



NEXO ANNUAL CONFERENCE
PARIS OCTOBER 1-2, 2018



Streamlining Web Payments

Harnessing new standards for payment and authentication to make paying online easier and more secure

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Co-chair, Web Payments Working Group, W3C

- About W3C
- The web as a platform
- Web payments specifications:
 - Payment request
 - Payment handler
 - Payment methods
- Web authentication

Key Facts About W3C

- W3C founded in 1994 by Web inventor Tim Berners-Lee
- Jeff Jaffe, CEO
- ~ [475 Members](#)
- ~ [70 full-time staff](#) Community of thousands
- [Liaisons](#) for interoper: ISO TC 68, ISO 20022, IETF, EMVCo, FIDO, etc.
- [Hundreds of specifications](#) (royalty-free)



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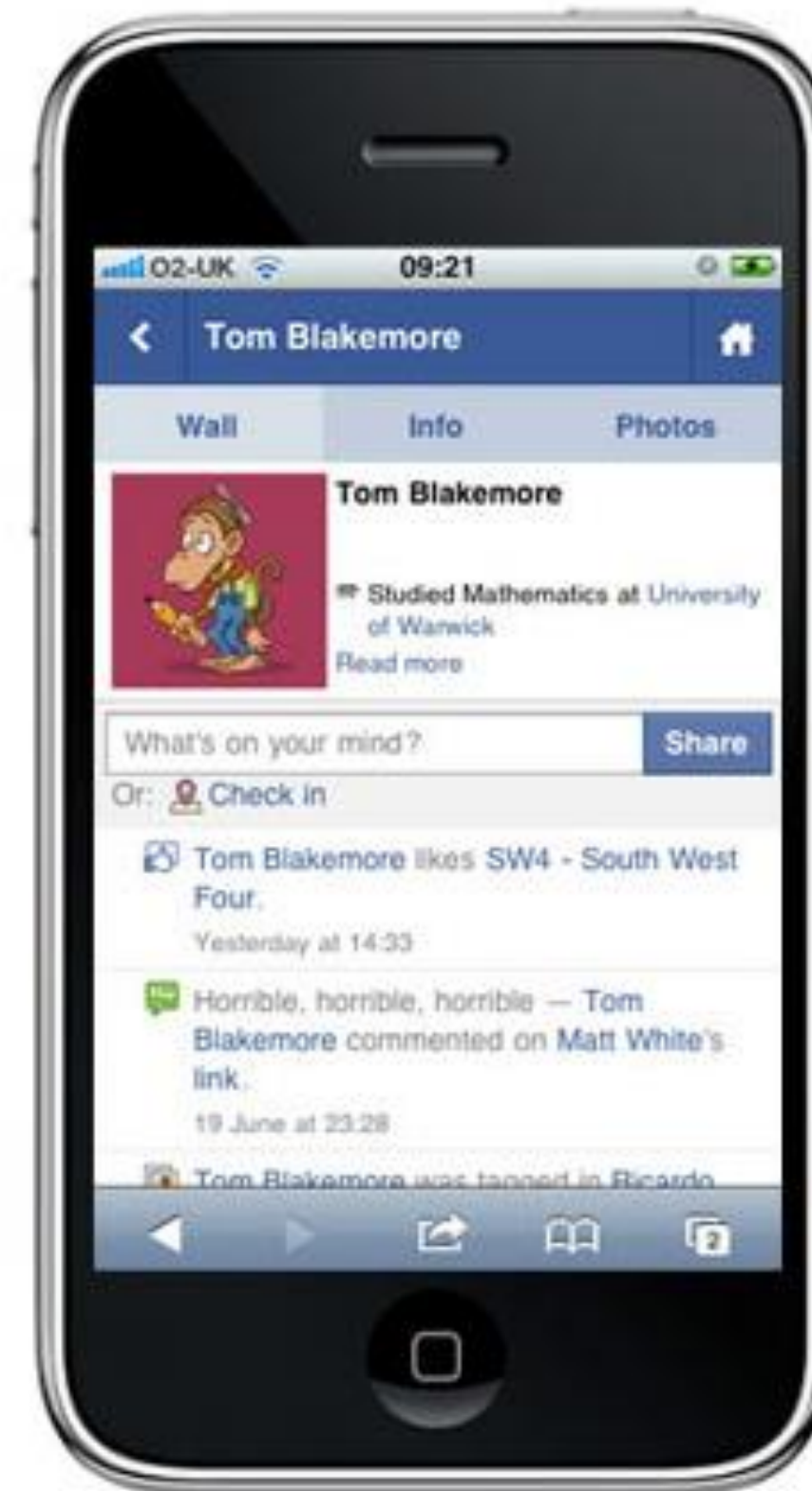


Which platform(s) do you choose for app development?

NATIVE APP

VS

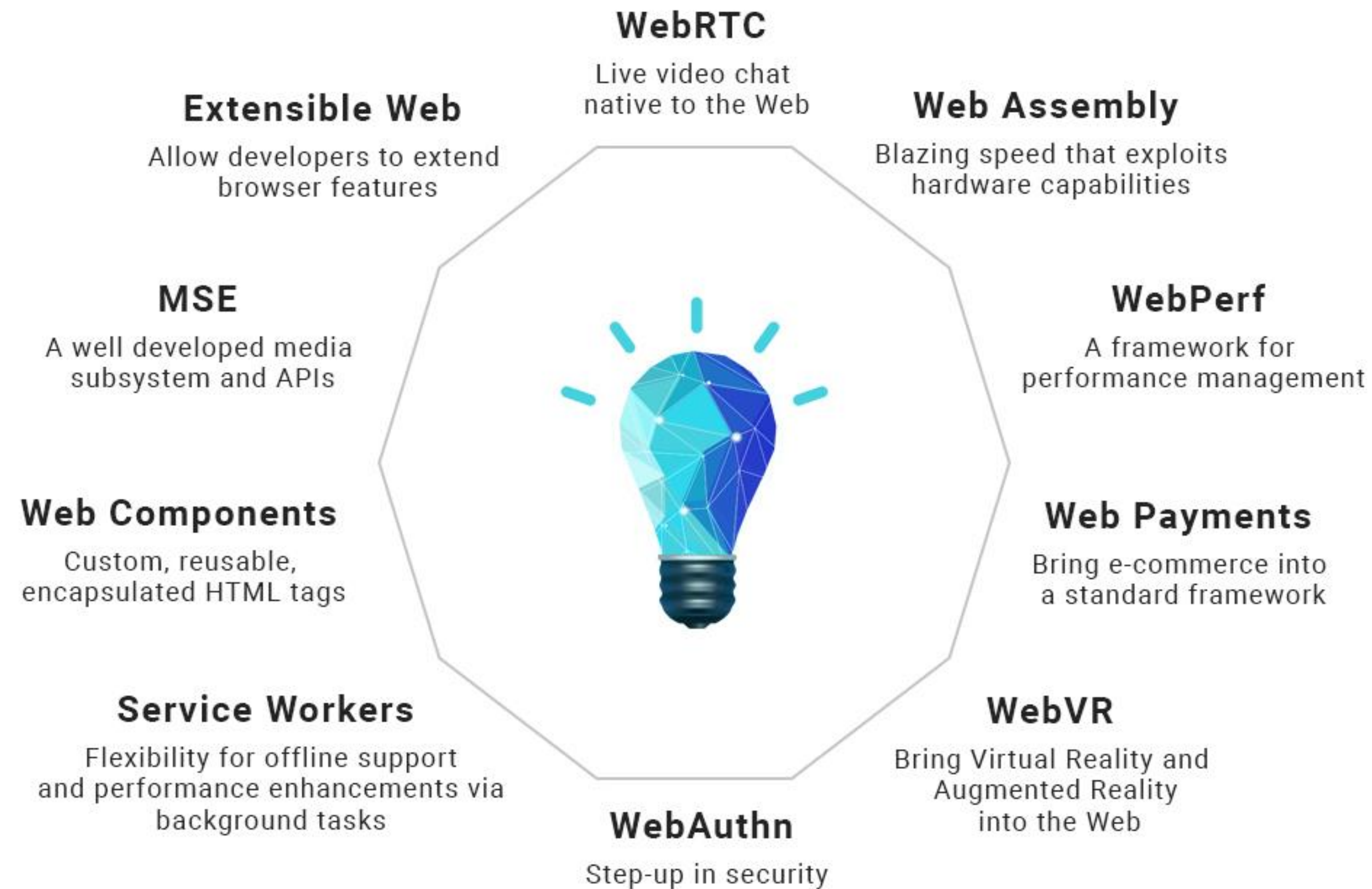
WEB APP



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Web Benefits: New Capabilities



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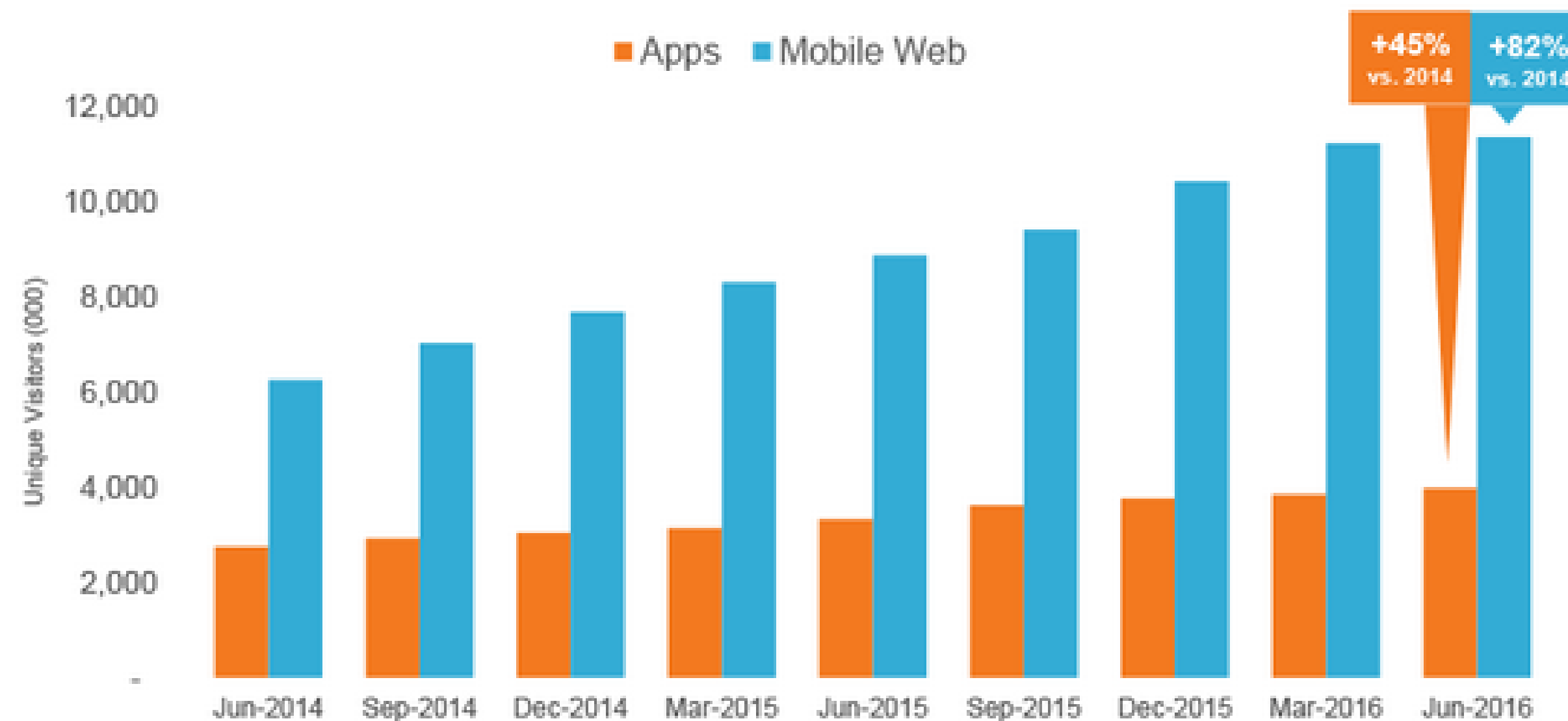


Web Benefits: Customer Reach

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

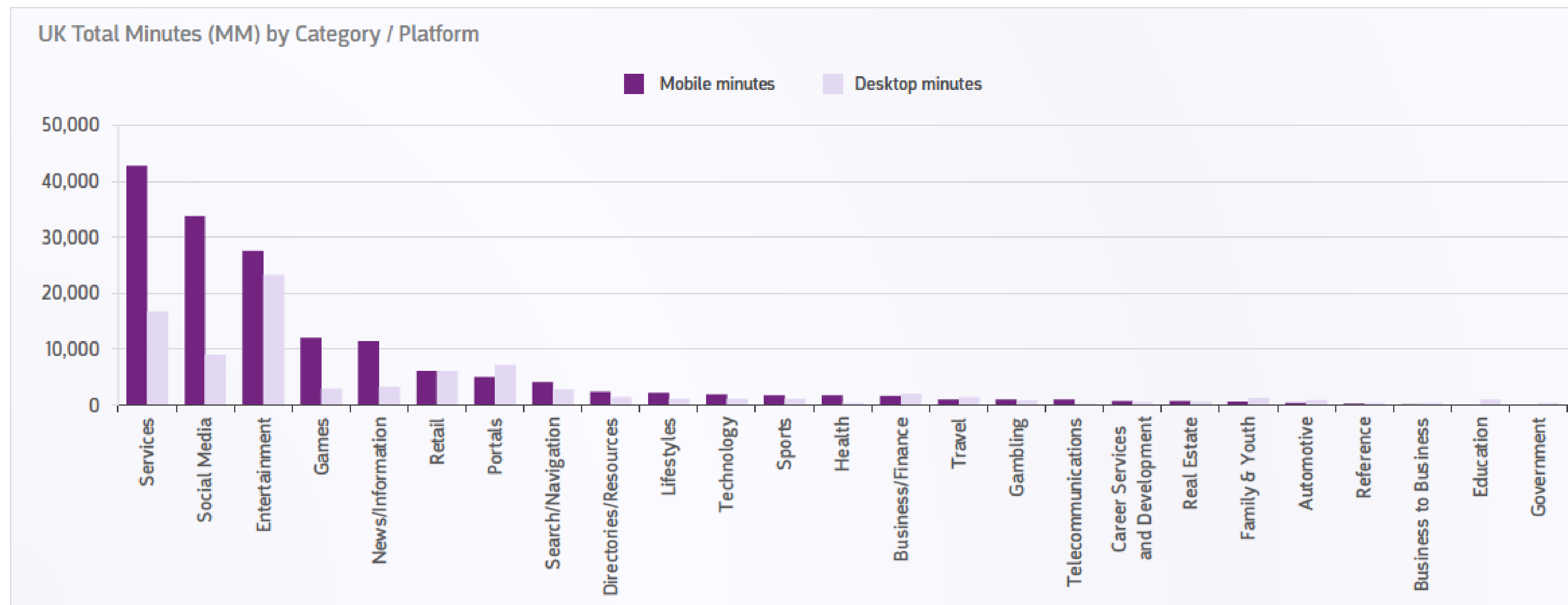
A comparison of the Top 1000 Apps vs. the Top 1000 Mobile Web Properties shows that despite apps dominance in usage time, mobile web is responsible for big audiences on mobile. Mobile web audiences are almost 3x the size and growing 2x as fast as app audiences.

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STANDARDS

Web Benefits: Desktop, Mobile, More



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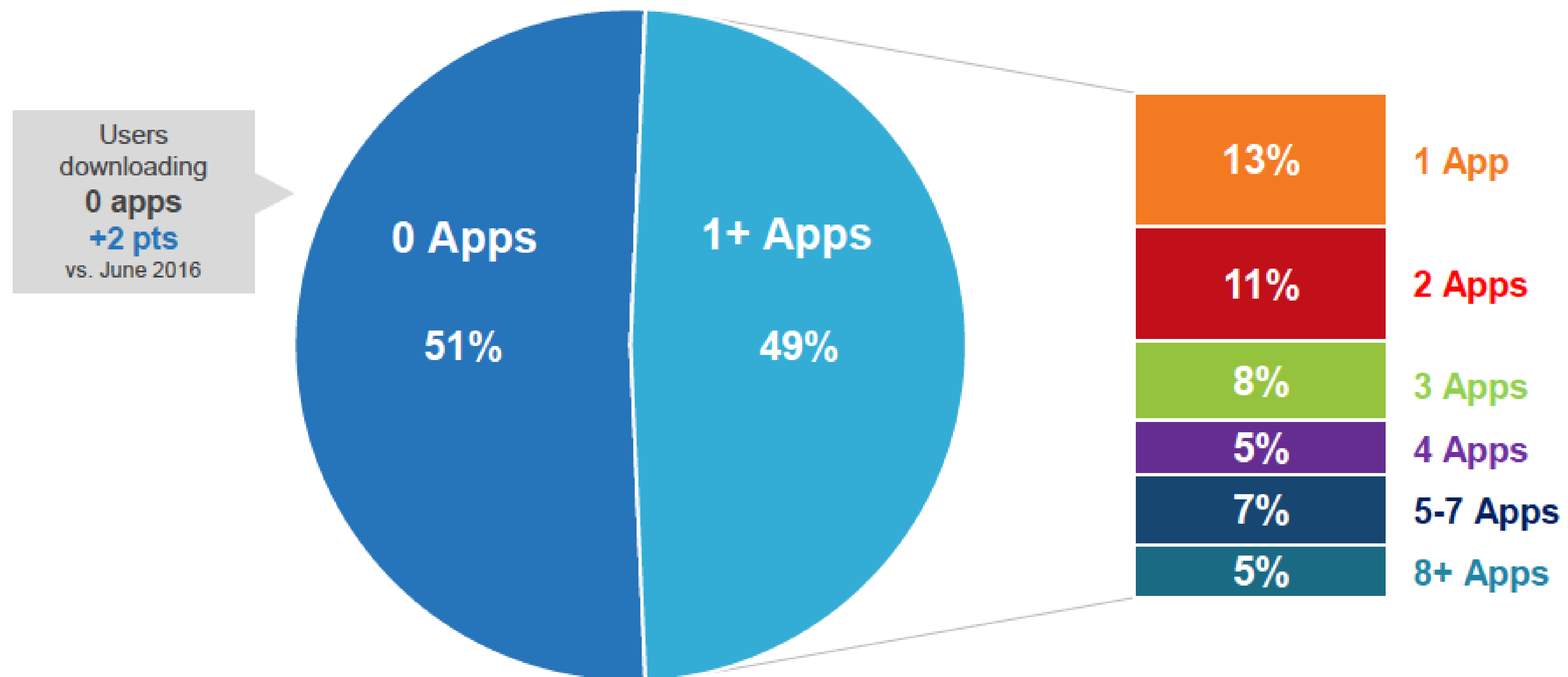


Source: [comscore](https://www.comscore.com)

Web Benefits: App Saturation

Smartphone Users' Number of App Downloads Per Month

Source: comScore MobiLens, U.S., Age 13+, 3 Month Average Ending June 2017



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Web Benefits: And More!

- Write once, run anywhere
- No installation required
- No app store needed (but can wrap app to include in store)
- In-place content updates
- Accessibility standards
- Huge global Web developer community
- Royalty-free standards from W3C
- Opportunities to reduce code size and development cost



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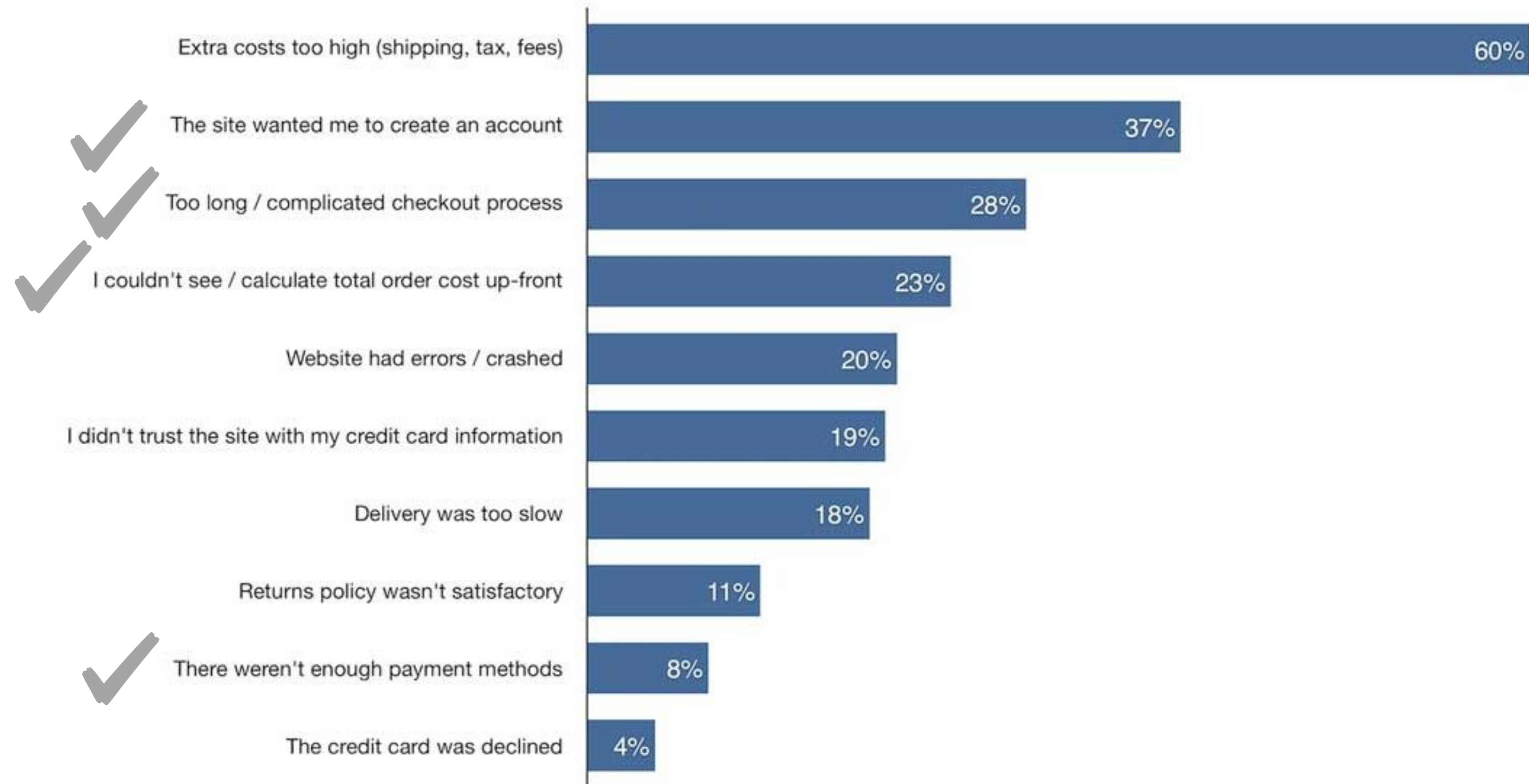
Web Payments: an introduction

Opportunities to Reduce Abandonment

✓ = we think we can help

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

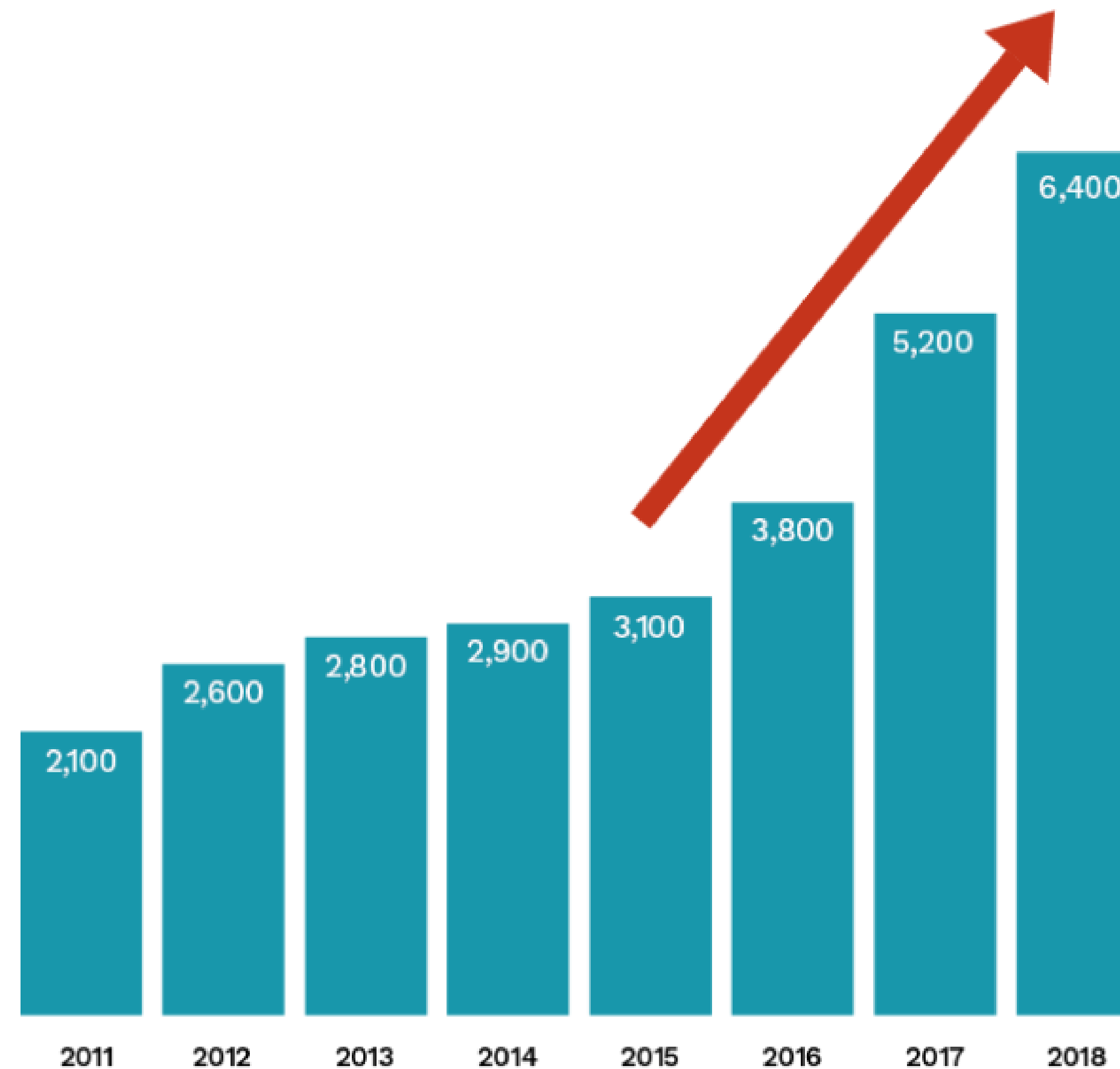
"Have you abandoned any online purchases during the checkout process in the past 3 months? If so, for what reasons?"
Answers normalized without the 'I was just browsing' option



Opportunities to Reduce CNP Fraud

US CNP Credit Card Fraud Losses [2011-2018]

(in \$ mm)



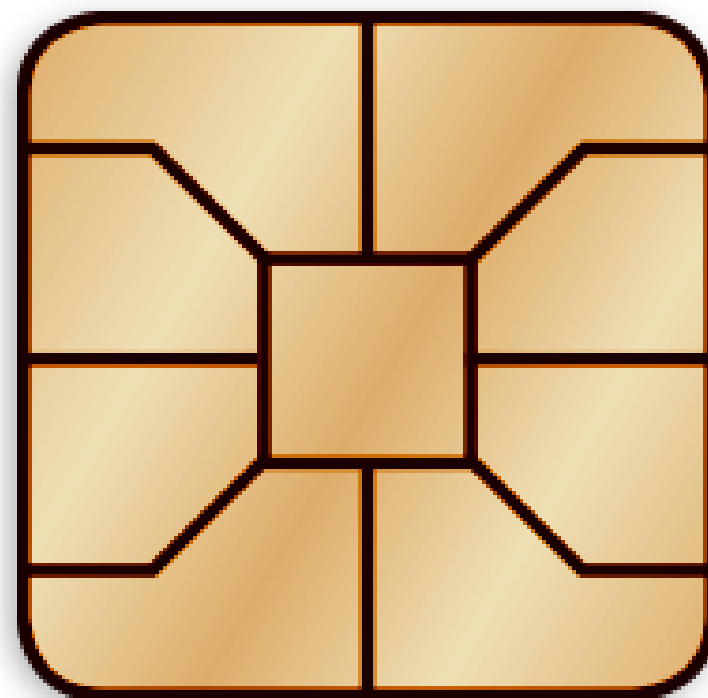
Source: [Kount](#)

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Context Driving Discussion

- Mobile (hardware capabilities, device connectivity, etc.)
- Strong authentication rules and regs (e.g., 3DS2, PSD2)
- Payment innovation (digital wallets, blockchain, faster payments)
- EMV migration (fraud moves online)



Time to Fix Web Payments



- Streamline checkout, facilitated by the browser
- Secure data and enable strong authentication
- Foster payment method innovation

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Ecosystem Participation

Merchant side

Merchants

- Airbnb
- Alibaba

Acquirers/Processors

- Lyra Networks
- Shift4
- Unify
- Worldpay

Gateways/PSPs

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

User side

Browsers/Platforms/Services

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

Issuers

- American Express
- Bank of America
- Barclays
- BPCE
- Capital One

Payment Handler / Wallet Providers

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

Other Stakeholders

Networks

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

Associations / Regulators / Bodies

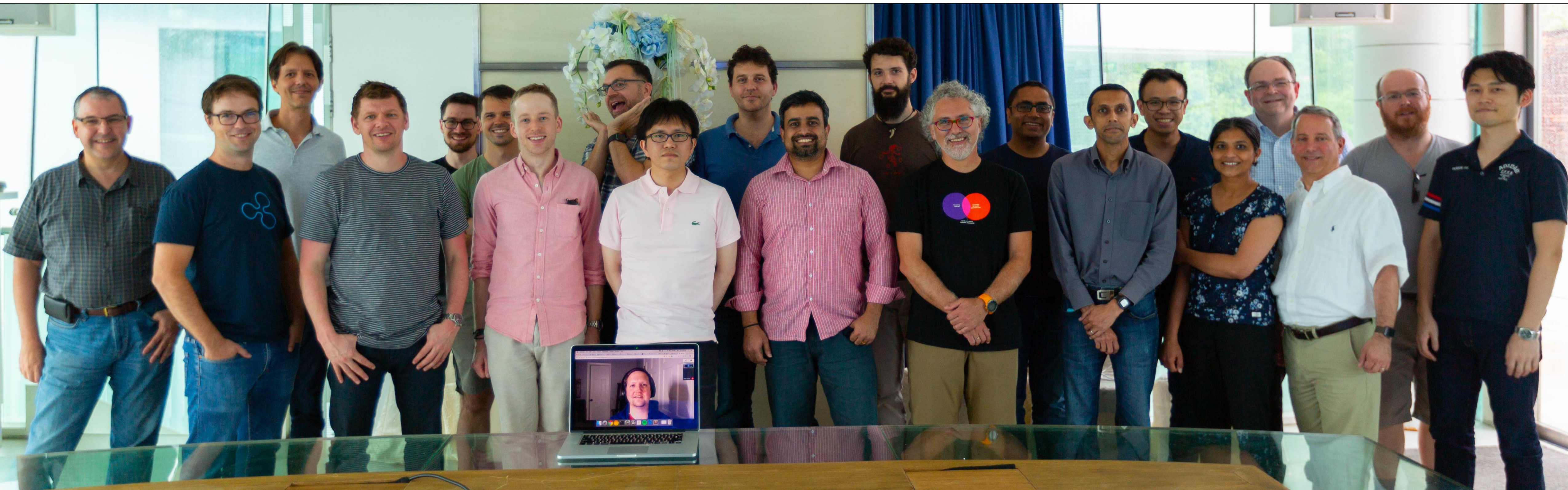
- MAG
- Conexus
- ETA
- IFSF
- ISO 20022
- GS1
- HM Government
- PayCert
- Payments Canada
- US Fed

Telcos

- China Mobile
- Deutsch Telekom
- Orange
- Telenor

Web Payments Working Group

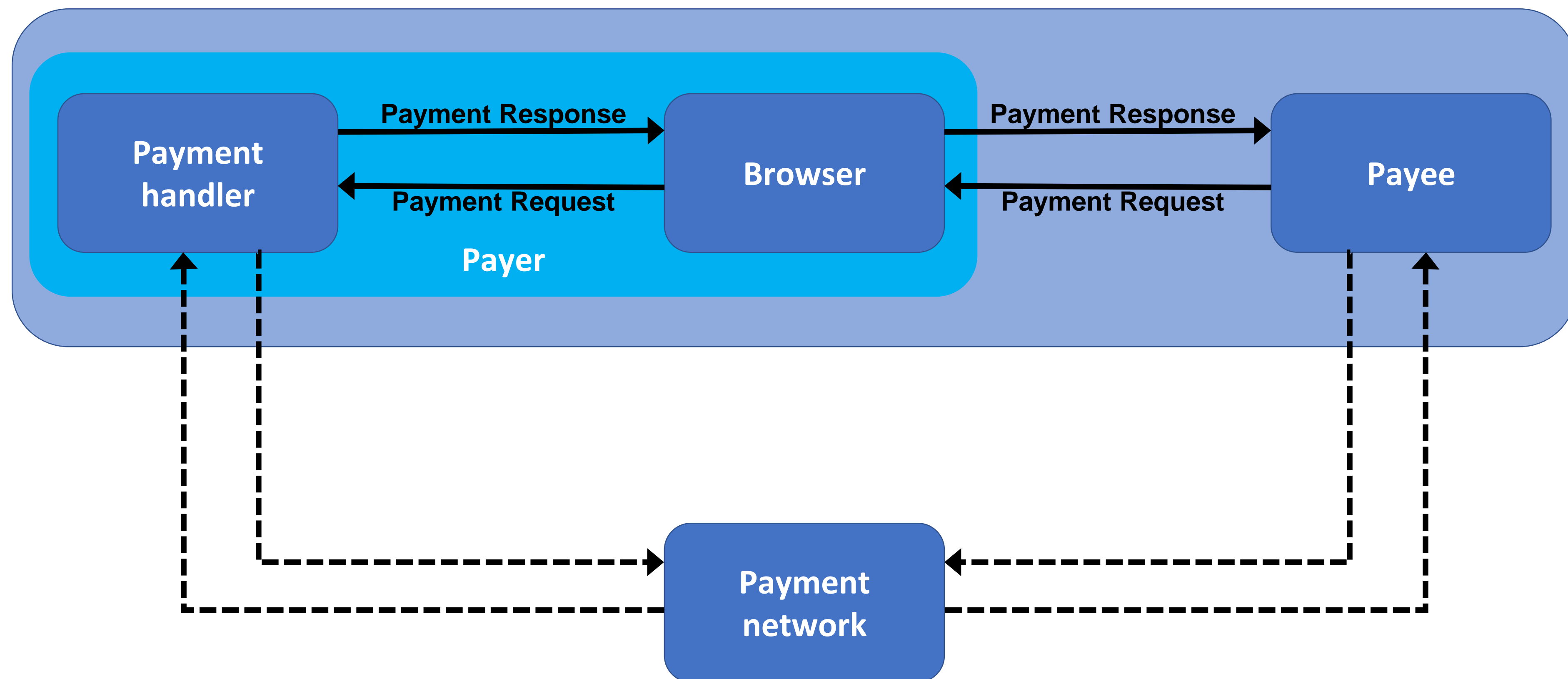
Singapore face-to-face April 2018



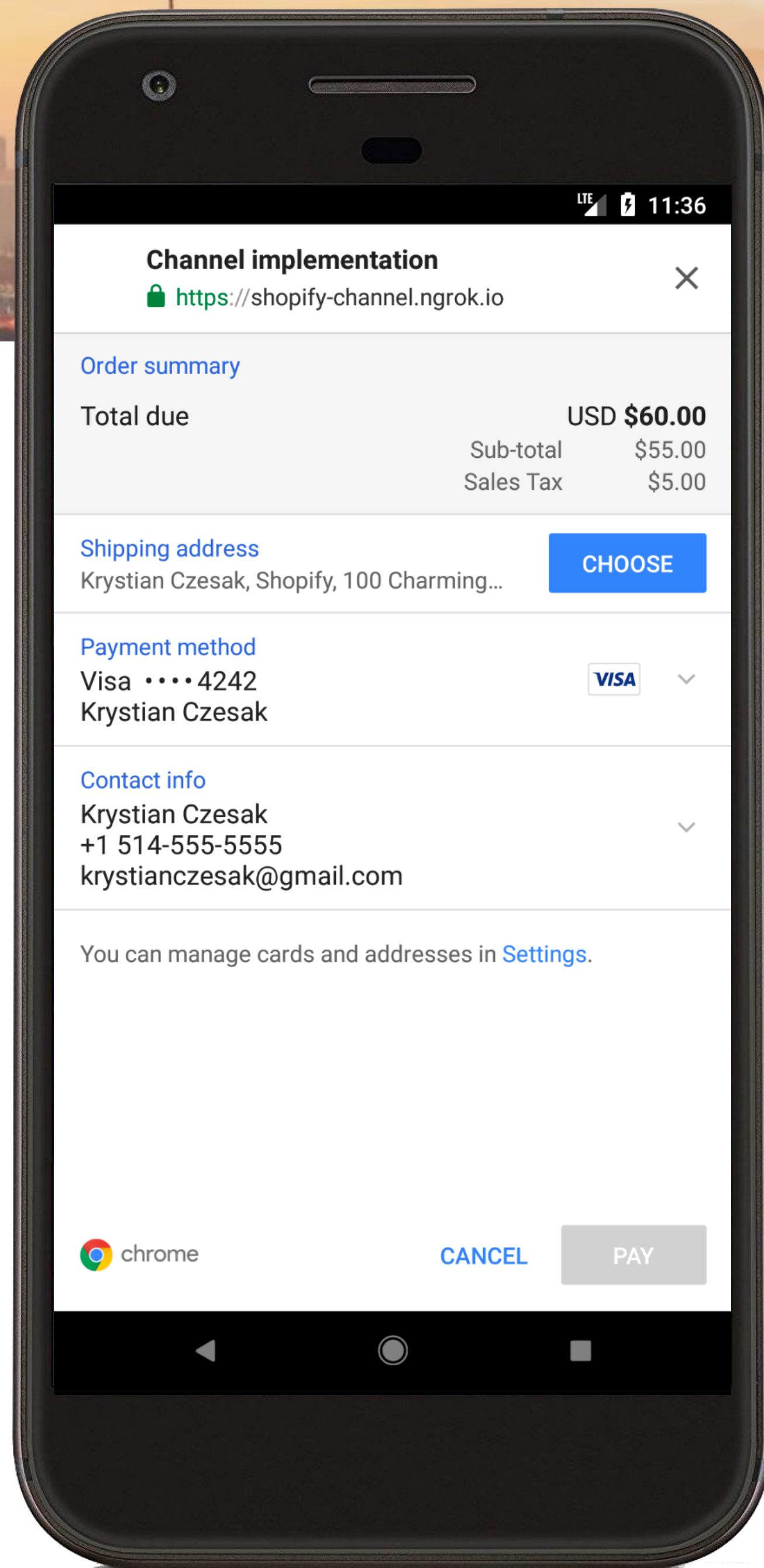
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Basic Architecture



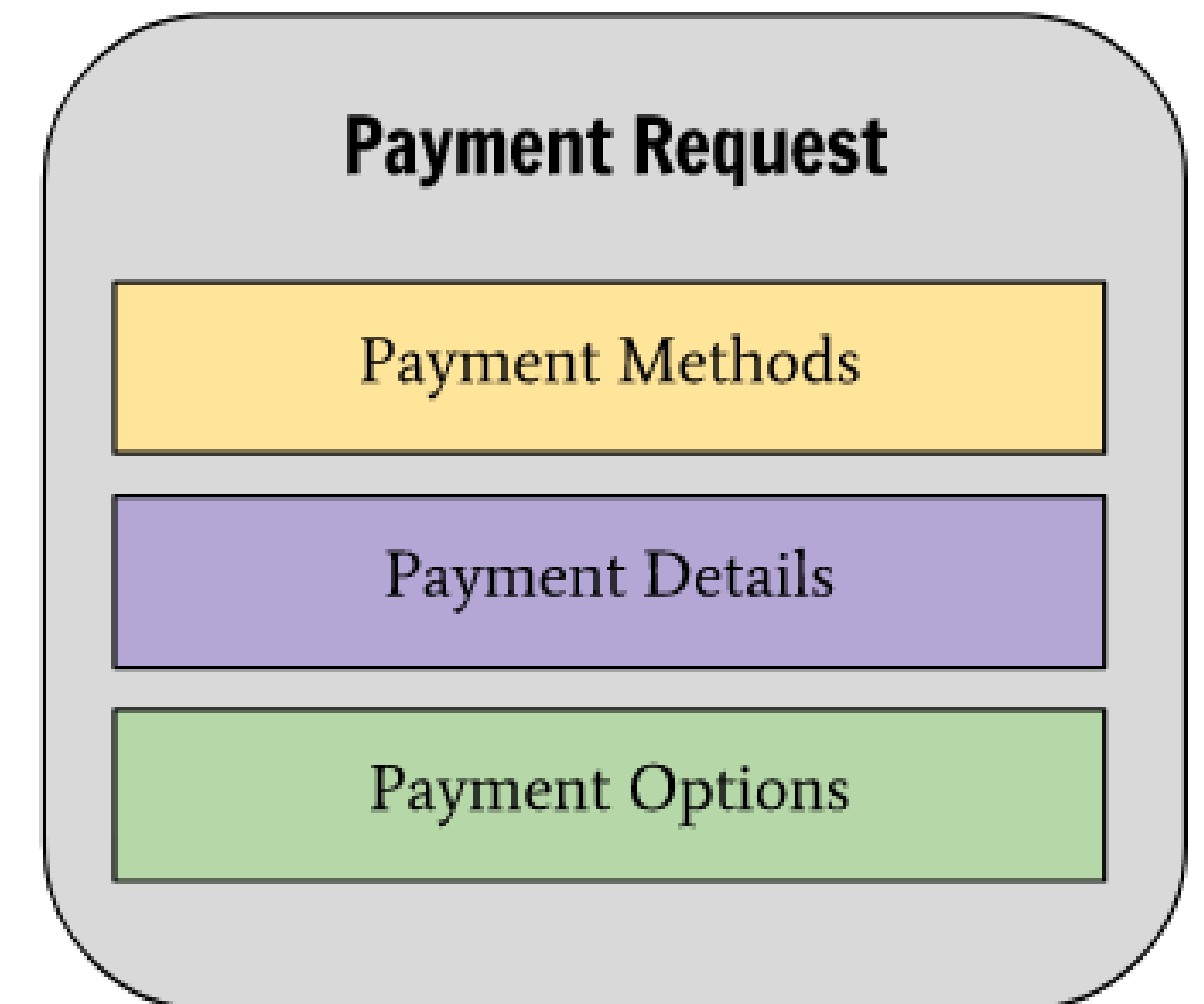
Payment Request API



- Streamlines checkout by making it easy for the user to re-use 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.

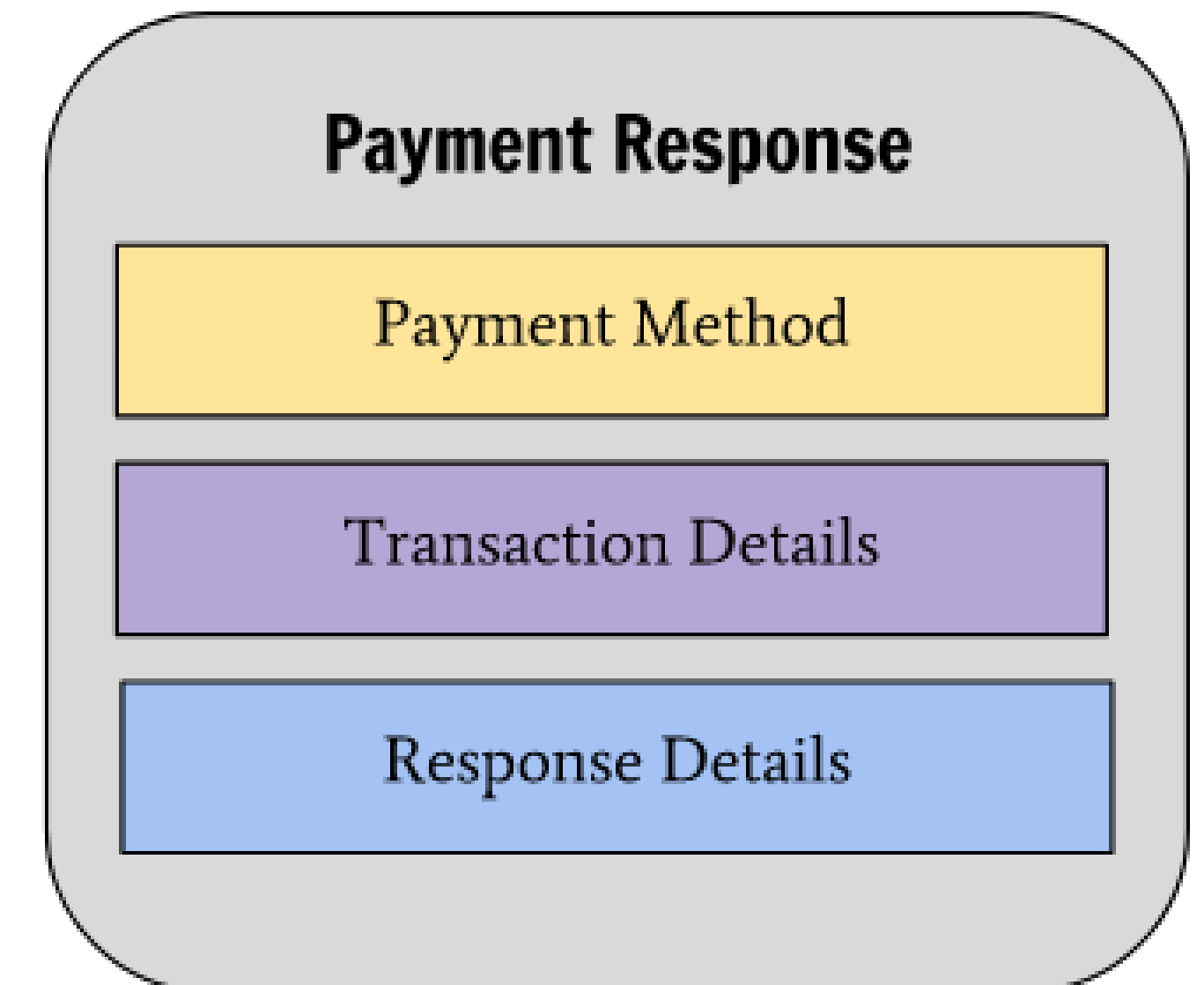
Payment Request

- The payment request object is created by the payee (for example, the merchant) and contains 3 key pieces of information
- Payment Methods
 - What kinds of payment does the PAYEE accept
 - For example, “we accept card-based transactions, but only debit cards”
 - Each payment method has its own specific method data
 - There is a filtering mechanism within the method data
- Payment Details
 - The details of the transactions including total cost
 - Optionally line item detail
 - Optionally shipping options
 - Optionally modifiers like processing fees
- Payment Options
 - Optionally delivery information like physical or electronic addresses
- There is also an event model to allow dynamic changes

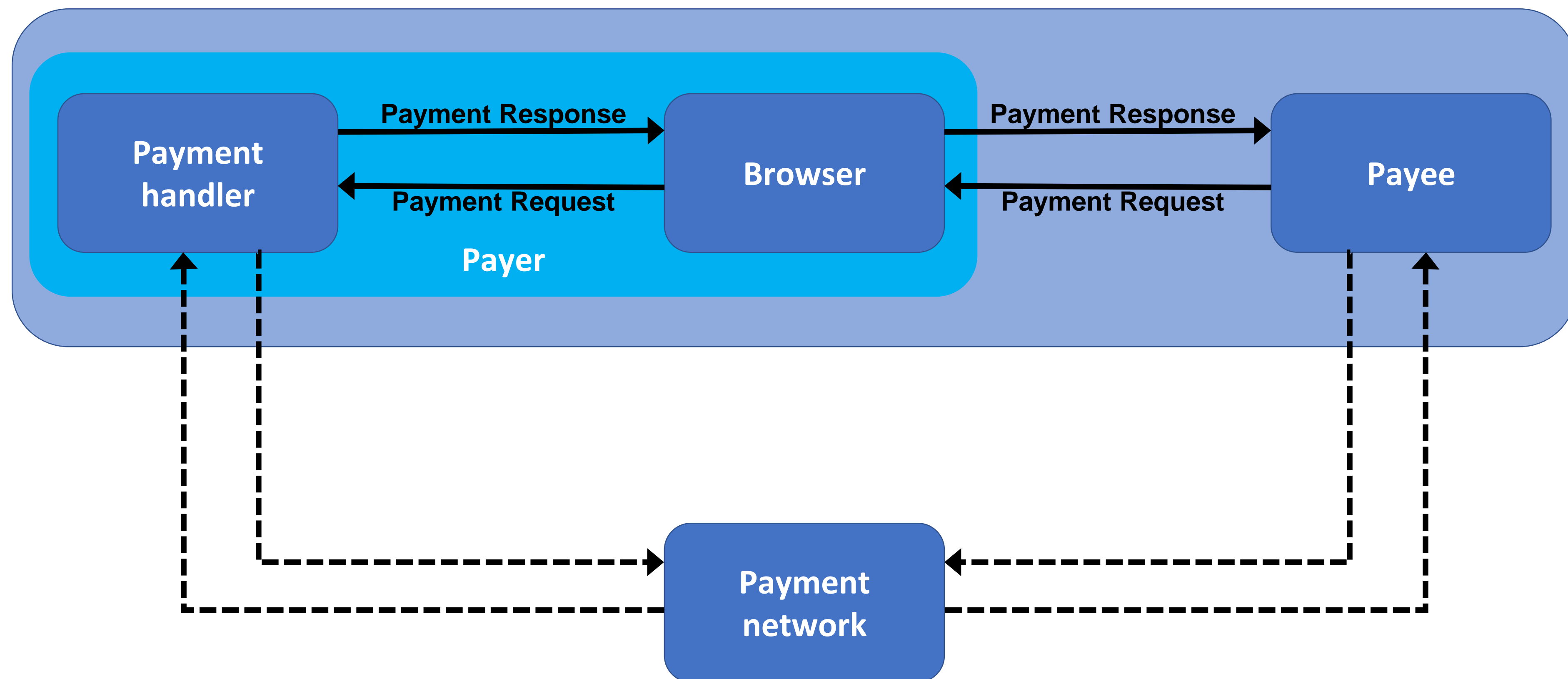


Payment Response

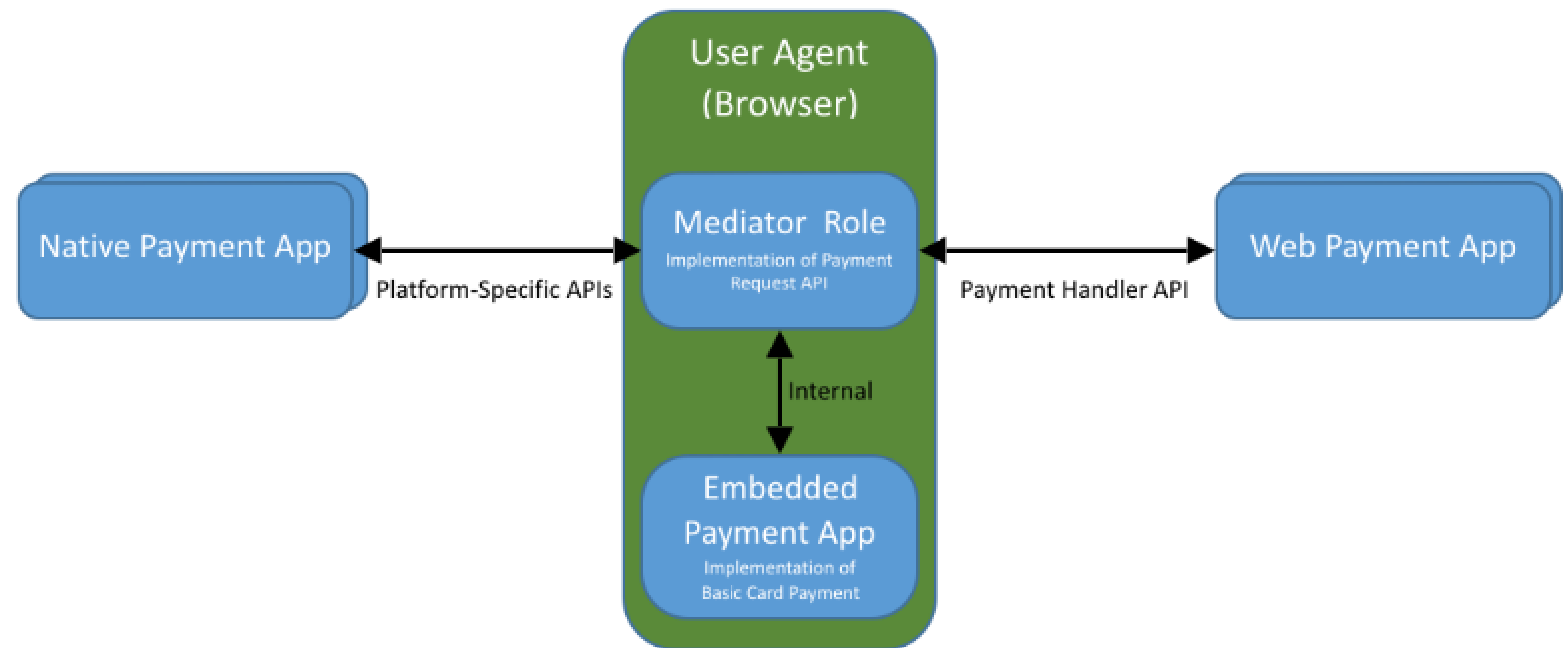
- The payment response contains the information necessary to complete a payment – push or pull
- Payment Method
 - What payment method was selected?
- Transaction details
 - Payment method specific payload required
- Response details
 - Shipping options
 - Payer information



Basic Architecture

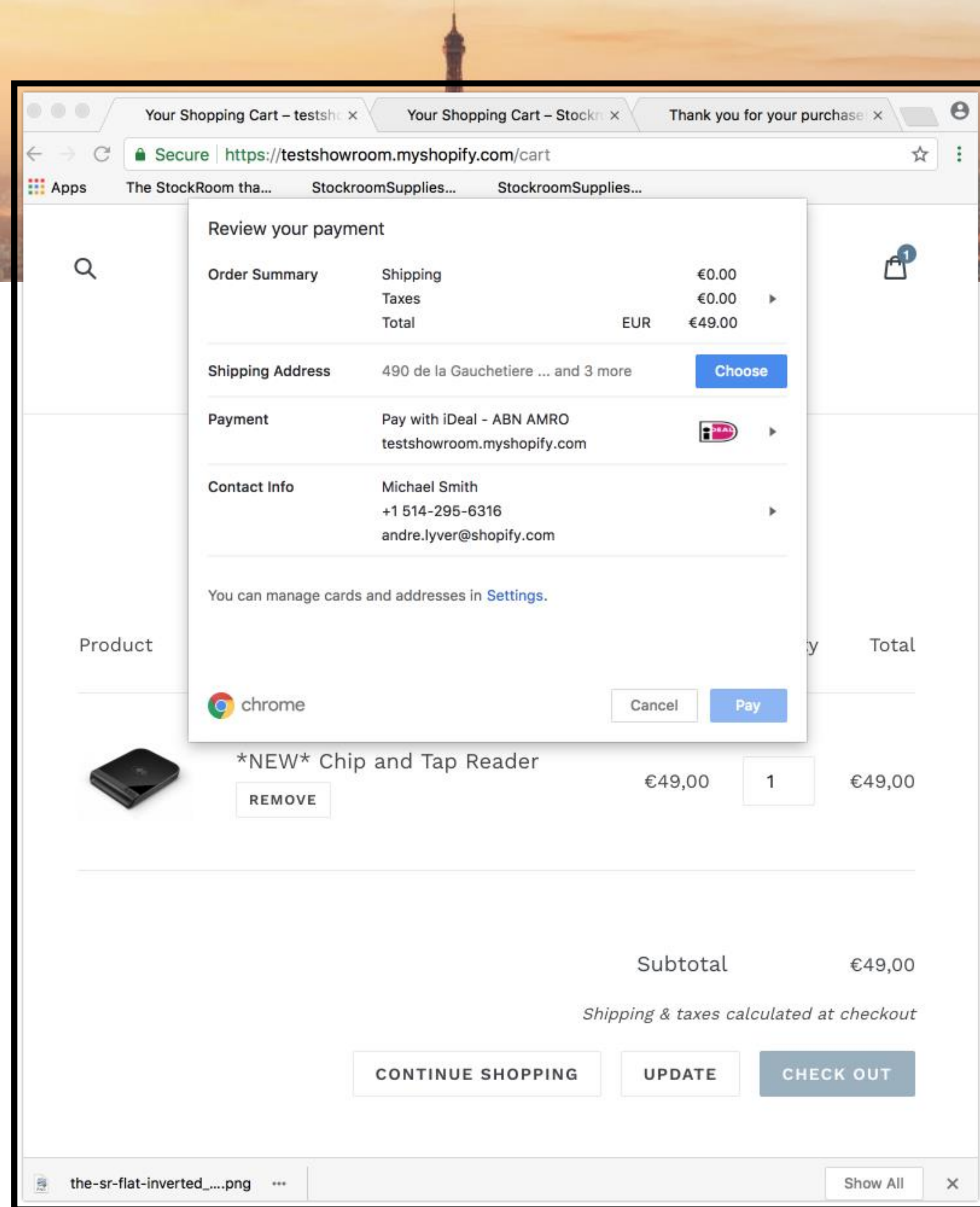


- The architecture is designed to support both native and web-based payment applications
- Current browser implementations include an embedded handler for basic card

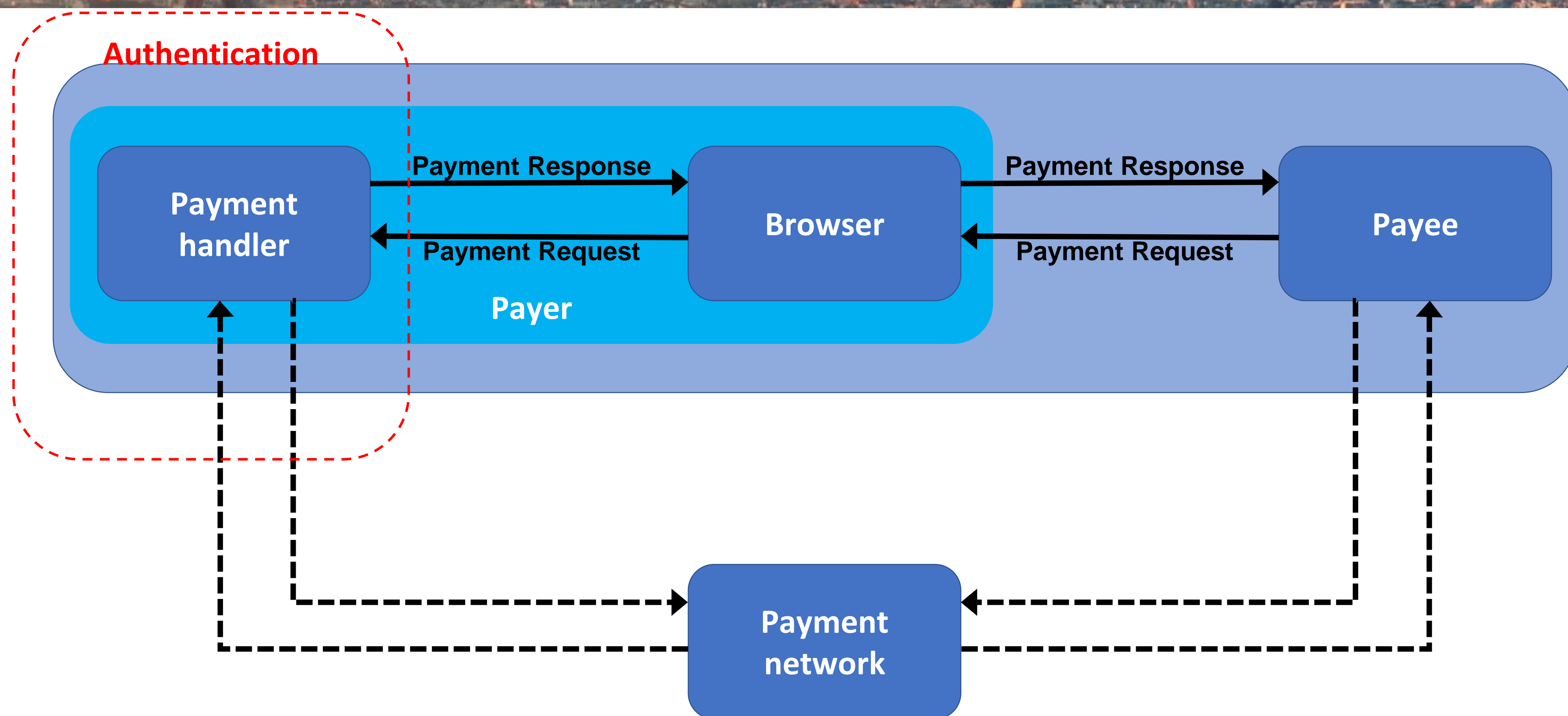


Payment Handler API

- Enables users to make payments on the Web using Web-based payment handlers (“digital wallets”).
- Enables issuing banks and other payment service providers to maintain customer facing relationships, improve security offerings, and provide value-added services alongside payments.
- Simplified user experience through browser-based UX.



Basic Architecture



Web AuthN: FIDO-Style Authentication

FIDO2 BRINGS SIMPLER, STRONGER AUTHENTICATION TO WEB BROWSERS



FIDO AUTHENTICATION: THE NEW GOLD STANDARD



Protects against phishing, man-in-the-middle and attacks using stolen credentials



Log in with a single gesture – HASSLE FREE!



Already supported in market by top online services

- Combination of strong authentication plus payment handlers is compelling approach for delivering **Strong Customer Authentication**
- WebAuth is a candidate recommendation from the W3C and is supported in Firefox, Edge and Chrome

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Payment Methods

- How the exchange of information is initiated and orchestrated between browser and payee domain (payment request API) has been deliberately separated from the payload that is required for a specific payment method
- Payment methods are declared either by:
 - Short string e.g. “basic-card”; “tokenized-card”
 - Full qualified URL: <https://examplePaymentNetwork.com/method1>
- The short strings are curated by the W3C’s Web Payment Working Group
- URL-based methods will provide a Payment Method Manifest which define:
 - Any default Payment Apps associated with the payment method
 - Any other permitted origins (“domains”)
- These manifests allow
 - Payment method owners to distribute authorised payment applications
 - Payment method owners to confirm authenticity of payment applications
 - Use agents to provide improved user experience for installation of new payment applications (e.g. where a user does not currently have an installed application)
- The declaration of the payment method also defines the payload required of both payment request and payment response *for that specific payment method*

Payment Request Implementation Status

- Chrome, Edge, Safari, and Samsung Internet today ship with support for Payment Request. Firefox live behind a user-set flag.
- Facebook, Shopify, Stripe, Braintree, WePay, Bluesnap, Paysafe, BS Payone support Payment Request API.
- Expect Payment Request API to advance to Recommendation by Q1 2019.
- Start planning to use the API now. Implementations will solidify over the next 9 months.





Current User Experiences



9:41 AM 100%

thenorthface.com

Apple Pay Cancel

CHASE FREEDOM (**** 1234)
27 FREDERICK BUTTE RD BROTHER...

SHIPPING JOHN APPLESEED
27 FREDERICK BUTTE RD
BROTHER OR 97712
UNITED STATES

METHOD 3-DAY
3-4 BUSINESS DAYS

CONTACT J.APPLESEED@ICLOUD.COM
(458) 555-2863

SUBTOTAL \$199.00
TAX \$16.42
SHIPPING \$0.00

PAY THE NORTH FACE \$215.42

Pay with Touch ID

Microsoft Wallet

Confirm and pay
www.webstoreurl.com

Pay with John Smith •• 5567

Ship to John Smith
13311 NE 100th St, #100
Seattle, WA 98100

Shipping options Standard - FREE 5-6 Business days

Email receipt to johnsmith@outlook.com

Total (USD) Show details \$345.00

Pay

Secure https://www.shopping.com/checkout

\$470.00 USD
Pay to shopping.com

Shipping Address Edit Add
Lily Addison White, 331 Capston Way
San Francisco, California, 90210, USA

Shipping Options
\$10.00 Standard (3-5 business days)

Payment Information Edit Add
**** 1343 02/2020 Lily Addison White CVV*

Cards and addresses are from Firefox. You can manage details in Firefox Preferences

Firefox Checkout Cancel Pay

PaymentRequest Contact Info Sample
googlechrome.github.io

Order summary

Donation USD \$55.00
Original donation amount \$65.00
Friends and family discount -\$10.00

Payment
Visa ****4242 Eiji Kitamura

Contact info
Eiji Kitamura
1111-1111
@gmail.com

You can manage cards and addresses in Settings.

CANCEL PAY

samsunginter.net

Payment Demo

A simple example of the Payment Request API

Press the button to make a test payment. It won't actually charge you!

You can enter fake details. Here are some example card numbers.

PaymentDemo
https://samsunginter.net/exampl... View details

Order summary

Test payment GBP £1.00

Payment
Visa ...1111 Mr P J Tester

CANCEL PAY

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Payment Handler Implementation Status

- June 2017: Google releases Payment Handler API support in Chrome 68.
- Mozilla and Samsung have also indicated publicly intent to implement.
- Numerous companies are experimenting with Web-based payment handlers, including Coil, Facebook, Klarna, Lyra Networks, Mastercard, Shopify, Worldline, and Worldpay.
- Implementations of Payment Handler API and Payment Method Manifest are still experimental and we welcome early feedback.
- Note also:
 - Google also supports access to native Android payment handlers, including Google Pay, Alipay, Samsung Pay, MasterPass, PayPal, Square, etc.
 - Apple supports access to one iOS-based payment handler: Apple Pay.

Hot Payments Topics

- Card Security
 - Tokenization
 - 3-D Secure 2
 - SRC (but not yet public so no active discussion within W3C)
- PSD2
 - Strong customer authentication
 - Open banking APIs (push payments)

- Web Payment Working Group specifications
 - <https://github.com/w3c/webpayments/wiki>
- Demos, FAQ and Developer Portal
 - <https://github.com/w3c/payment-request-info/wiki/Introductions>
 - <https://github.com/w3c/payment-request-info/wiki/FAQ>
 - <https://github.com/w3c/payment-request-info>



Conclusions

Web Payments: some conclusions

- “Harnessing new standards for payment and authentication to make paying online easier and more secure”
- Consistent user experience
- Aligned to existing programmes and standards
- Covers all payment types (it’s not just cards)
- Web authentication
- Open ecosystem for security and innovation
- Implementing now in the world’s biggest browsers