

Web Payments and PSD2

Ian Jacobs, W3C
<ij@w3.org>
23 January 2019

Web Payments Aspirations

Reach Customers

Streamline Checkout

Web and PSD2



About 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.

How Do You Reach Customers?



The Case for the Web

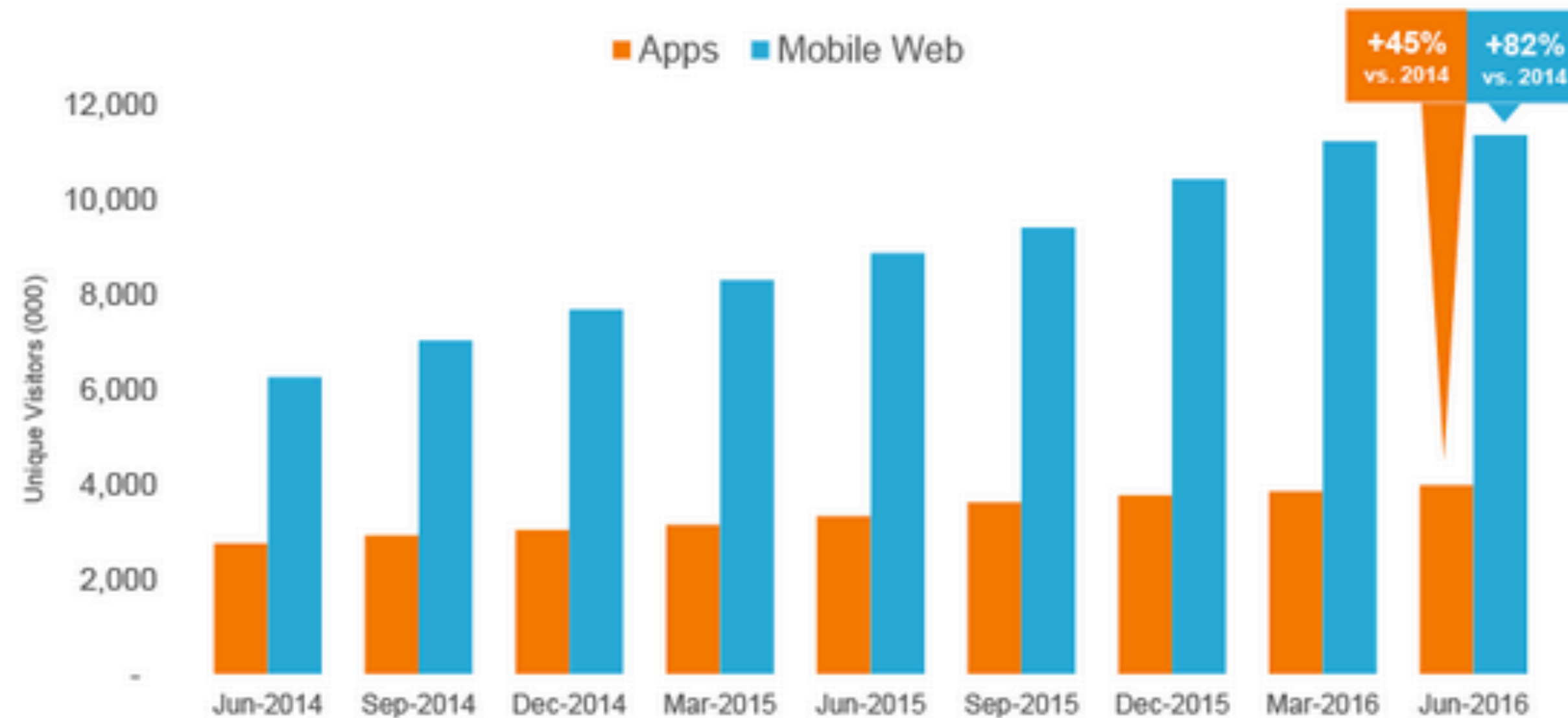
...including for mobile



Mobile Web Audiences 3X Larger than Native

And mobile audience growth is being driven more by mobile web properties, which are actually bigger and growing faster than apps.

Average Monthly Audience: Top 1000 Mobile Apps vs. Top 1000 Mobile Web Properties
Source: comScore Mobile Metrix, U.S., Age 18+



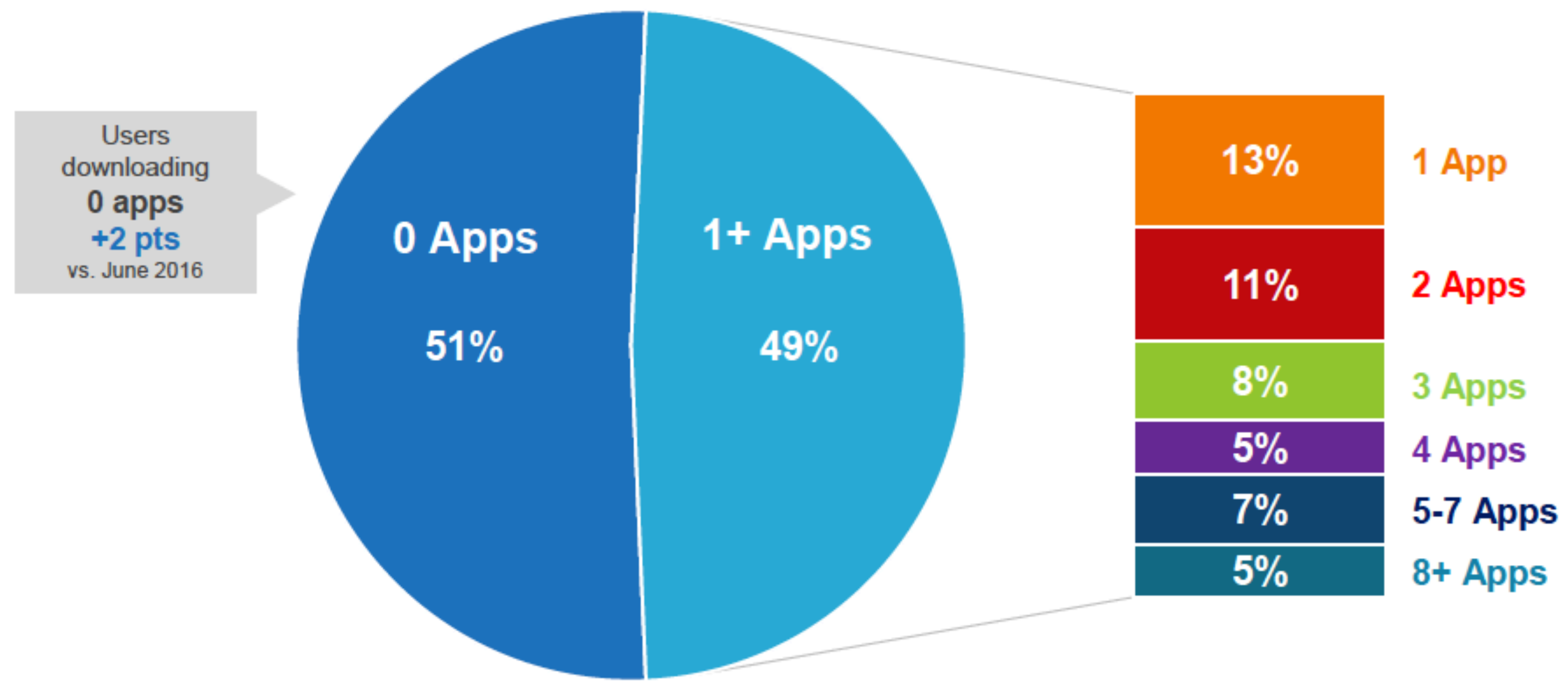
INSIGHT

A comparison of the Top 1000 Apps vs. the Top 1000 Mobile Web Properties shows that despite apps dominance in usage time, mobile web is responsible for big audiences on mobile. Mobile web audiences are almost 3x the size and growing 2x as fast as app audiences.

People have App Fatigue

...but everyone has a browser

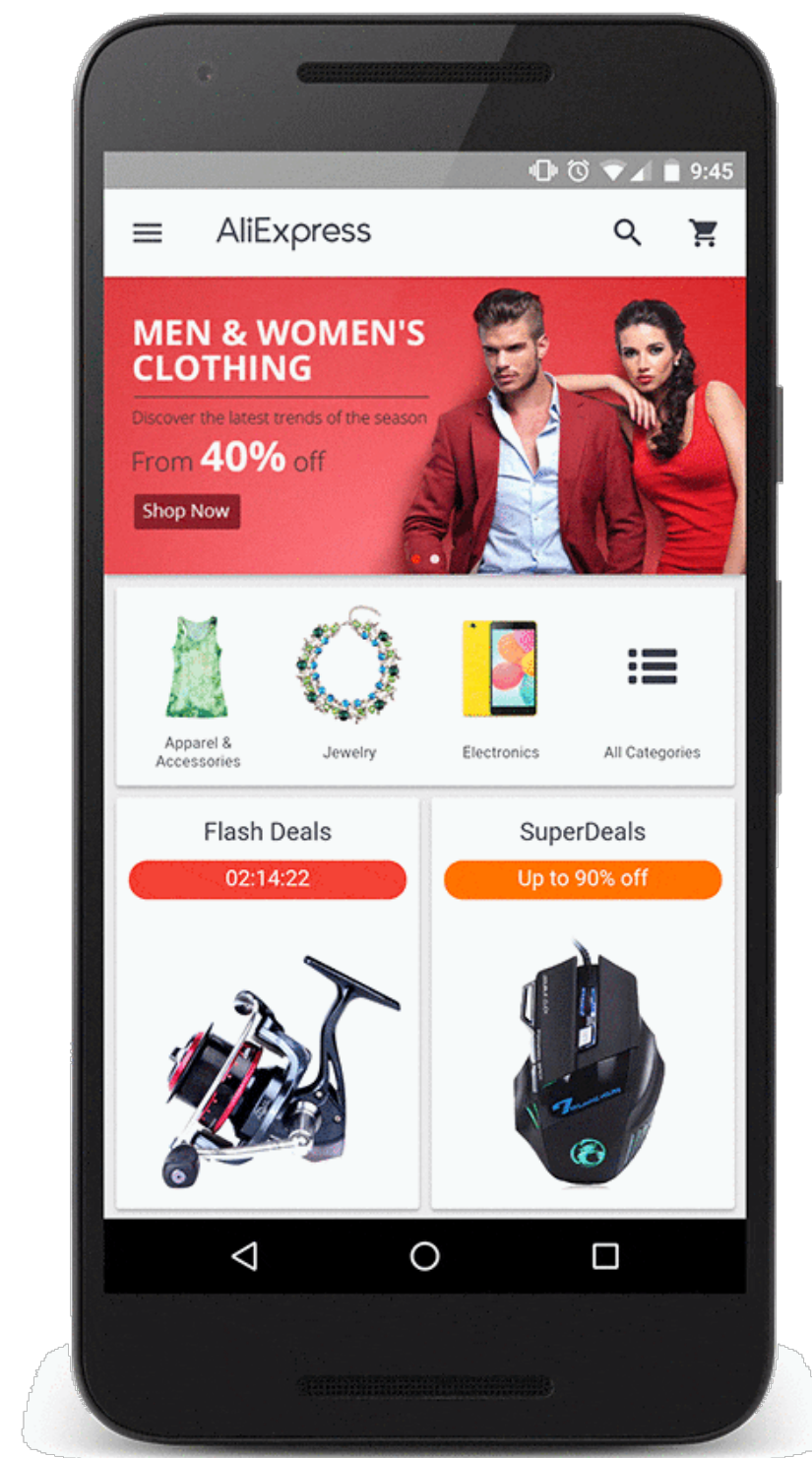
Smartphone Users' Number of App Downloads Per Month
Source: comScore MobiLens, U.S., Age 13+, 3 Month Average Ending June 2017



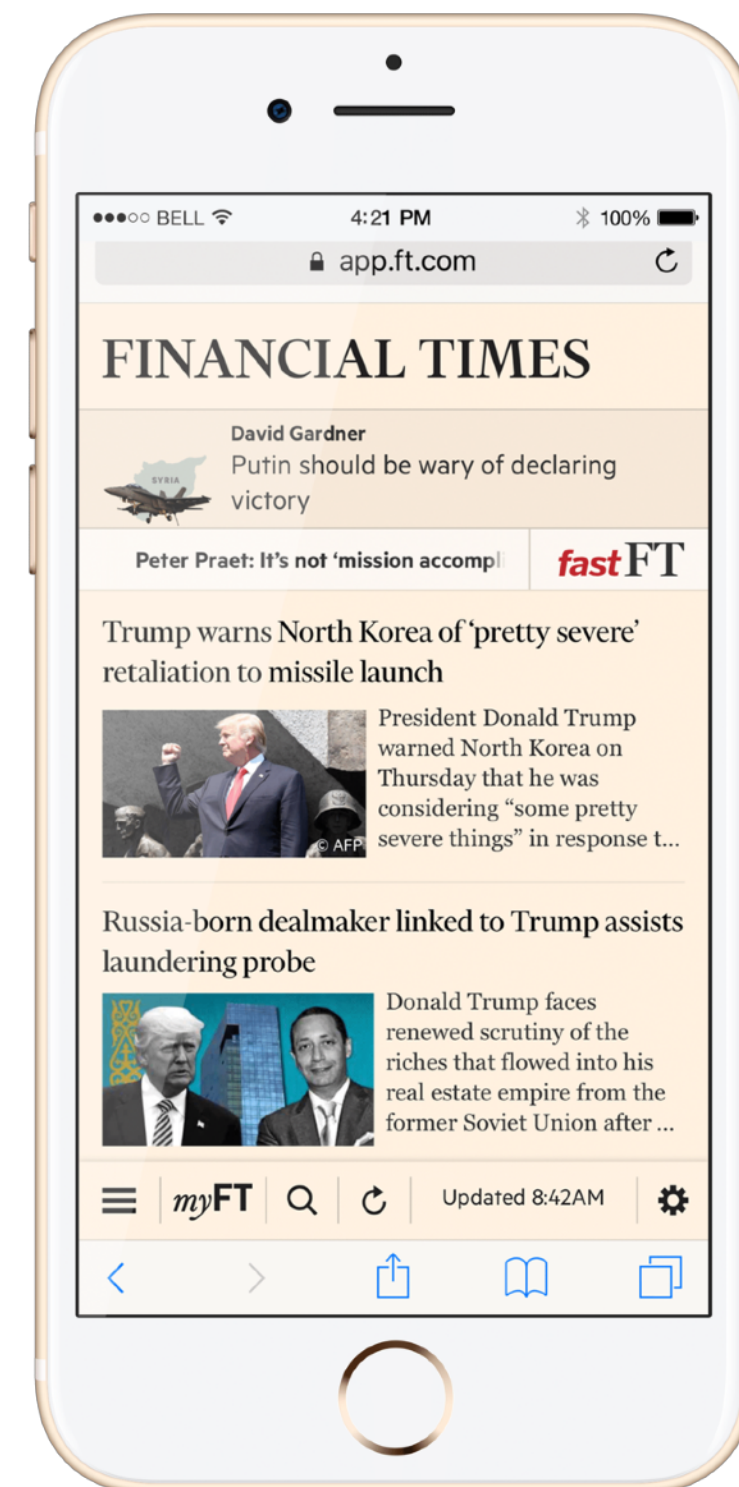
What is a Native Experience?

- Launches from home screen icon
- Works offline
- Shares look and feel with other apps
- Receives push notifications
- Accesses device sensors and capabilities
- Performs well
- Distributed via app store

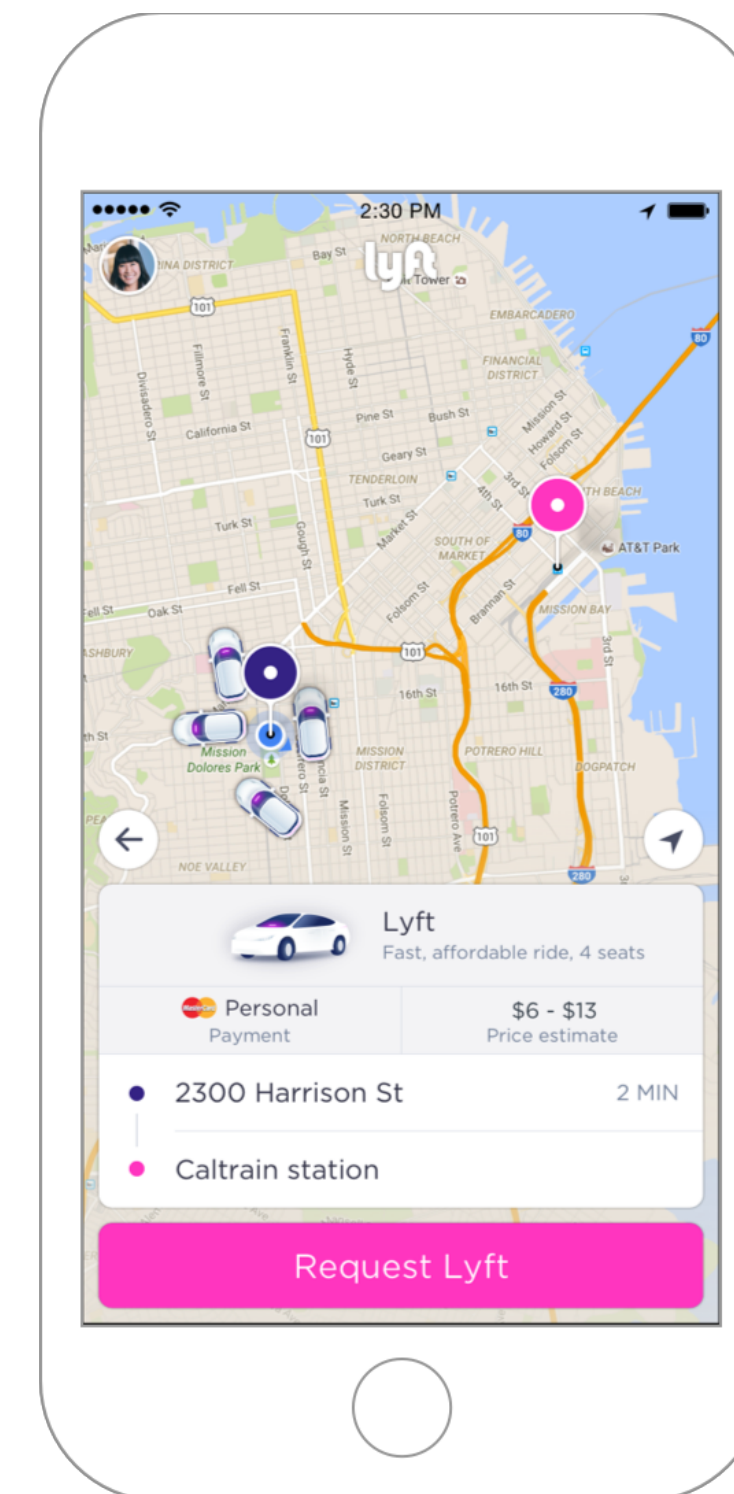
Progressive Web Apps: Native-like experience via Web technology



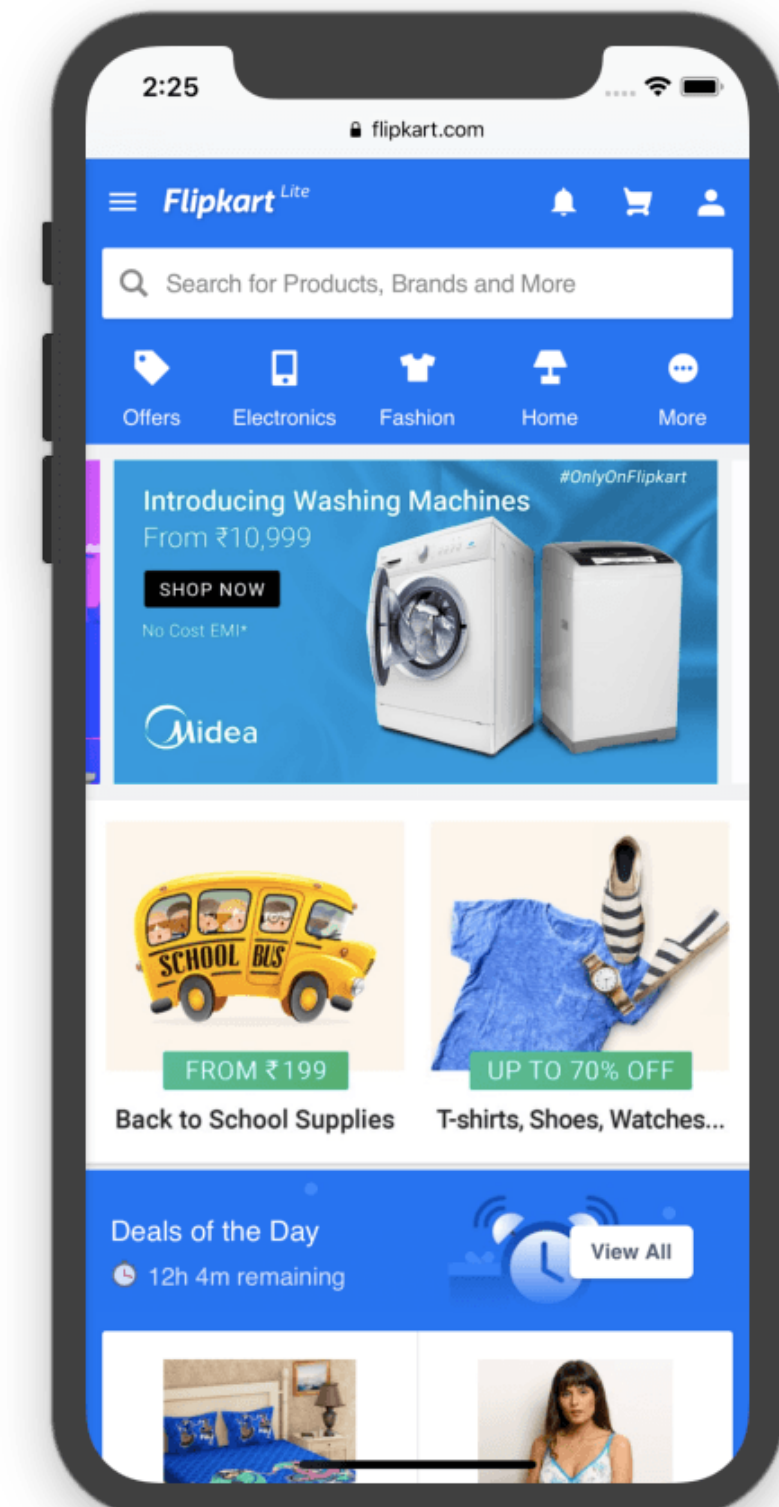
AliExpress



Financial Times



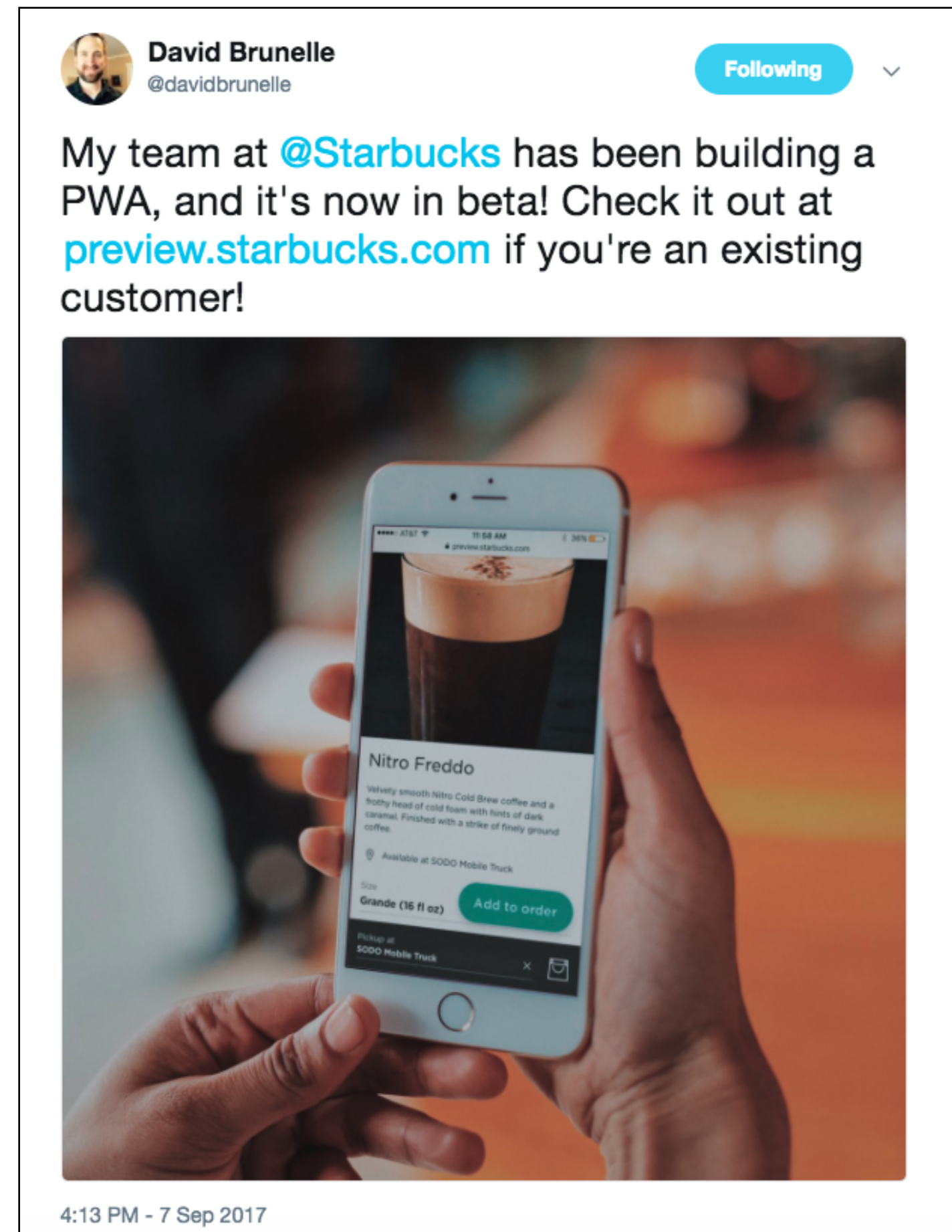
Lyft



Flipkart

Starbucks Experience with Progressive Web App (PWA)

- Progressive Web App is .4% the size of the iOS app
- Led Starbucks to double daily active users.
- Feels as natural as the native app version
- **Works on desktop, too;** users order ahead via desktop
- Leverages W3C's Payment Request API

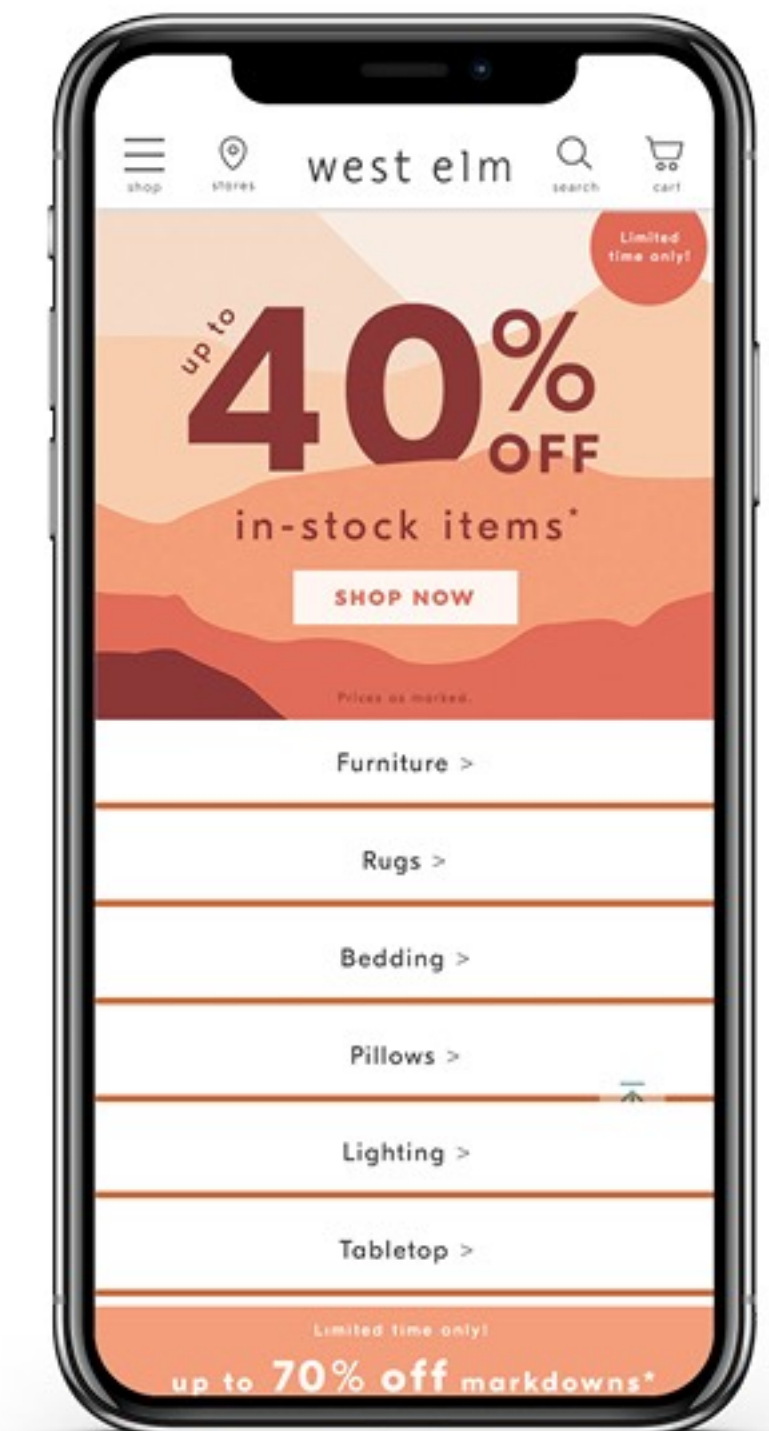
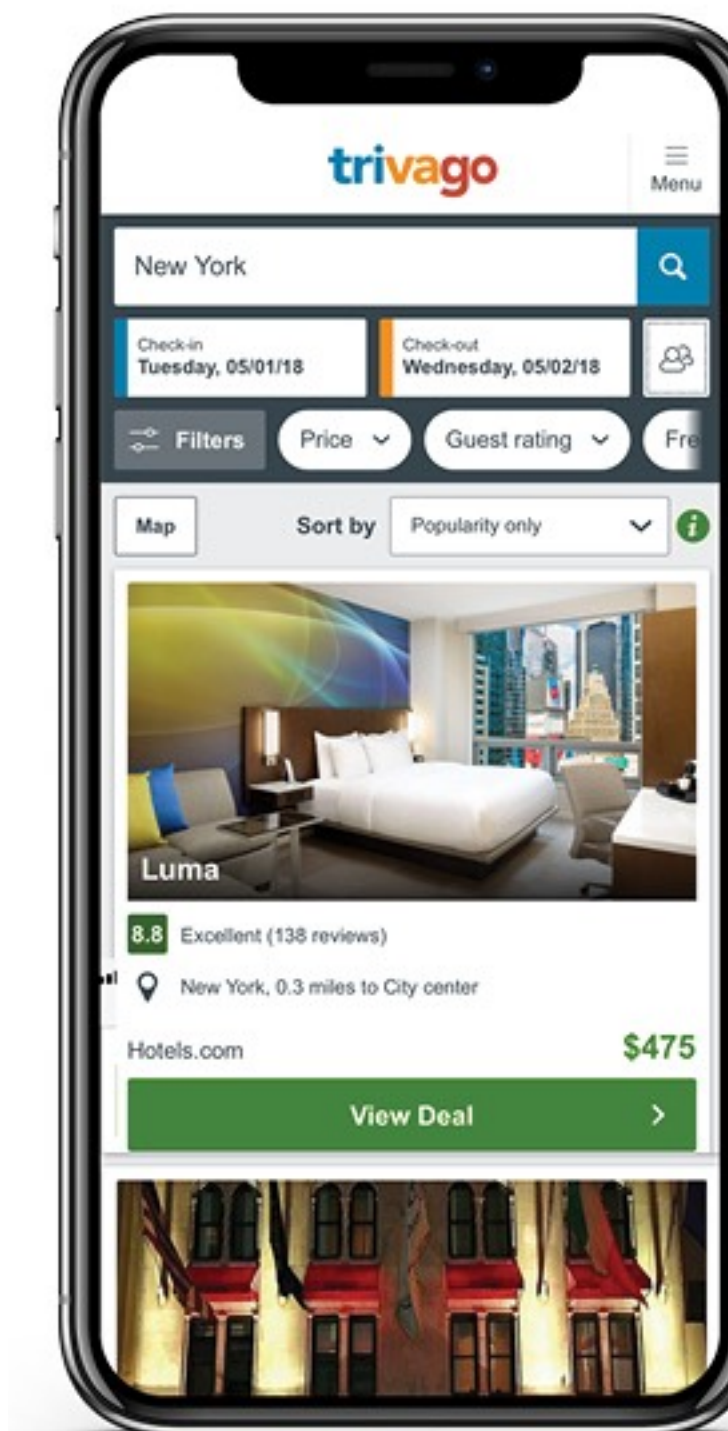


More Progressive Web App Success

- **Tinder**: -50% load time compared to its native app; PWA is 90% smaller than Android app.
- **Pinterest**: +40% time on site; +44% ad revenue; +60% in core engagements (all compared to previous mobile site)
- **Flipkart**: 60% of customers who had uninstalled their native app return to use the PWA
- **Lancôme**: -84% time until the page is interactive; +17% conversions; +53% in sessions on iOS
- **Best Western River North Hotel**: 300% increase in revenue
- More progressive Web app metrics

Discoverable and Omnichannel

- Run on any device/platform with browser
- No app store (fees, terms) required
- Linkable and discoverable through search engines and social media
- Automatically and directly indexed in Microsoft store. Wrap for other stores (e.g., with Cordova)



Source: corra.com

Web Payments Aspirations

Reach Customers

Streamline Checkout

Web and PSD2

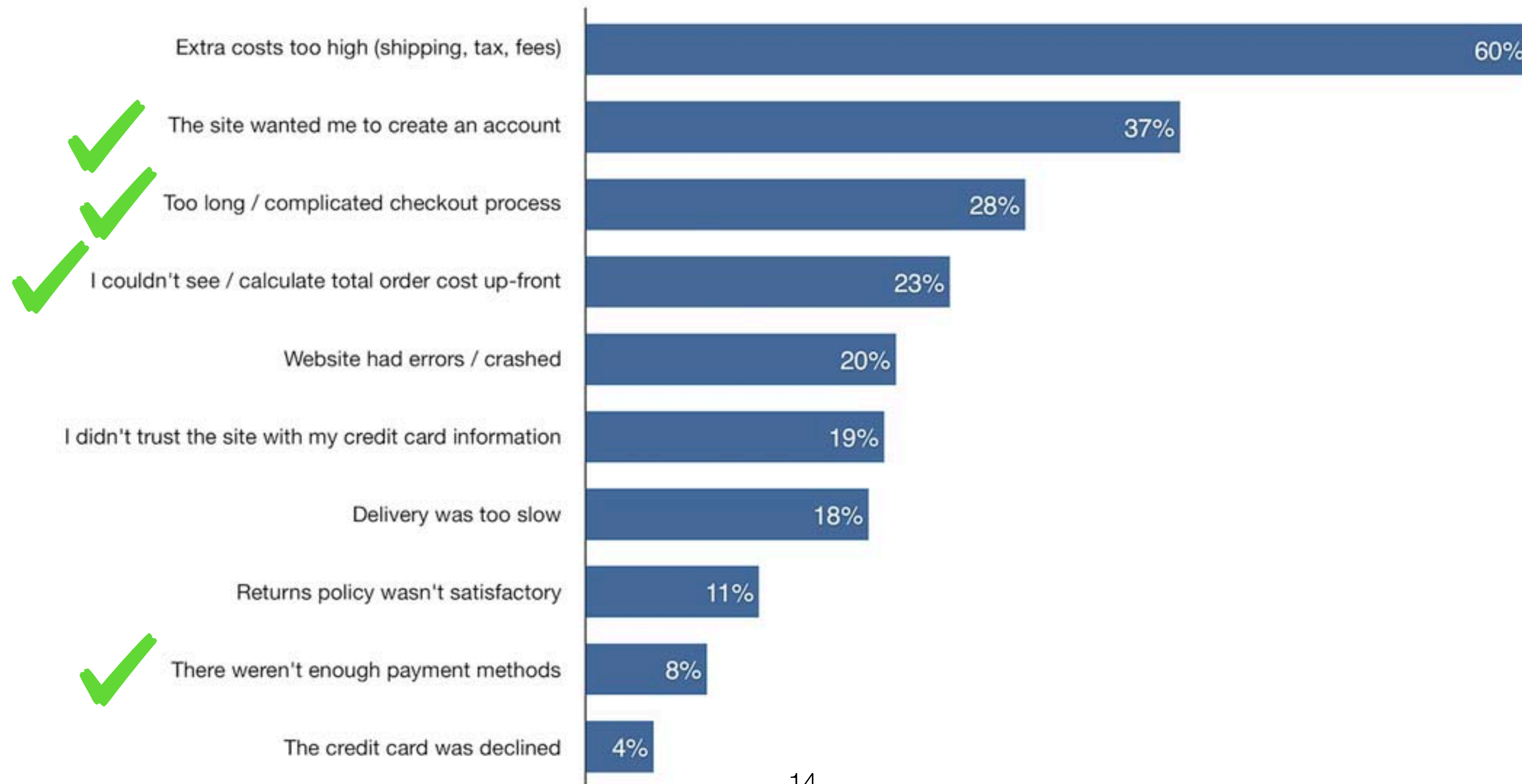


Opportunities to Reduce Abandonment

✓ = new browser capabilities can help

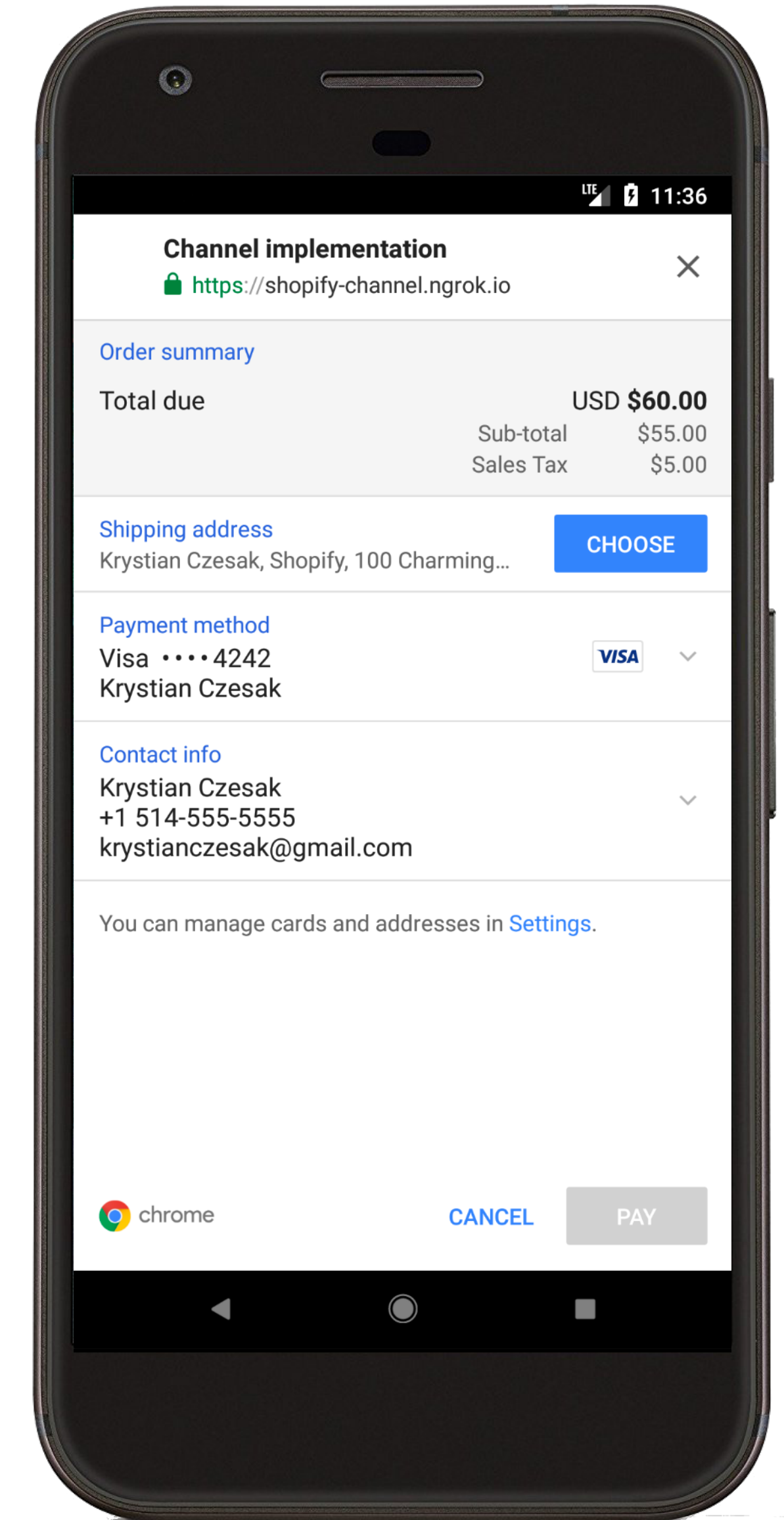
1,799 responses · US adults · 2017 · © baymard.com/checkout-usability

"Have you abandoned any online purchases during the checkout process in the past 3 months? If so, for what reasons?"
Answers normalized without the 'I was just browsing' option

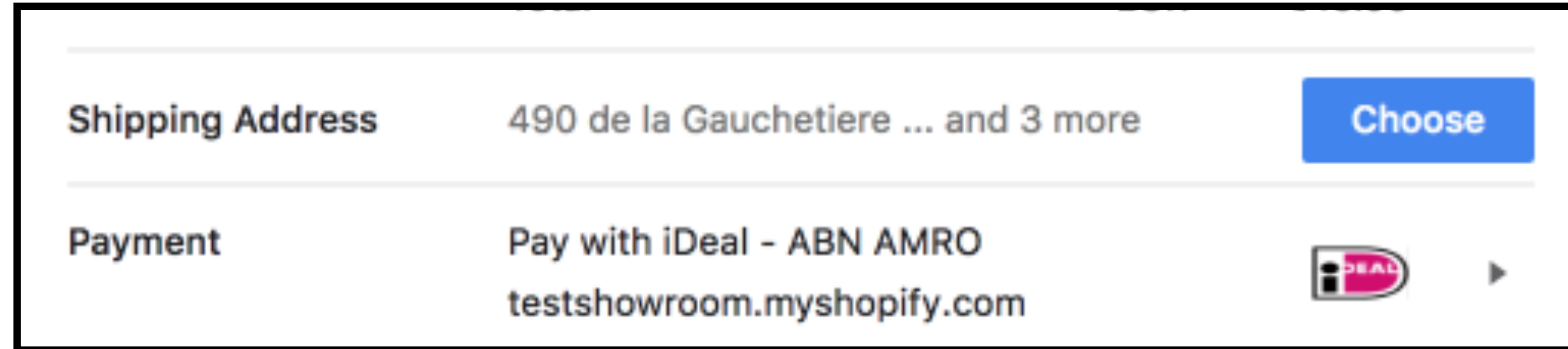


Payment Request API

- Streamlines checkout through re-use of stored data.
- Creates a consistent checkout experience across the Web to speed up conversions.
- Reduces merchant integration costs; use one API instead of multiple API integrations.



Payment Handler API

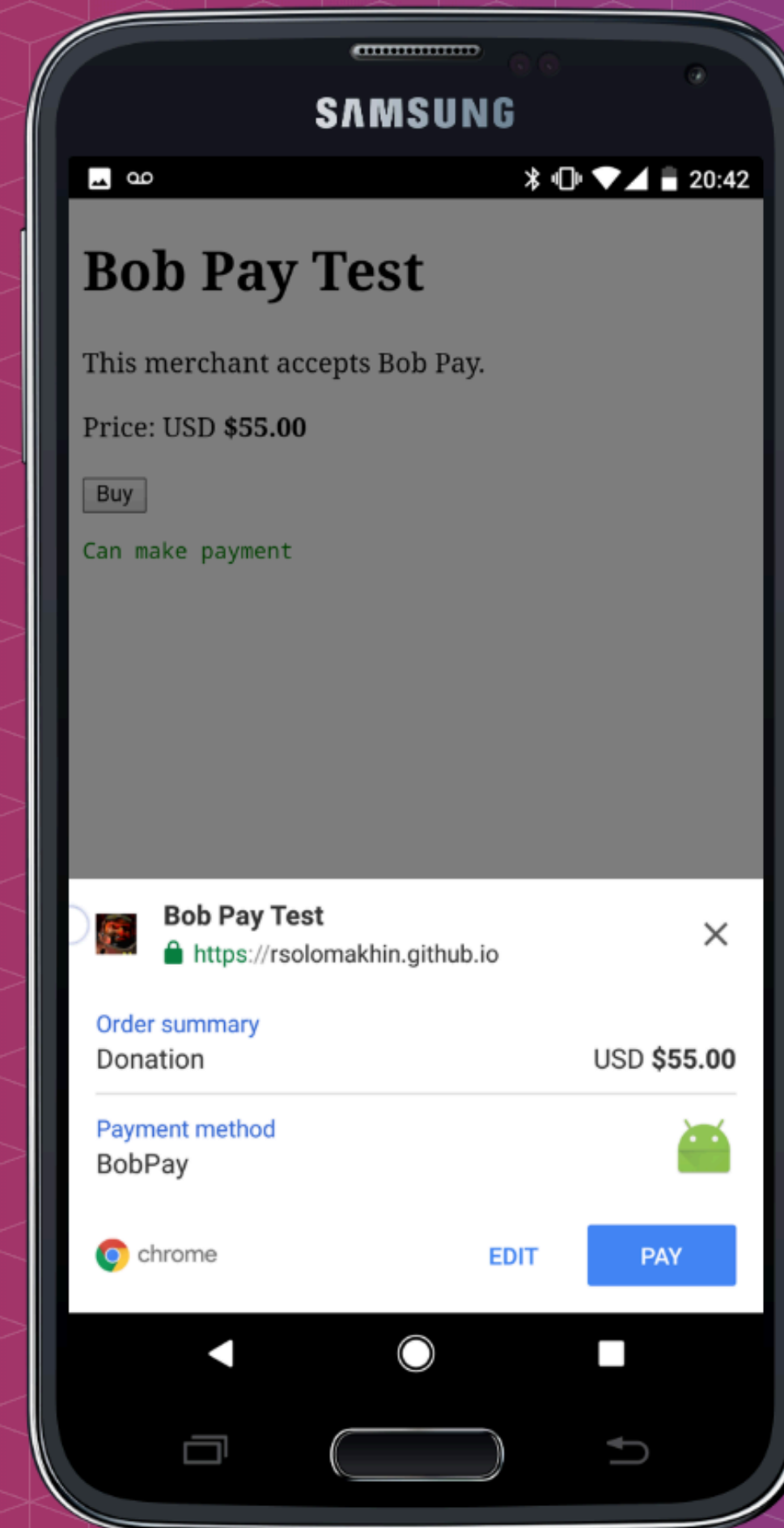


- Encourages innovation through Web-based payment handlers (“digital wallets”).
- Banks and other payment service providers can maintain customer facing relationships, improve security offerings, and provide value-added services.
- Fast, harmonized user experience through browser-based UX.
- Modal window for payment handler preserves merchant context.

Demos

BobPay is a sample payment app that works with Payment Request API

LEARN MORE



W3C Participation

Merchant side

User side

Other Stakeholders

Merchants

- Airbnb
- Alibaba
- Rakuten
- Wiley

Browsers/Platforms/Services

- Apple
- Facebook
- Google
- IBM
- Intel
- LGE
- Microsoft
- Mozilla
- Oath
- Opera
- Oracle
- Samsung
- Seeroo
- Tencent

Networks

- American Express
- Carte Bancaire
- Clearing House
- Discover
- JCB
- Mastercard
- NACHA
- Visa

Gateways/PSPs

- BlueSnap
- Klarna
- PayGate
- Reach
- Ripple
- Shopify
- Stripe
- Worldpay

Payment Handler / Wallet Providers

- Abine
- Apple
- Beem It
- Bread
- Coil
- Digital Bazaar
- Google
- Klarna
- Microsoft
- Samsung

Associations / Regulators / Bodies

- MAG
- Conexus
- IFSF
- ISO 20022
- GS1
- GSMA
- HM Government
- PayCert
- Payments Canada
- US Fed

Acquirers/Processors

- Lyra Networks
- Worldpay

Issuers

- American Express
- Bank of America
- Barclays
- Capital One
- Wells Fargo

Telcos

- China Mobile
- Deutsch Telekom
- Orange
- Telenor

Liaisons with Industry Groups and SDOs

- Open Banking UK
- STET
- Berlin Group
- EMVCo
- ISO 20022
- FIDO
- Merchant Advisory Group (MAG)
- IETF
- Others

Early Adoption Feedback



“[With Payment Request], the median time for buyers with `canMakePayment() = false` is 3:17 whereas the median time for buyers with `canMakePayment() = true` is 2:25. This is promising, as **both medians are faster than our standard checkout.**” ([Read more](#))

J.CREW

“The firm has also sought to make it easier for consumers to convert at checkout with the “Payment Request API” ... **Wait times** for checkout on J.Crew’s online store have **decreased 75 percent** from more than two minutes four months ago, according to a J.Crew spokeswoman.” ([Read more](#))

Payment Request Implementation Status



- Chrome, Edge, Safari, and Samsung Internet **today** ship with support for Payment Request API. Growing availability in Firefox Nightly.
- Stripe, Braintree, Facebook, WePay, Bluesnap, Paysafe, BS Payone provide customers support for Payment Request API.
- Expect Payment Request API to advance to Recommendation by Q2 2019.

Payment Handler Implementation Status

- Google ships Payment Handler API support since Chrome 68. Google demonstrated a Web-based version of Google Pay at W3C meeting in October 2018.
- Under consideration: Microsoft Edge, Mozilla Firefox, Samsung
- Numerous experiments underway, including: Barclays, Capital One, Coil, Credit Suisse, Facebook, Klarna, Lyra Networks, Shopify, Worldline, and Worldpay.

Web Payments Aspirations

Reach Customers

Streamline Checkout

Web and PSD2



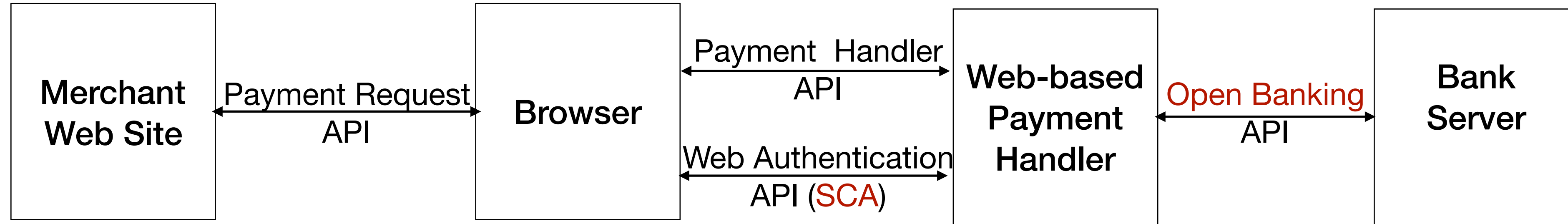
Principal PSD2 Themes

- Strong Customer Authentication (SCA)
- Open Banking APIs

In this presentation we focus on PURCHASE use cases.

Simplified View of API Sequence

Note: focus on PURCHASE use cases

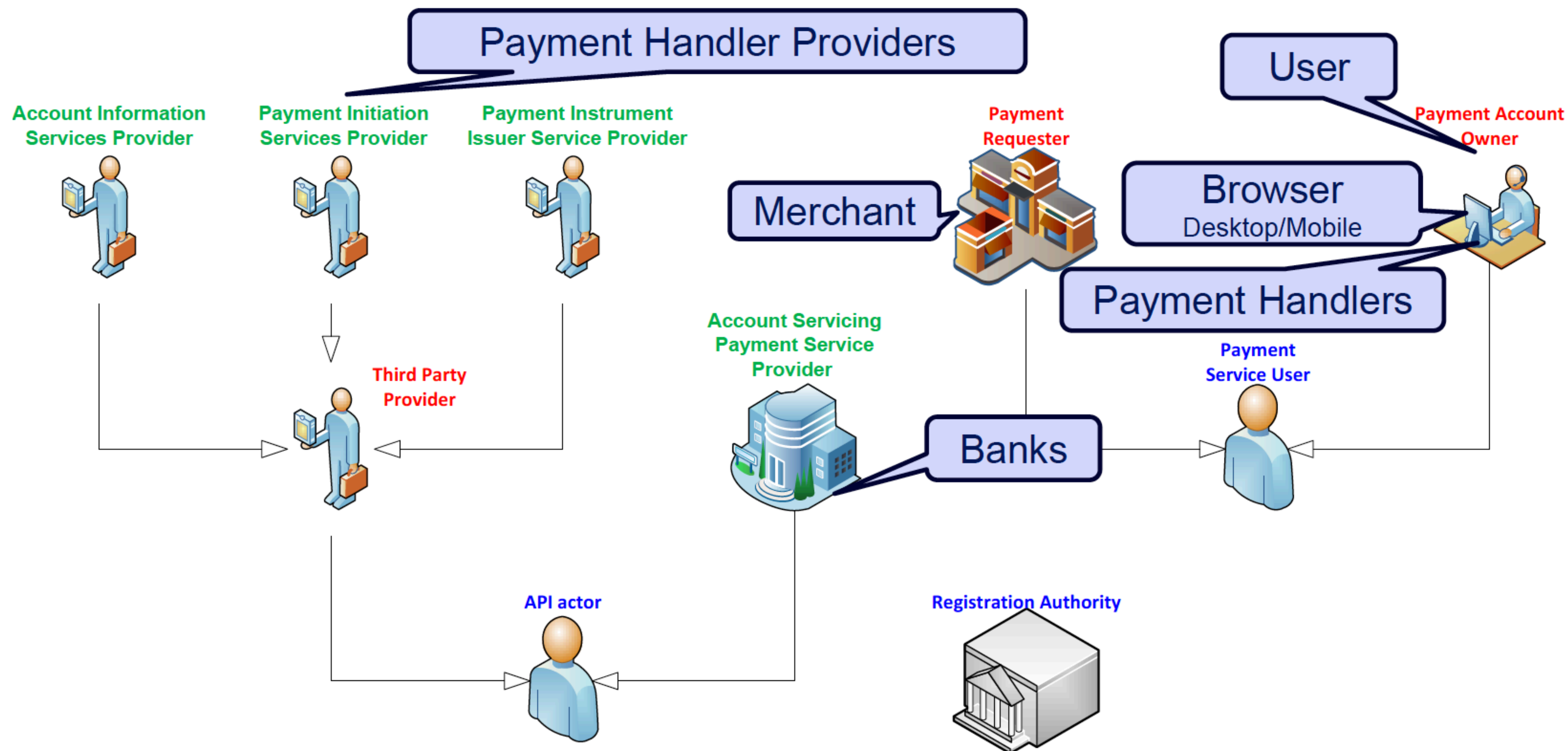


Worldpay demos illustrate these APIs.

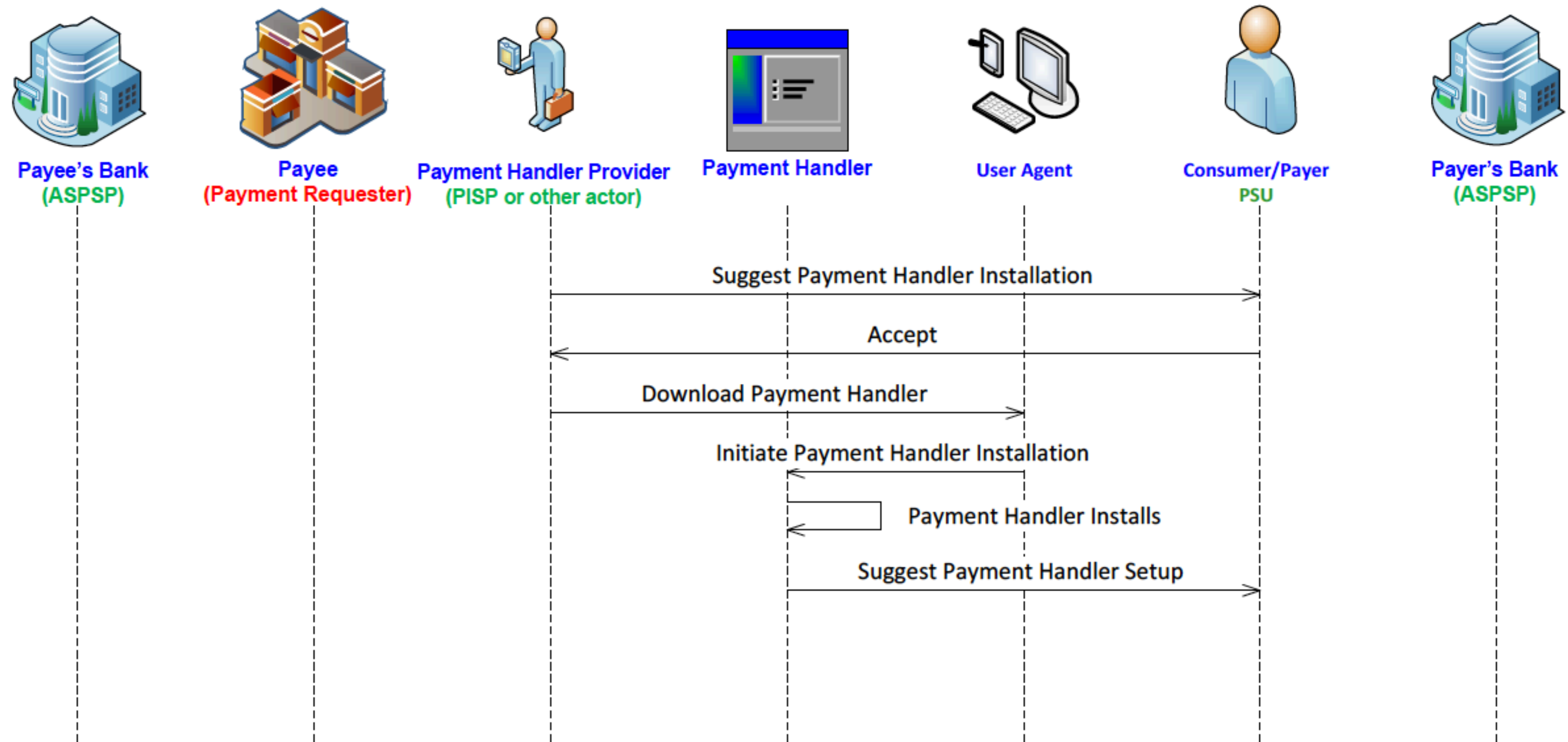
Questions

- Who would likely provide the payment handlers?
- What are payment method input and output data?
- When does SCA occur in the flow(s)?
- Can we lower integration costs for PISPs by standardizing across open banking APIs?

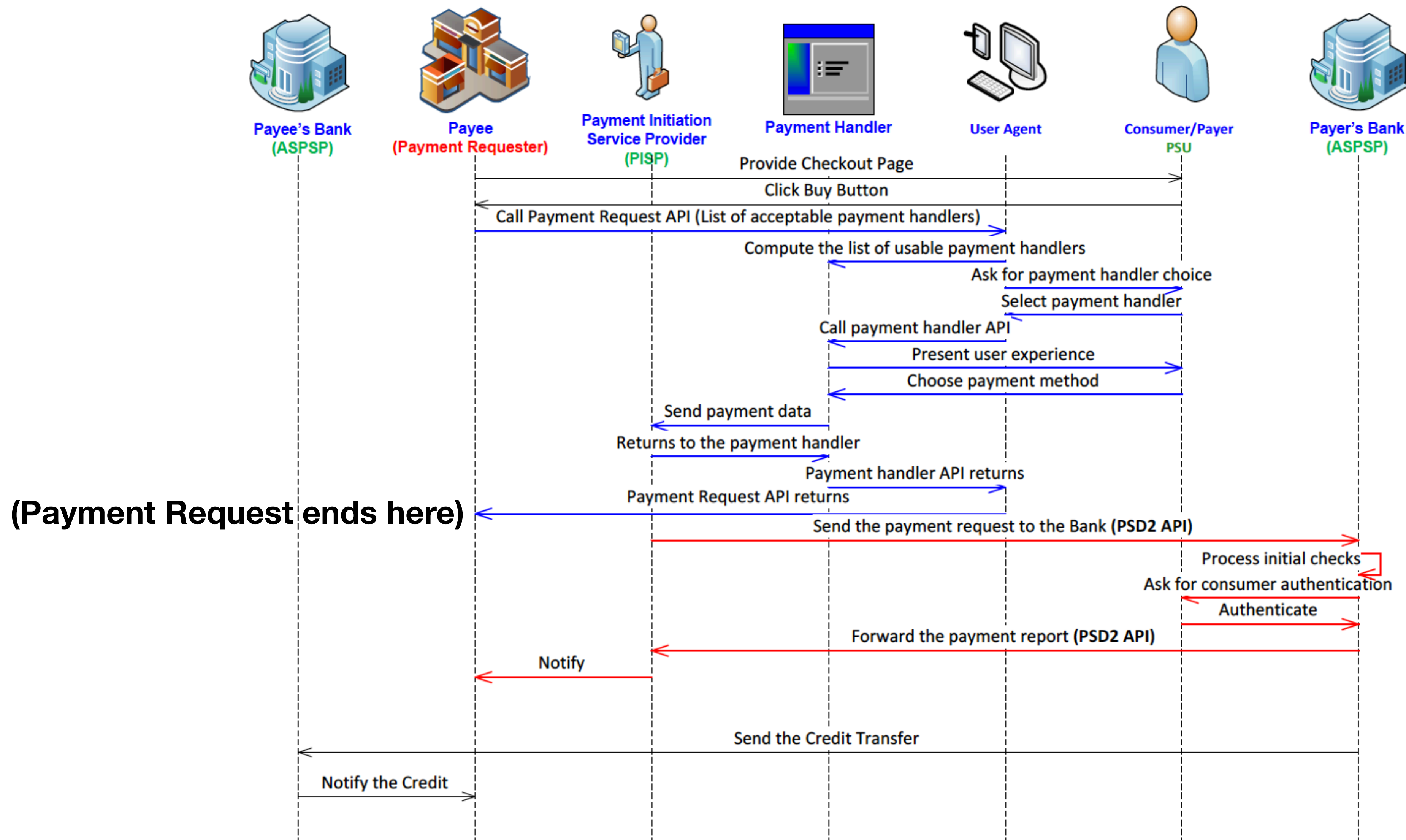
If PISPs Provide Payment Handlers



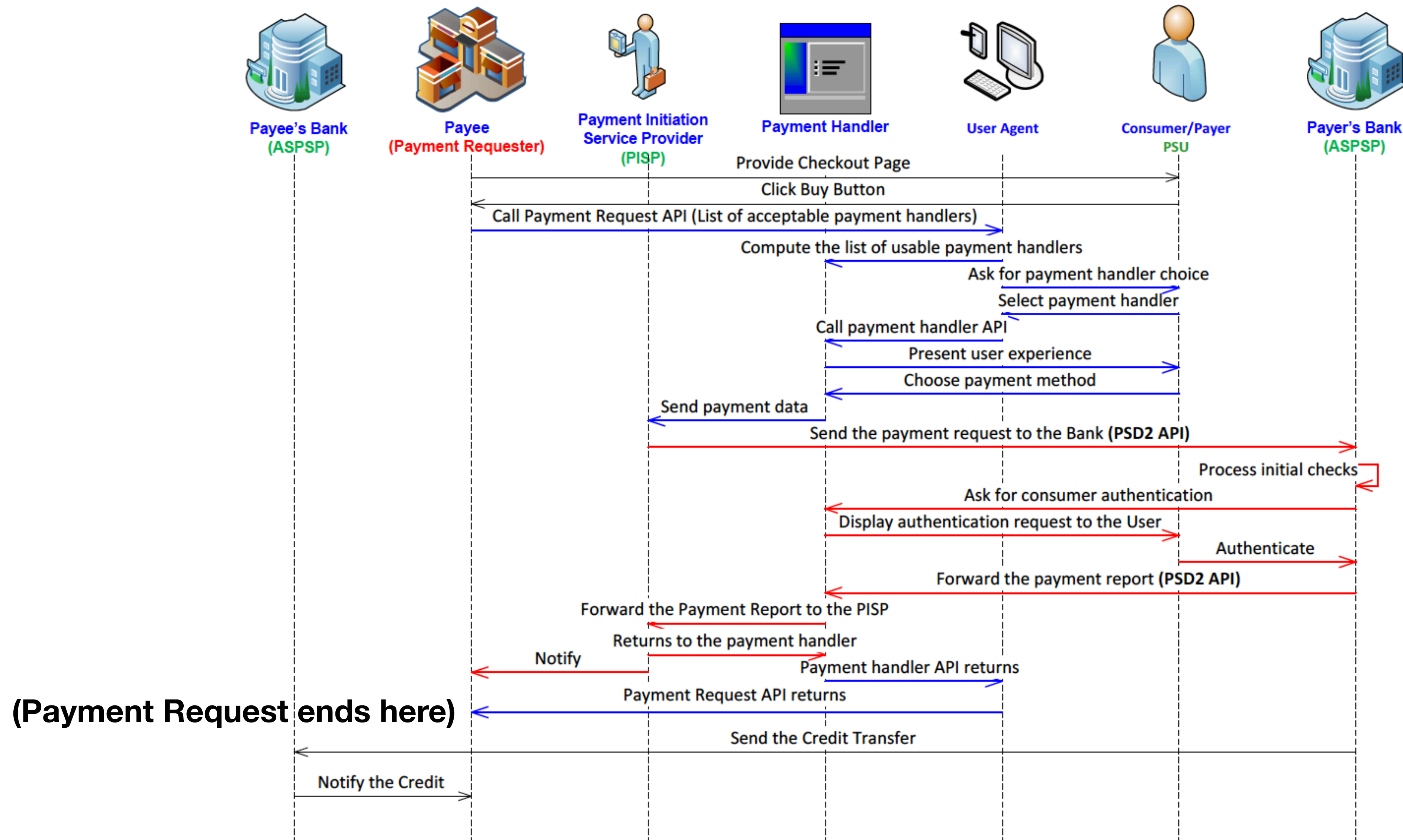
Setup for PISP Purchase



Transaction with PSD2 Decoupled



Transaction with PSD2 Integrated





Candidate Answers


- Who provides the payment handlers?
 - PISPs
- What are payment method inputs and outputs?
 - WPWG has drafts of three payment methods: Credit Transfer Payment (includes both payer- and payee-initiated flavors) and PISP Credit Transfer Payment.
- When does SCA occur in the flow(s)?
 - Different flows possible and may use Web Authentication.


FIDO/WebAuthn Implementation Status


(ignore U2F API)


U2F API			WebAuthn API			
		Chrome Desktop		Windows MacOS & Linux		
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	Win10

U2F API			WebAuthn API			
		Firefox		Windows MacOS & Linux		
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	Win10

U2F API			WebAuthn API			
		Safari macOS				
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	os

U2F API			WebAuthn API			
		Chrome Android				
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	Android

U2F API			WebAuthn API			
		Edge				
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	Win10

U2F API			WebAuthn API			
		Safari iOS				
CTAP1 / U2F			CTAP2			
USB	NFC	BLE	USB	NFC	BLE	os

Legend:

Implemented / Stable
In Development
Not Supported / No ETA

Note: ITU recognized CTAP2 as an international standard in December 2018.

Proposed Next Steps

- Work with PISPs to develop a prototype payment handler that works with Payment Request, Payment Handler, Web Authentication, and 2 different open banking APIs.
- Experiment with the integrated and decoupled approaches.
- From those experiences, define a standardized payment method (or several) for PISPs that can be used with multiple open banking APIs.

More Information

- [FAQ](#)
- [Intros and Demos](#)
- Ian Jacobs <ij@w3.org>
[Web Payments Working Group](#)
- Sam Weiler <weiler@w3.org>
[Web Authentication Working Group](#)