W3C and Web Payments

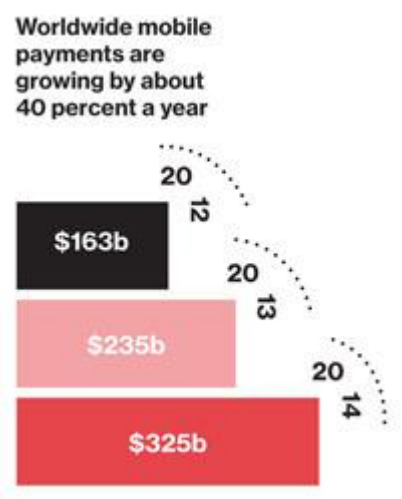
November 2014

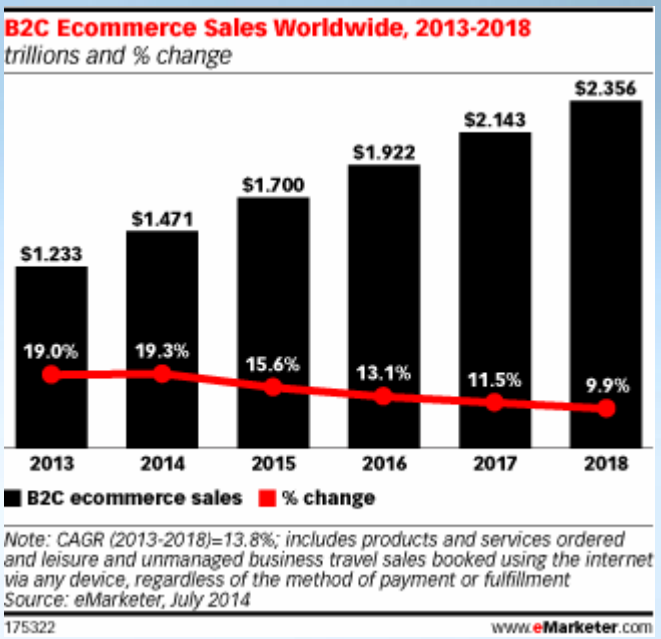
David Ezell (david_e3@verifone.com)
Stéphane Boyera (boyera@w3.org)

Supported by

Opportunity

- E-commerce is booming: +20% in 2014 reaching 1.471 trillions
- Mobile payments is also booming: avg +40% in the last 3 years





Challenges

- A very small percentage of people complete their buying:
  - 72% average cart abandonment rate across device
  - 97% on mobile
- Online Fraud (CNP) is 10 times higher:
  - 0.09% fraud rate on physical credit-card payments
  - 0.9% fraud rate on online payments
- New payments instruments: e.g. crypto-currencies
- Unbanked: 260M+ people have money but no online capability

Key Problems to solve

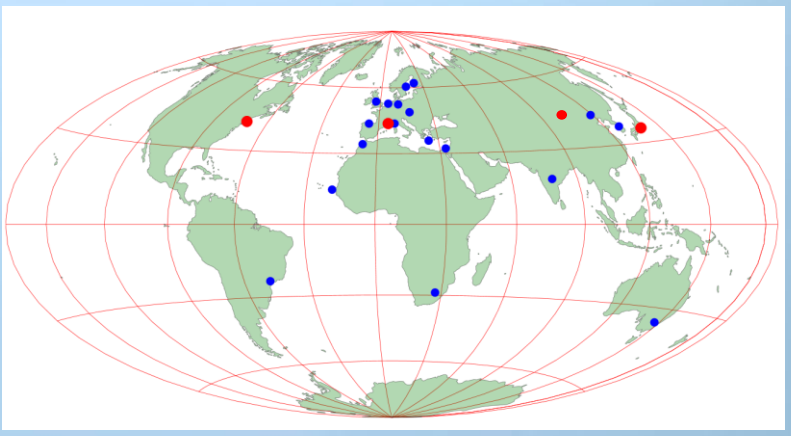
- Customers:
  - More secure transactions, more flexible ways of payments, less trust required in merchants, consistency of interface
- Merchants:
  - Easier integration of payment solutions and less reliability on customer data protection, decreased card abandonment rate
- Apps Developers:
  - Easier integration of payments on the Open Web Platform (HTML5)
- Payment solution providers:
  - Easier uptake of new solutions

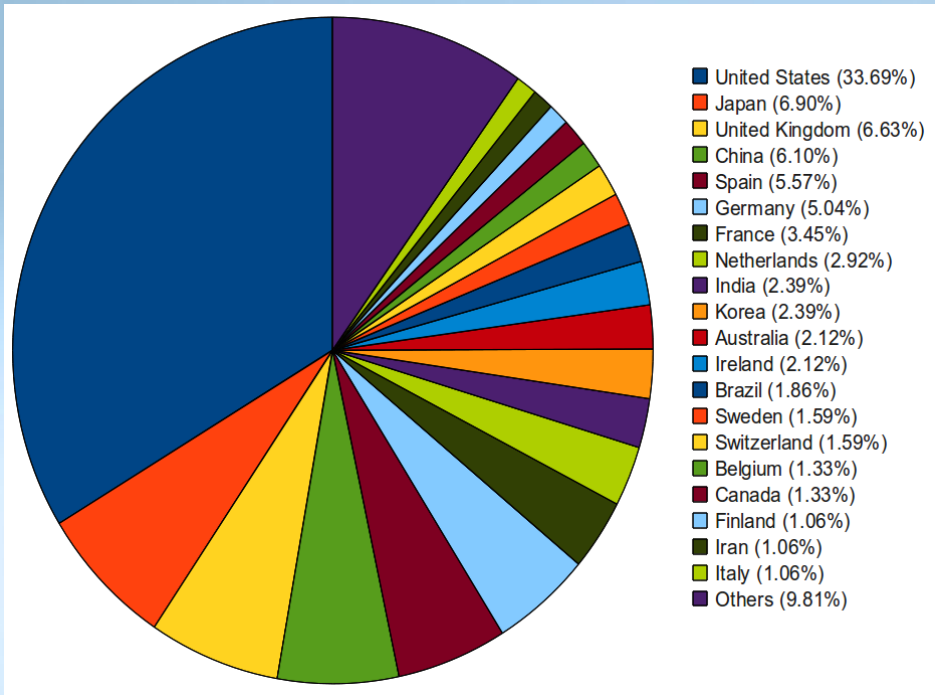
Introducing W3C

- 70 staff in US (MIT), France (ERCIM), Beijing (Beihang), and Japan (Keio)
- 20 Offices in countries world wide

W3C Members

4 Host Locations, 19 Offices





385+ Members from 45 countries;
Many Industries & Governments, including BRIC countries

How Can W3C Contribute?

- Standardized user experience using Open Web Platform
  - Canvas effects
  - Accessibility guidelines
  - “Workers” for continual or background tasks
- Encourage international cooperation
  - Good track record with bringing people together
- API normalization and consolidation
  - Prior work with NFC and other WebApps
- Help establish an implementation road map
- Cultivate developer mind-share
- Security, Trust, Privacy
  - Web Cryptography WG

Process

- A workshop to query the community at large and evaluate the momentum for standardization and key work items

- Post-workshop stakeholders engagement within W3C
- Launch of relevant groups (Interest group, Technical Working Group(s))

W3C Web Payments Workshop - Stakeholders

- Banks:
- Payment Industry:
- Merchants:
- Standardization Bodies:
- Regulators:
- Alternative Payment/Currency providers:
- Mobile & Web Industry:

Web Payment IG Outcomes

- Meeting in Santa Clara October 27-28, 2014
- “Wallet” = “Payment Agent”
- Other Standards Review
  - ISO 20022 provides basic business process framework
  - ISO 12812 has a firm start on standards for “Mobile Payment”
- Payment Use Case Review
  - Web Payments CG contributions
  - X9 Contributions
  - Axes:
    - Endpoints – Consumer, Merchant (Seller), Government
    - Basic Payment vs. “Semi-Integrated”
    - Online vs. Offline
    - Pull-payment vs. Push-payment
- Tasks
  - TF to populate the Use Cases on the Wiki
  - TF to begin to investigate “User Agent” requirements
    - Merchant/Consumer instrument negotiation
  - TF to provide feedback to outside groups on relevant specifications

Example API - NFC

- The NFC API supports the following features:
  - Reading and writing NDEF messages on NFC tags
  - Sending and receiving NDEF messages on peer targets
  - Bluetooth or WiFi pairing (or "handover") with a peer target

- Here are some possible use cases:
  - **Tap to Play**: tap your device to another to play a peer-to-peer game, using the **NFCPeer** interface to exchange NDEF messages.
  - **Tap to Share**: tap to share some data, e.g. coupons, contacts, using the **NFCPeer** interface to exchange NDEF messages.
  - **Tap to Control**: tap to control another device, like a TV remote, using the "handover" capability of the **NFCPeer** interface.
  - **Tap to Connect**: tap to connect via WiFi or Bluetooth, using the "handover" capability of the **NFCPeer** interface.
  - **Tap to Read**: tap to read NFC tags, using the **NFCTag** interface.
  - **Tap to Write**: tap to write NFC tags, using the **NFCTag** interface.

http://www.w3.org/2012/nfc/web-api/

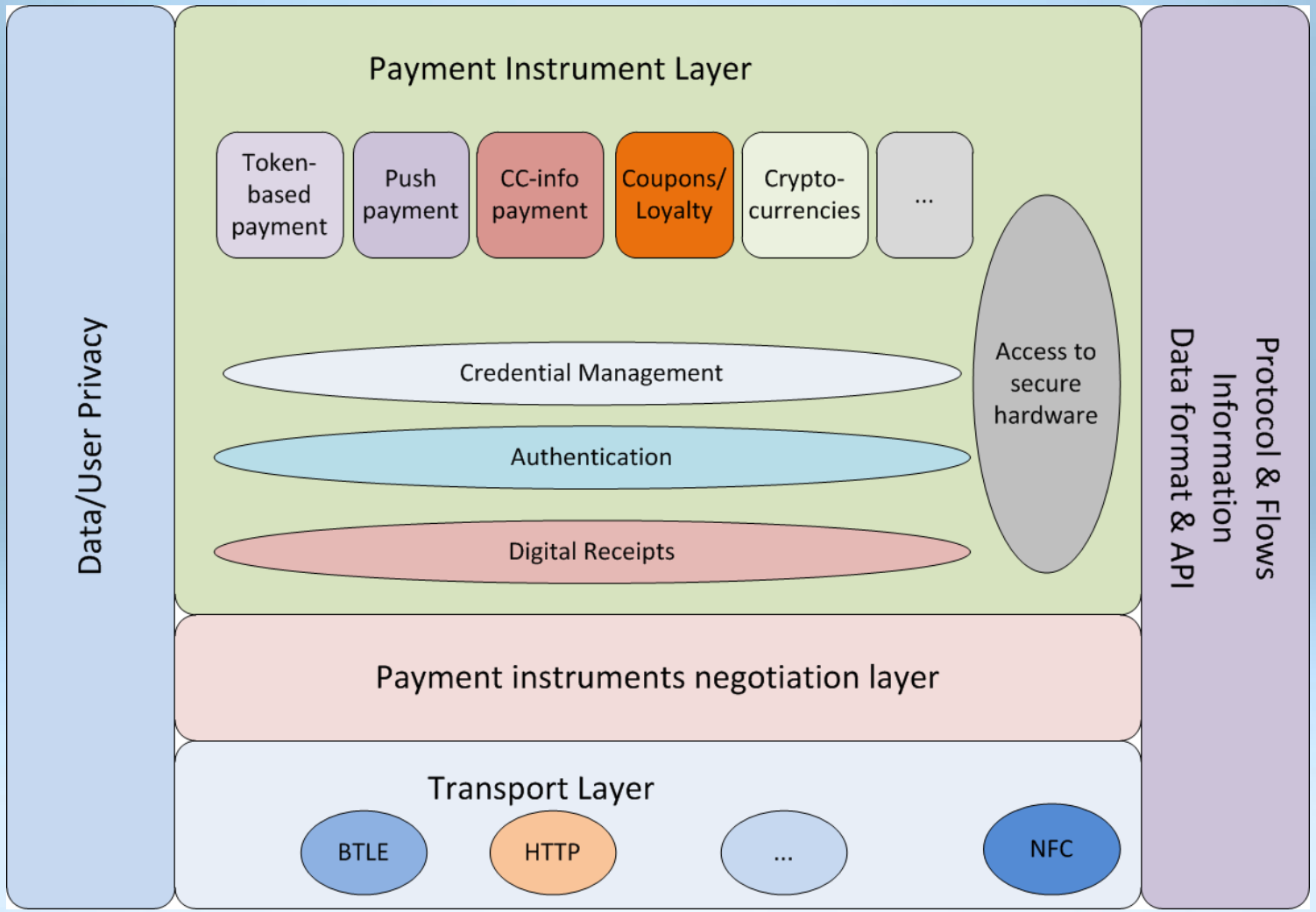
Example API - NFC

```
var hello = new NDEFRecordText("hello world", "en-US", "UTF-8");

navigator.nfc.ontagfound = function(e) {
      window.console.log('NFC Tag found!');
      var tag = e.tag;
      tag.writeNDEF(new NDEFMessage([hello]));
}

navigator.nfc.startPoll().catch( function(e) { window.console.error(e); });
```

API Development - Payment Agent



Web Cryptography WG

- Web Cryptography API

```
typedef DOMString KeyType; typedef
DOMString KeyUsage; interface Key {
        readonly attribute KeyType type;
        readonly attribute boolean
        extractable;
        readonly attribute KeyAlgorithm
        algorithm; readonly attribute
        KeyUsage[] usages;
};
```

- Secure Element API

(Coming soon!)

Other W3C & Non-W3C Groups

- W3C NFC Working Groups: http://www.w3.org/2012/nfc/
- W3C Device Api Working Group: http://www.w3.org/2009/dap/
- W3C Web Cryptography Working Group: http://www.w3.org/2012/webcrypto/
- W3C Web Applications Working Group: http://www.w3.org/2008/webapps/
- W3C Web Application Security Working Group: http://www.w3.org/2011/webappsec/
- Fido Alliance
- EMVco
- ISO/X9
- GSMA
- …

Conclusions

- Payments on the Web is facing a few challenges that need a response from all the stakeholders involved in the domain.
- The Open Web Platform (HTML5) can help close crucial gaps in implementations.
- A community including Web industry, Telecom industry, Finance-Payments industry and Retailers/e-commerce industry is forming at W3C to tackle theses challenges.
- The new activity is just starting and requires involvements of all parties to shape the agenda and take into consideration all the requirements.
- We want to understand your current focus and interests:

  http://www.w3.org/Payments/

  http://www.w3.org/Payments/IG/

  http://www.w3.org/2014/04/payments/webpayments_charter.html

  http://lists.w3.org/Archives/Public/public-webpayments-comments/

NACS Est. 1961

Thank You

References

- W3C Web Payment Workshop Report: http://www.w3.org/2013/10/payments/final_report.html
- W3C Web Payments Home Page: http://www.w3.org/Payments
- W3C Web Payments IG charter: http://www.w3.org/2014/04/payments/webpayments_charter.html
- W3C Workshop on Authentication, Hardware Tokens and Beyond: http://www.w3.org/2012/webcrypto/webcrypto-next-workshop/Overview.html
- HTML5Apps EU Project “Closing the gap with Native”: http://html5apps-project.eu/
- Contact: Stéphane Boyera (W3C) – boyera@w3.org
- Contact: David Ezell (NACS) – david_e3@verifone.com
- Contact: Erik Anderson (Bloomberg) - eanders@pobox.com