Moving the Web and Automotive Forward

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Philippe Le Hégaret, @plehegaret
Director and Head Lead

Who am I?

- Joined W3C in 1994
- Joined MIT in 1998
- Presently responsible for the W3C technical mission and all of the Groups
- Co-Chair of the W3C Process Governance Group
- e-mail plehegaret@w3.org

Why am I here?

1. The Web is a platform for applications
2. The Web is important for the Automotive, IoT business
3. COVID accelerates Behavior
4. The Internet is more in need of platforms for applications

World Wide Web Consortium

- Founded in 1994 by Tim Berners-Lee
- Director: Jeff Jaffe, CEO: Jeff Mitchell
- Over 450 Members from around the world
- 350 employees
- 2018 Langsdorf & Alm Award
- Hosted by ERCIM, Keio, MIT
- Regional Offices around the world
- Over 300 recipients
- W3C Inc. created in 2013

Brief History

Inventing the Web Platform – 1990 to 2000
HTTP parsing HTML/CSS, CGIPL and JavaScript become the core platform
Inventing the Web Platform Scale Open Interoperable – 2000 to 2014
Mobile, IPv6, Accessibility and Internet
Web Platform Maturity – 2014 to Today
The Web is a clear public good, where for general, we've big to W?

Version of the W3C

W3C's Vision for the World Wide Web

- The Web is for all humanity
- The Web is designed for the good of its users
- The Web must be safe for its users
- There is one interoperable multicultural Web

Vision of the W3C

> [ ] provide a consistent architecture across the rapid pace of progress on the Web
> [ ] ensure that the Web is sustainable long-term, while continuing to **provide the Web's scope and reach**
> [ ] consistently strive to make the Web better through these principles, including Web Principles

From: Vision Task Force

Driven by principles

- Vision Task Force
- Vision Introduction Principles
- Web Principles
- Ethical Principles, see Ethics Interest Group
- Web Platform Design Principles

and multiple set of guidelines

Some learnings along the way

- The Web is a medium-term to long-term strategy
- Building the Web for your own purposes and **NOT** how you
- Ignoring the Web will bite you in the long term

Web?

The Web is not just code, your Web browser

Web User agent
CSS, APIs/Machine Learning, Performance, Content Guidelines, Internationalization, WebXR,
Web Platform
WCAG APIs, JSON-LD, Verifiable Credentials, Decentralized Tracing, Web Of Things

Technical needs

1. Maintain the current platform (CSS, Communication, DOM),
2. Improve the current platform (WCAG Guidelines, Authentication, Identity,
3. Expand the scope immersive Platform **Accessibility**

The Vehicle as a device

Thinking the Internet and global network

- Voice, gesture, security, mobility, confidentiality, privacy,
- Big screen
- Big data accessibilities

Not a mechanical device with IT digital units and a lot of interlocutors

CONVESA and W3C goals

CONVESA
- Mobile, a platform for Web, open APIs for the whole Auto industry

W3C
- Mobile accessibilities are open and requirements that can be managed by multiple industries

The Web as an Auto platform

- Accessibility & Auto Requirements
- Secured communications, control and sensors, verifiable credentials
- Local Code applications and local environments access code transparency
- Local experiences Synergies AR

Security and the Web

- Challenges the Web runs attackers and automated code
- Web Authentication scalable public key based credentials on authentication users
- Permissions
- Is it a device or does it bring access to "security features"
- Is appropriate to provide such Security features
- WebRTC Encrypted Transmission enable audio and video encryption

Web Authentication

- Passwords are dangerous
- Public key based authentication creates one use of strong unbreak-crypto public key based credentials
- Using a single device, easily pairing in hardware key (USB keys) or software (eg Google, or FB app)

Permissions

- Permissions APIs
- Integrate with browser permissions, representing user's choices
- Implementation may need and be verified
- Permissions Policy, Permissions in a platform Features (usually an HTTP)
- Permissions Policy
- allows developers to selectively enable and disable use of various features and APIs
- a powerful new and flexible way to control processing within their application
- enable several types of "low power" optimizations of the browser

Secure Payment Confirmation

- Payment Request API extend, Web Authentication,
- Secure Payment Confirmation, Web Payment
- Multiparty Transaction "payment"

Privacy

- Consumers increasingly concerned with users' privacy
- Controlling cookies, Anti-Fingerprinting, Anti-Tracking, Anti-Mining
- Anti-Tracking, machine learning, social networks

Privacy Advertising

- Privacy-Enhancing Technologies (PETs) address advertising use cases while protecting consumer privacy
- Architect and implement emerging privacy-preserving advertising solutions
- Anti-privacy compromises (PPC) in standard consumer environments (TPM)
- PETs, A group is based at the Privacy Group

Neural Network API

Web Machine Learning WG
Web Neural Network API Editors Draft, 6 June 2022

- Hardware-agnostic, dynamic input, for CNN inference
- Use cases: Person Detection, Auto Transfer Image Captioning Denoising Video Calls
- TensorFlow Lite and ONNX extensions, dynamic selection (quantized, power preference, hardware acceleration, and non-accelerated) and compatibility
- Implement on Core ML
- Implement on Windows ML

Ethical Principles for ML

Ethical Principles for Web Machine Learning
W3C Group Note, 29 November 2021

- Ethical principles for machine learning and the Web platform, including the Web platform's consideration of harms, risks and mitigations relevant to Web APIs
- Discussion delayed, focus is on scope and other ethics-related ongoing standards work
- Ethics Interest Group, discussions on human interactions, also embedded in groups
- Ethical Machine Learning, ethicalmachinelearning.com, a long-planned workshop on human factors

Notifications

- Notifications API (WHATWG), Push API (IETF)
- Notification
- Notification
- Persistent notifications
- Actionable
- Closeable
- Timing out
- Interaction-free Notifications

Immersive Web

- Low latency, high-performance Virtual Reality (VR) and Augmented Reality (AR) experiences
- WebGPU Canvas API
- WebGPU Augmented Reality Modules
- Light Estimation, Hit Testing, Anchors, Lighting Performance, Geospatial, Depth Sensing, Mesh Data, Plane Data

Devices and Sensors

- Generic sensor API, Generic sensor extensions
- Implementations
- Ambient Light Sensor API
- Magnetometer, Proximity, Sensor Extensions, Accelerometer, Gyroscope
- Orientation Sensor, Relative Orientation Sensor, Absolute Orientation Sensor, Pressure, Ambient Light, Screen Wake Lock

Mashups

- Facilitate the development of interoperable and robust Mashups
- Mashup Platform
- Messages
- Packaging
- Storage
- Addressing

Web Of Things

- Enable cross-integration across IoT platforms and application domains
- Specifications
- Thing Description
- Thing Interaction
- Thing Model
- Binding
- Discovery

Web based Digital Twins for Smart Cities

- Focus for technical and business discussions related to Smart and Net
- Support interoperability within Smart Cities through their use of Web technologies
- "Twin in a program"

VC2

- W3C Working Drafts
- JSON-LD 1.1, Crypto
- Verifiable Credentials, Exchanging machine information
- Exchange different protocols
- Linked-in-program with DID ecosystem is critical
- JSON-Ld 1.1 Transport (HTTP), Web Archive, MQTT

DID/VC

- Decentralized Identifiers and Verifiable Credentials
- Provides a mechanism enhancing trust by ensuring that data can be cryptographically verified
- Engaging Issuers (e.g.DMV) Systems Data Holdings to
- issue
- issue of identifiers that enables verifiable, machine-readable, cryptographically secure
- Holding Holding or Repository
- Holding, Holding or Repository

Deployment

- Pilots for Verifiable Employee Ids Credentials
- Decentralized Digital Wallet
- Digital Age Certificates
- Customer Relationship Initiative Libraries
- Digital Identity Wallet, Digital Identity Wallet EU
- Digital Permanent Id Program Cycle

From: Verifiable Credentials and DIDs - Photo Service

Web Identity?

- Attempt to merge Mobile Discussions Requests (MP, DMV/EU) and Federated Credential Management (Auth0 CEO)
- Federated Identity Management, Federated Identity Management
- OPS Authentication, Identity Management, Identity Management
- W3C, IETF, ISO is a better discussion venue, IETF, ISO, Decentralized Economic Governance (DEG), open issues

Of work in progress

What's next?

- Improve DIDs leading to implementation/adoption
- Leveraging the Web platform, condensing work on energy
- Decentralized Identity and Trading
- Crowdsourcing research
- Identifying interactions where cross-group etc.

Thank you

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- COVESA goals: Enable a platform for data and APIs for the entire Auto industry
- W3C goals: Enable automotive use-cases and requirements that can be leveraged by multiple industries

https://w3.org/2023/10/web-automotive