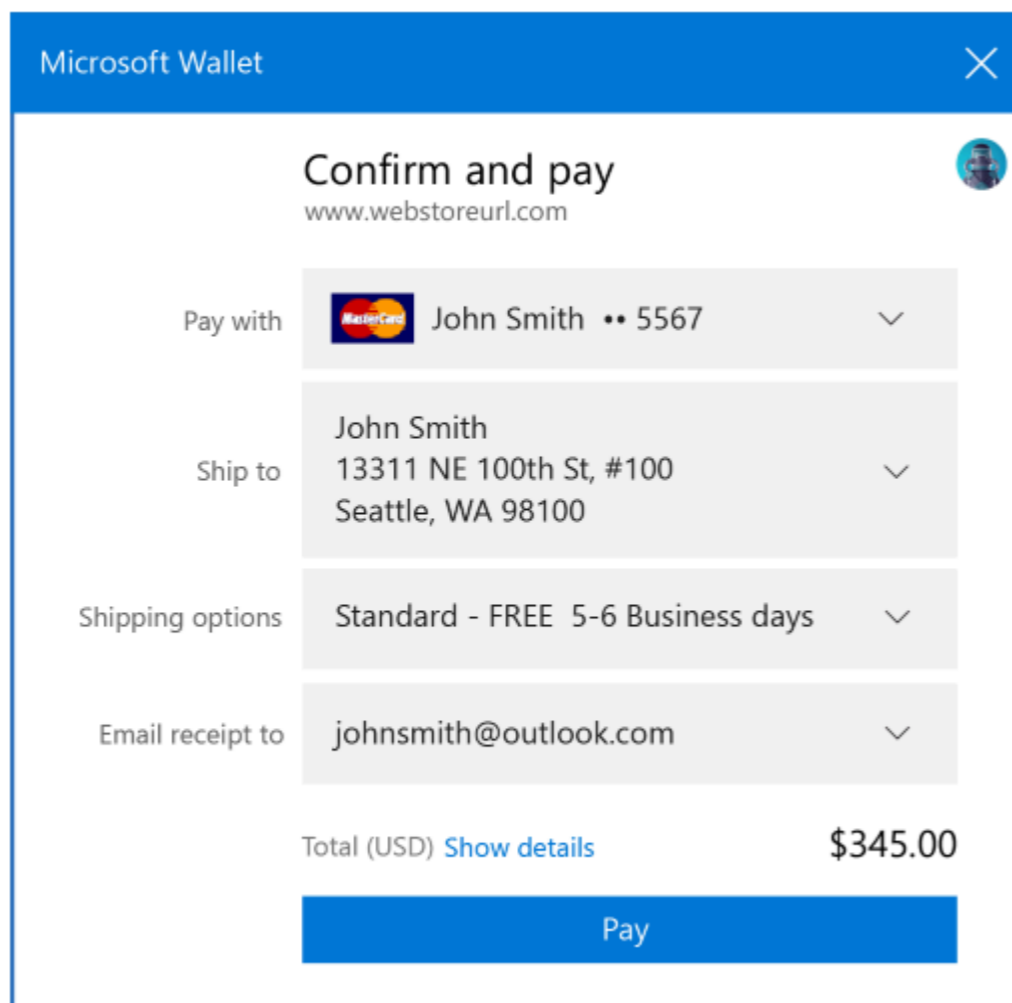


Reduce Complexity



Web-Wide Consistency

- Predictable, harmonized user experience across sites
- Easier for user to access preferred payment method

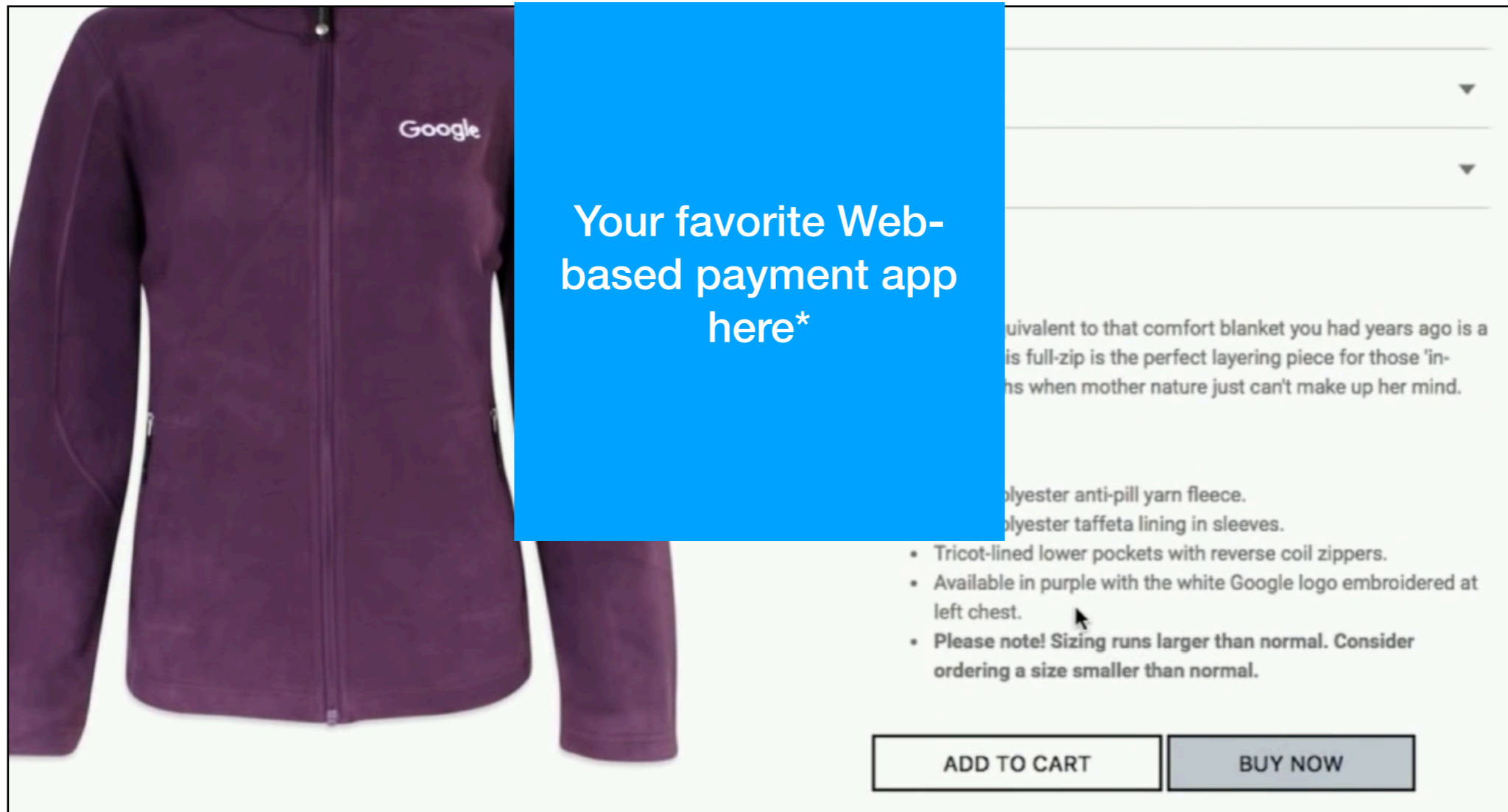


The screenshot shows a Microsoft Wallet checkout window titled "Confirm and pay" for the website "www.webstoreurl.com". The interface is clean and organized, with a blue header bar. Below the header, there are four main sections, each with a dropdown arrow on the right: "Pay with" (MasterCard, John Smith, •• 5567), "Ship to" (John Smith, 13311 NE 100th St, #100, Seattle, WA 98100), "Shipping options" (Standard - FREE 5-6 Business days), and "Email receipt to" (johnsmith@outlook.com). At the bottom, the total amount is displayed as "Total (USD) Show details \$345.00" with a blue "Pay" button.



Streamlined User Experience

Stay Near Merchant Site



We anticipate that Web-based payment apps will run within modal windows, superior to today's redirects.

*Not shown yet because Payment Handler API is in development

2. Secure Card Payments

~~EXPOSED PANS~~

~~4111111111111111~~

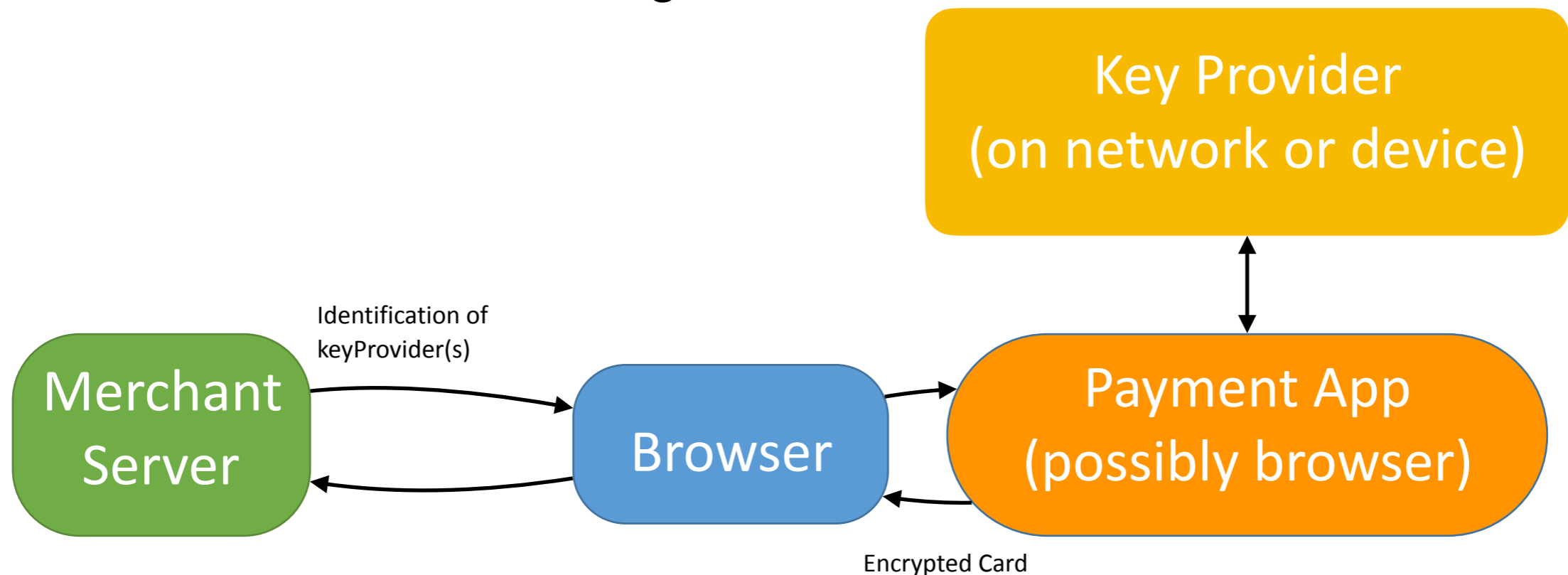
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~~378282246310005~~

Secure Card Payments

Encrypted Card

- Goal: Ensure PANs never leave the browser to improve security and reduce PCI DSS exposure.
- In discussion: a payment method to support encryption of basic card data by the browser or third party payment app.
- Question: is this interesting?

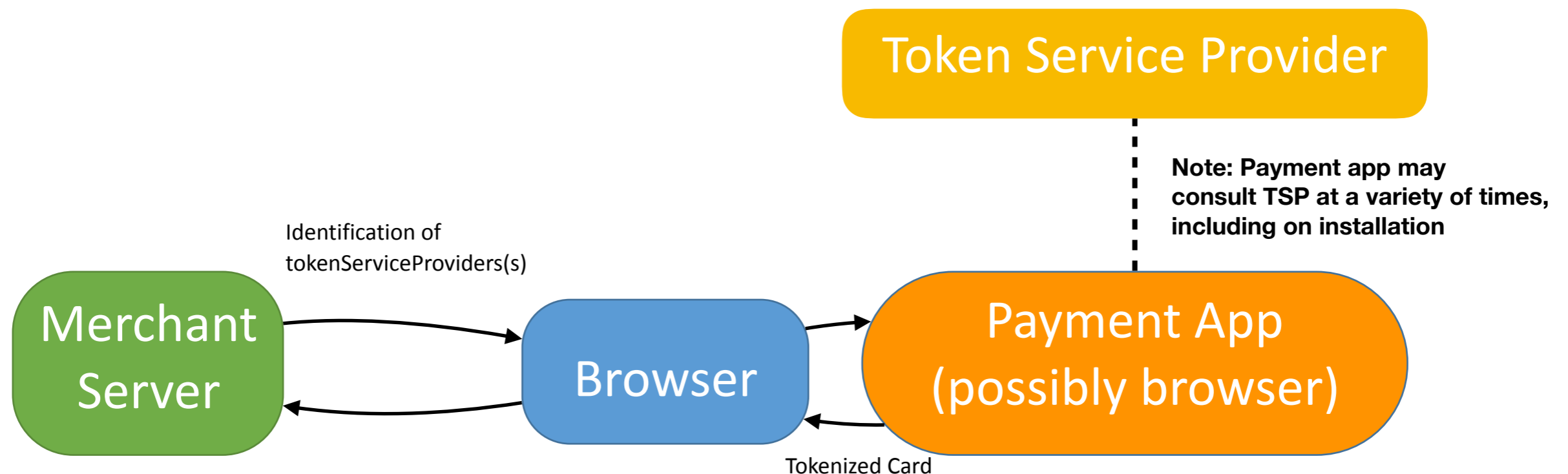


Tokenized Card

- Goal: Lower the cost of leveraging existing tokenization mechanisms.
- In discussion: a payment method to make it easier to build a front end that can receive tokens.

Note: this does not change backend handling of tokens.

- EMV Tokenisation WG reps participate directly in this work.



3. Strong Authentication on the Web

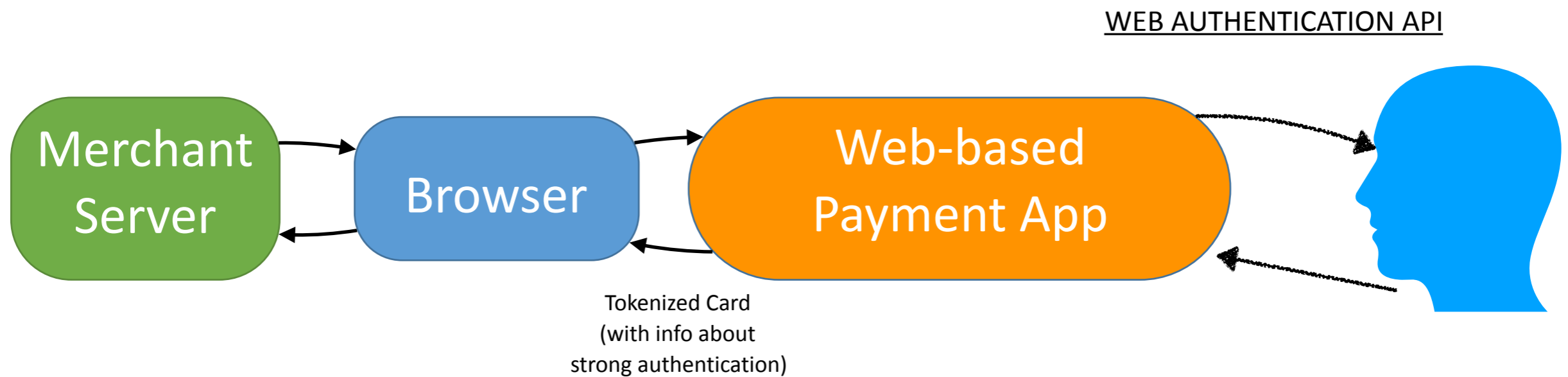
PASSWORDS

“123456”

“myexgirlfriend”

FIDO / W3C Collaboration

- Passwords are weak, leading to phishing, data loss, liability
- Replace with logins via USB key or smartphone

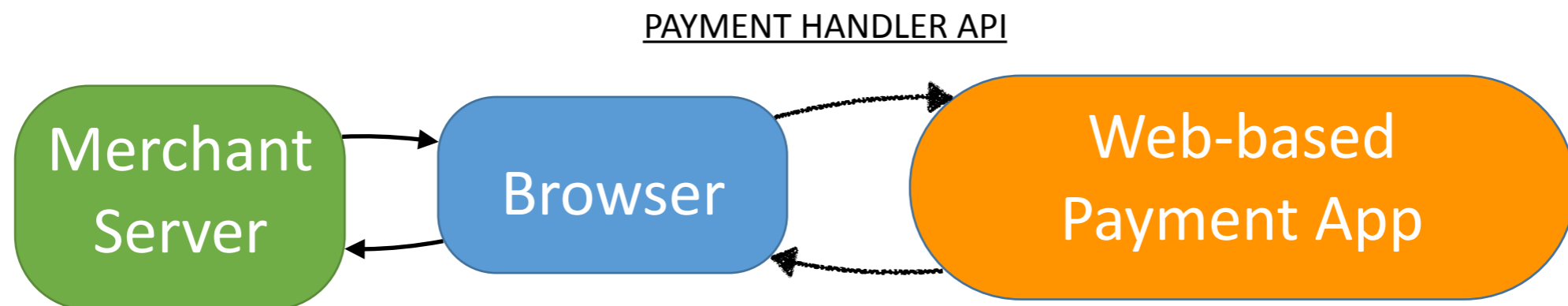


4. Payment App Innovation



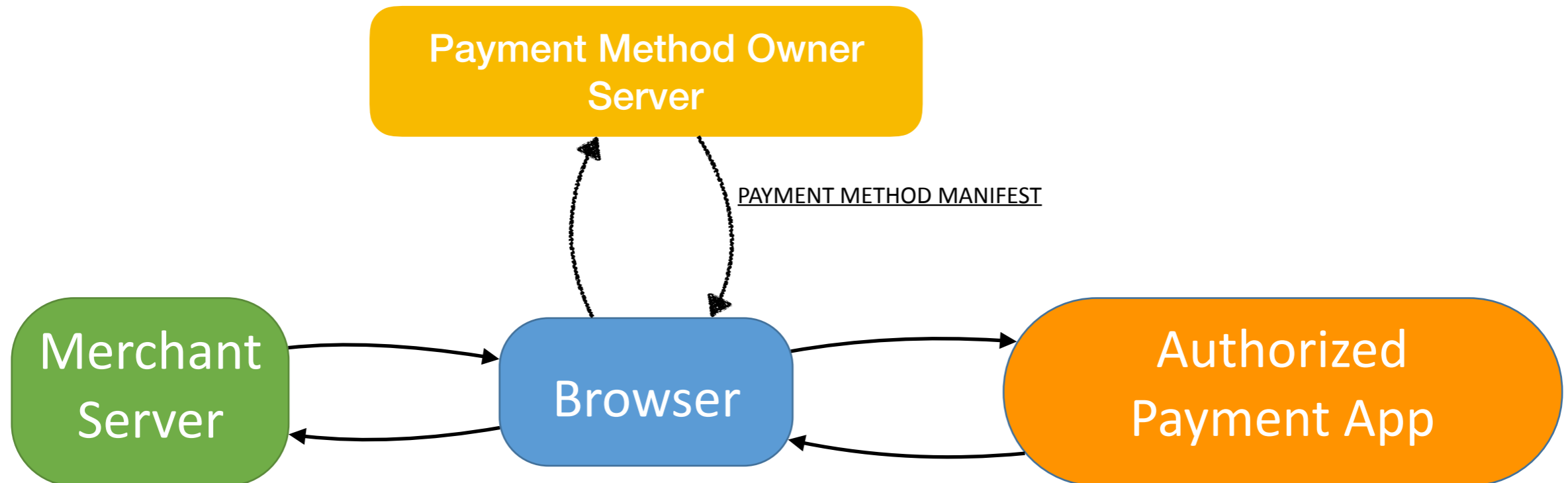
Web Payment Apps

- Payment Handler API enables Web sites to appear in list of user payment apps.
- Why Web apps? Write once, run cross-platform.
- We are pursuing a user experience better than redirects.
- Once invoked, payment apps may use other Web standards (e.g., WebAuthn).
- Payment apps distinguish themselves through loyalty or other value propositions to users.



Payment App Security

- Payment method owners want to ensure that only authorized parties serve authorized (digitally signed) payment apps.
- Browser consults Payment Method Manifests, displaying only authorized payment apps.



Beyond Basic Card

Status: Payment Methods Under Discussion

- Encrypted Card
- Tokenized Card
- Credit Transfer
- Interledger (ILP)

Review: Merchant Benefits

Increased conversions

reuse of stored info, reduced complexity, consistency, stay near merchant site

Lower cost of front end development

standard API replaces web forms

Reduced PCI DSS exposure

encrypted card, tokenized card payment methods

Strong consumer authentication

FIDO

Reduced fraud risk

all of the above + payment method manifest

Payment innovation built on standards

standard APIs to facilitate more payment methods and apps on the Web, but without increased complexity in the UI due to “matchmaking” in Payment Request API

Implementation Status

- **All** major browsers are implementing Payment Request API.
- W3C encourages early, public implementation experience for quality assurance.
- Features are available **today** in some browsers, but may be “behind a flag” or in beta releases.
- Start planning to use the API **now**. Implementations will solidify over the next 9 months.
- Implementation of Payment Handler API is still experimental and we welcome early feedback!
 - *Google working with native mobile app providers on integration of Android Pay, Alipay, Samsung Pay, MasterPass, PayPal, Square, etc.*

Standardization Timeline

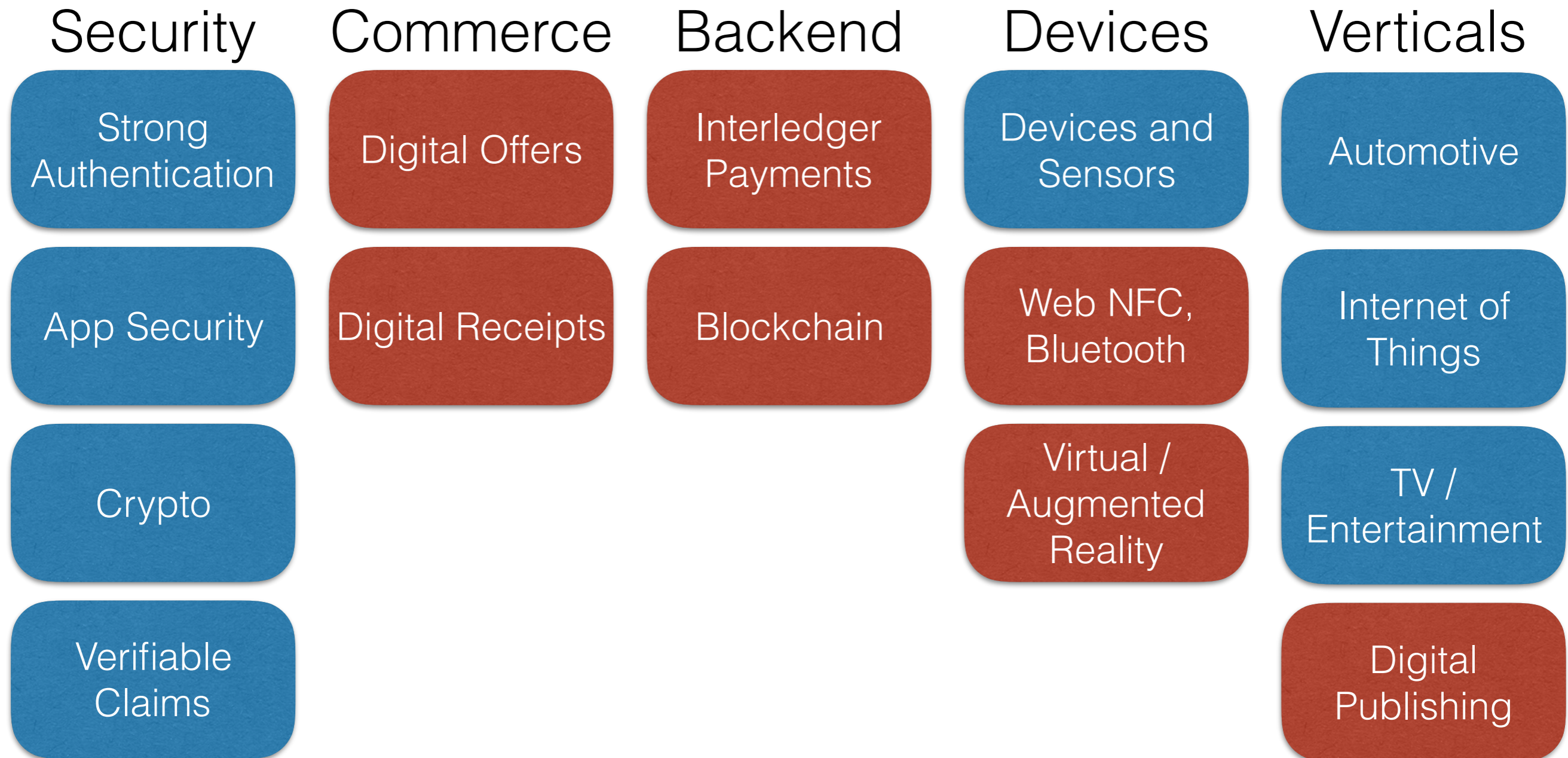
Working Draft

Candidate Recommendation

Recommendation

Oct 2015	Charter Web Payments WG
Feb 2016	Charter Web Authentication WG
Apr 2016	Initial Working Draft: Payment Request
May 2016	Initial Working Draft: Web Authentication, Payment Handler
Sep 2017	Candidate Recommendation: Payment Request
Dec 2017	Candidate Recommendation: Web Authentication + Recharter Web Payments Working Group (get involved)
Q2 2018	Recommendation: Payment Request, Web Authentication
Q4 2018	Candidate Recommendation: Payment Handler

More Activities to Enhance Commerce on the Web



Key: standards track, incubation

Thanks!

- Want to get involved? Ian Jacobs <ij@w3.org>
- This presentation:
https://www.w3.org/2017/Talks/ij_uspayments_20170912/w3c.pdf
- Come see Demos at Money 20/20 with W3C, Google, Mastercard, Airbnb
- Web Payment Working Group specifications
- Web Authentication Working Group specifications
- FAQ and Developer Portal
- More W3C Working Groups and Community Groups