

Present and Future of the World Wide Web

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极客邦科技 会议推荐2019

5月

QCon 北京
全球软件开发大会

大会：5月6–8日
培训：5月9–10日

QCon 广州
全球软件开发大会

培训：5月25–26日
大会：5月27–28日

6月

GTLC 上海
GLOBAL TECH LEADERSHIP CONFERENCE
技术领导力峰会
时间：6月14–15日

GMTC 北京
全球大前端技术大会
大会：6月20–21日
培训：6月22–23日

ArchSummit 深圳

全球架构师峰会
大会：7月12–13日
培训：7月14–15日

7月

QCon 上海
全球软件开发大会

大会：10月17–19日
培训：10月20–21日

10月

GMTC 深圳
全球大前端技术大会

大会：11月8–9日
培训：11月10–11日

AiCon 北京
全球人工智能与机器学习大会

大会：11月21–22日
培训：11月23–24日

11月

ArchSummit 北京

全球架构师峰会
大会：12月6–7日
培训：12月8–9日

12月

World Wide Web Consortium

- Founded in 1994 by Tim Berners-Lee
- Over 400 technical Web standards,
Over 450 members
- Goals:
 - Neutrality
 - World-Wide Impact
 - Foundation for future innovations
- Hosts: Beihang, ERCIM, Keio, MIT



A Web platform for Automotive

- Need for a robust application ecosystem and interoperability
- Reduce fragmentation by competing proprietary approaches
- More developers for the Web than any other platform
- Web has proven itself and transformed industries
- Connected vehicles will be relying on Web services

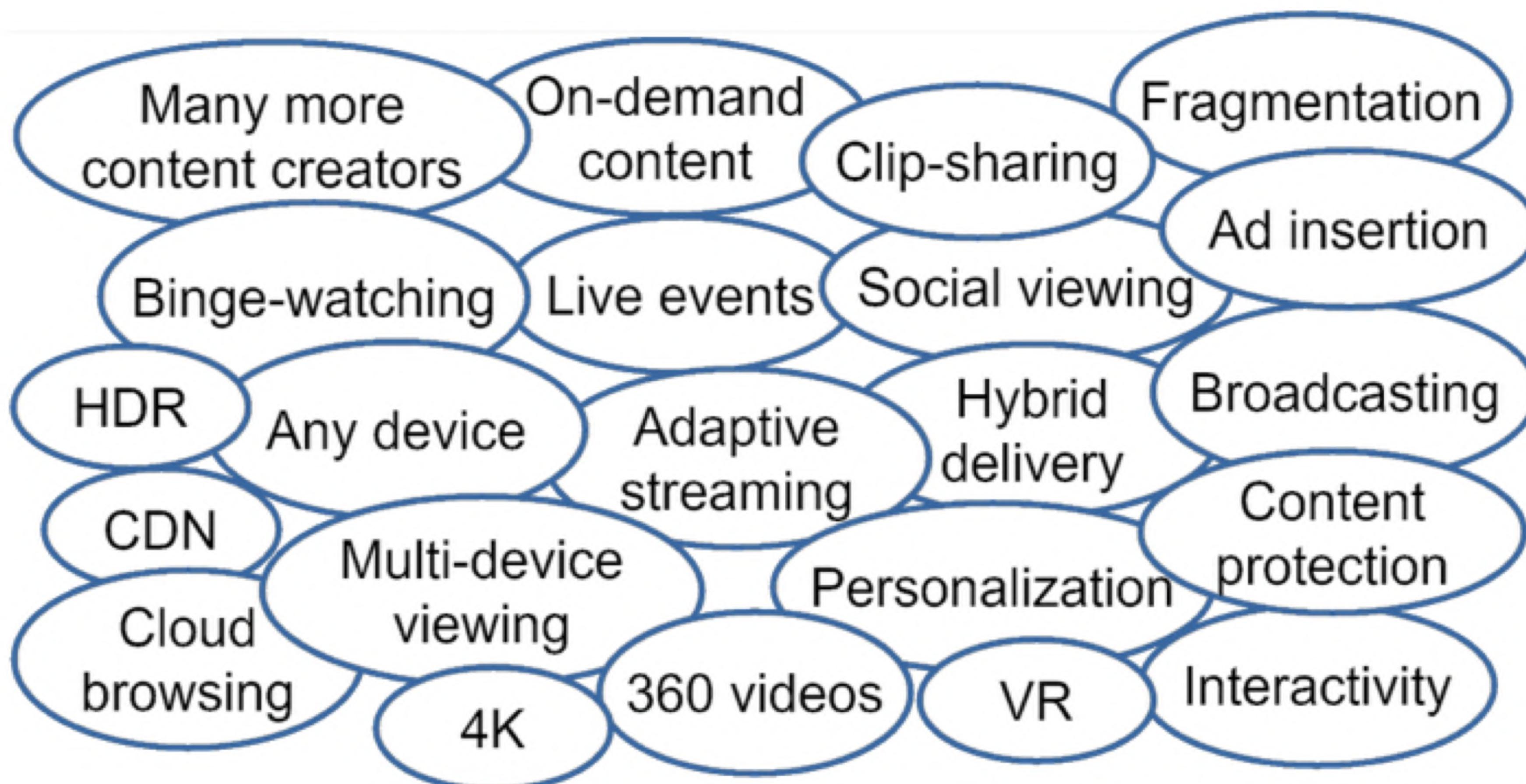


[Byton next generation system](#)

Expanding Core Capabilities



A dynamic media landscape

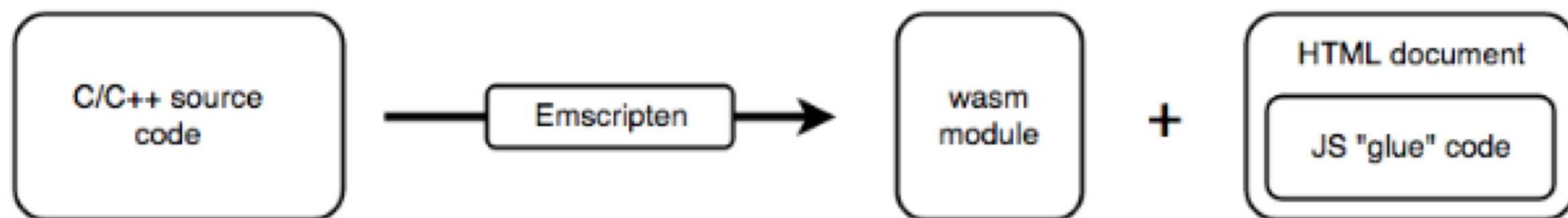


Graphic Processing Units and the Web

- Successor to the WebGL?
- WebGPU:
 - rendering onscreen and offscreen drawing surfaces
 - computation tasks
- WHLSL: platform-neutral Shading Language
- Could be implemented above Direct3D, Metal, or Vulkan.

Web Assembly

- binary instruction format for a stack-based virtual machine
- target for compilation of high-level languages like C/C++/Rust
- intended for performance-critical portions of page scripts

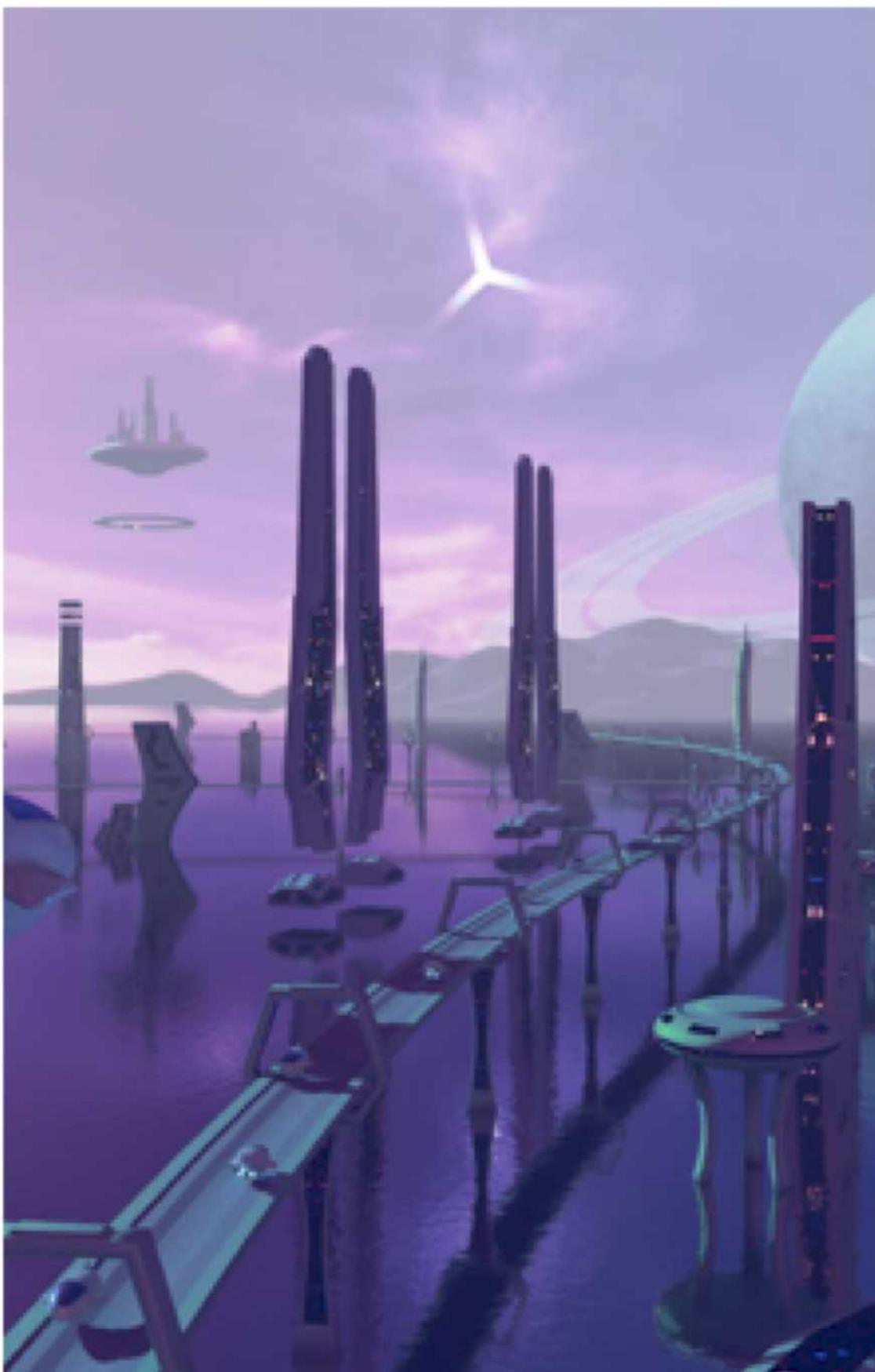


Web and games

- *If you can solve a problem for a gamer, you can solve it for everyone else*

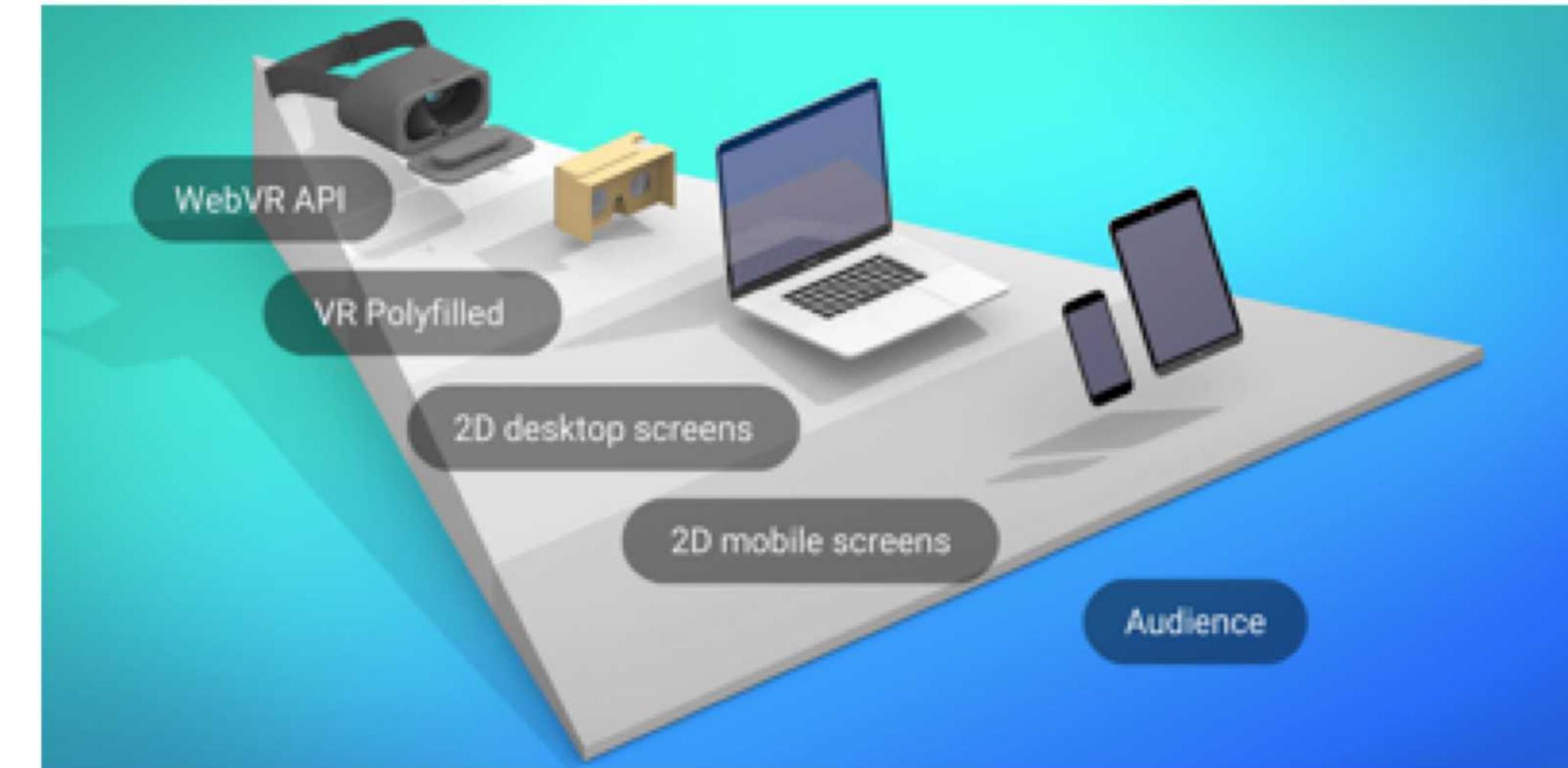
John Hanke, founder of Niantic (Pokemon Go)

- Additional technologies for games:
 - multithreading operations
 - game input API
 - WebAssembly high-performance bindings
- [Workshop on Web Games](#) in June



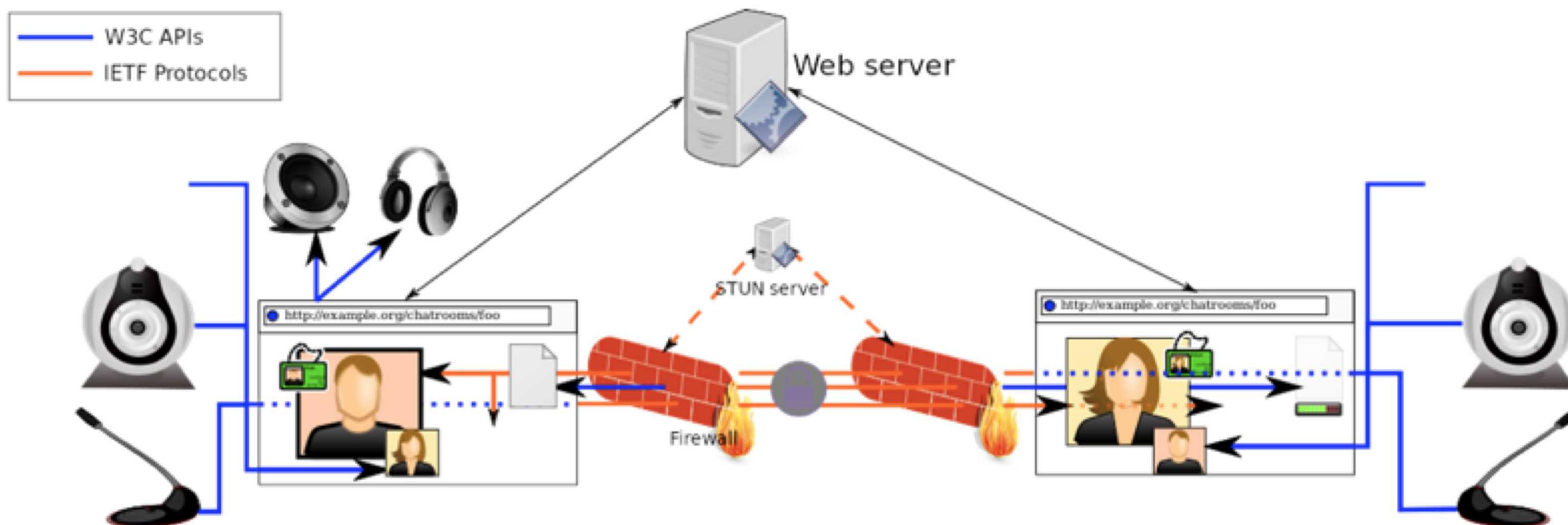
WebXR

- Virtual Reality (VR) and Augmented Reality (AR) opens the door to fully immersive experiences and spatial computing
- WebXR enables both VR & AR in Web browsers, creating low-friction entry points for immersive experiences

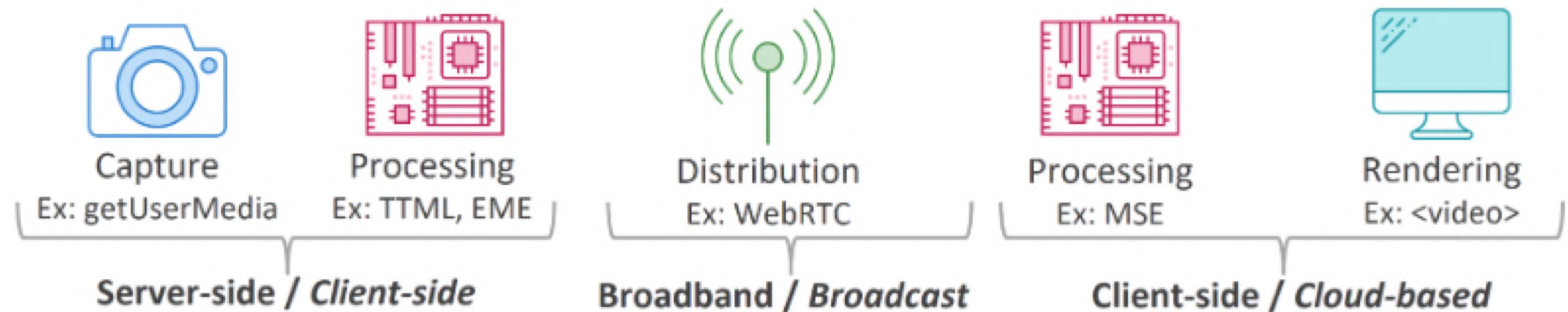


WebRTC

- Make audio/video communication available to any Web app
- Planned for approval by the end of this year



Web Video experience

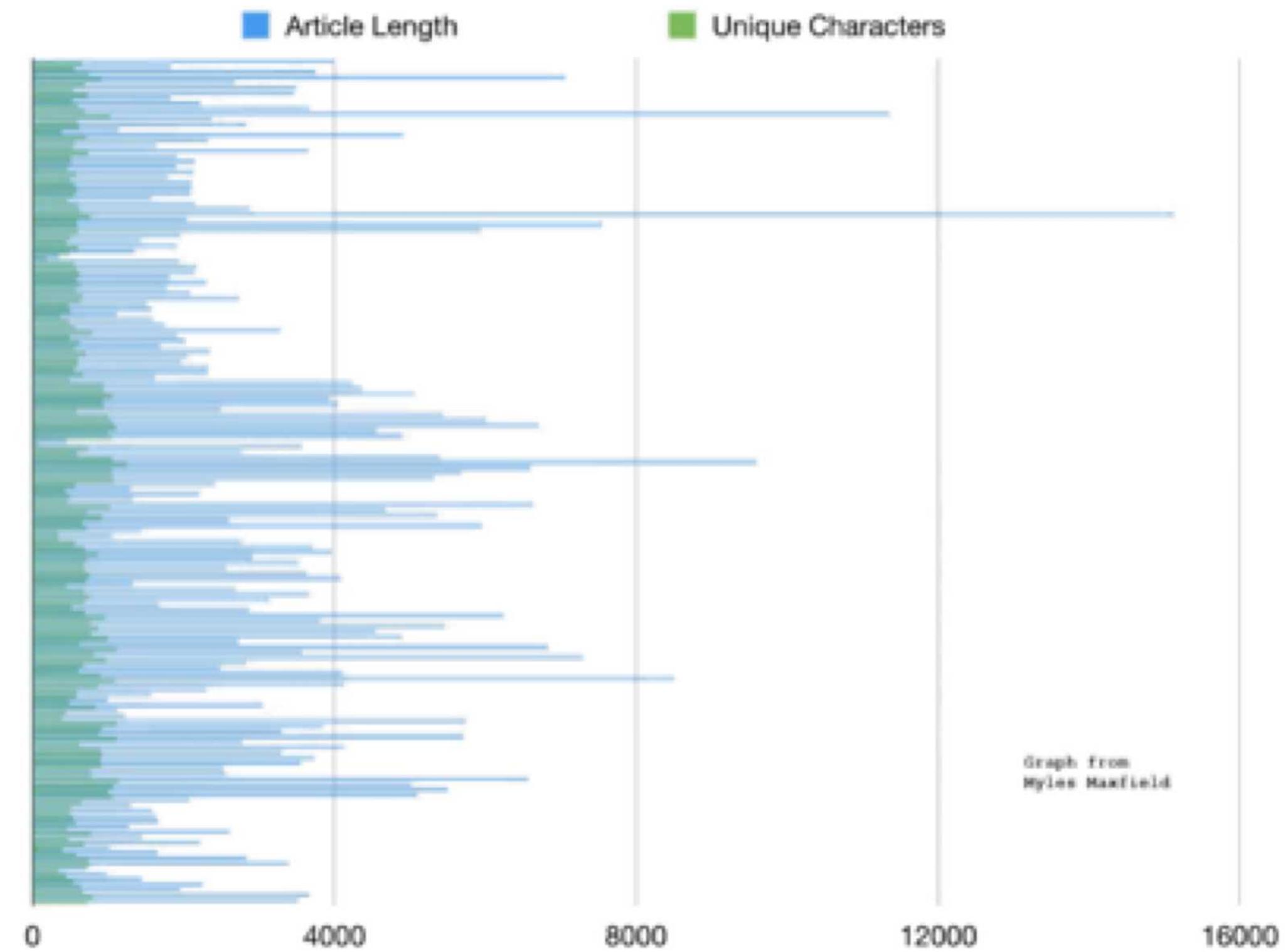


Next on Video

- Support for real-world ad-insertion use cases through new codec switching feature in MSE
- Exposure of decoding, encoding, and encryption capabilities to select optimal media content
- Measurement of user perceived playback quality to improve adaptive streaming algorithms
- Detection of the autoplay policy
- Support for picture-in-picture scenarios

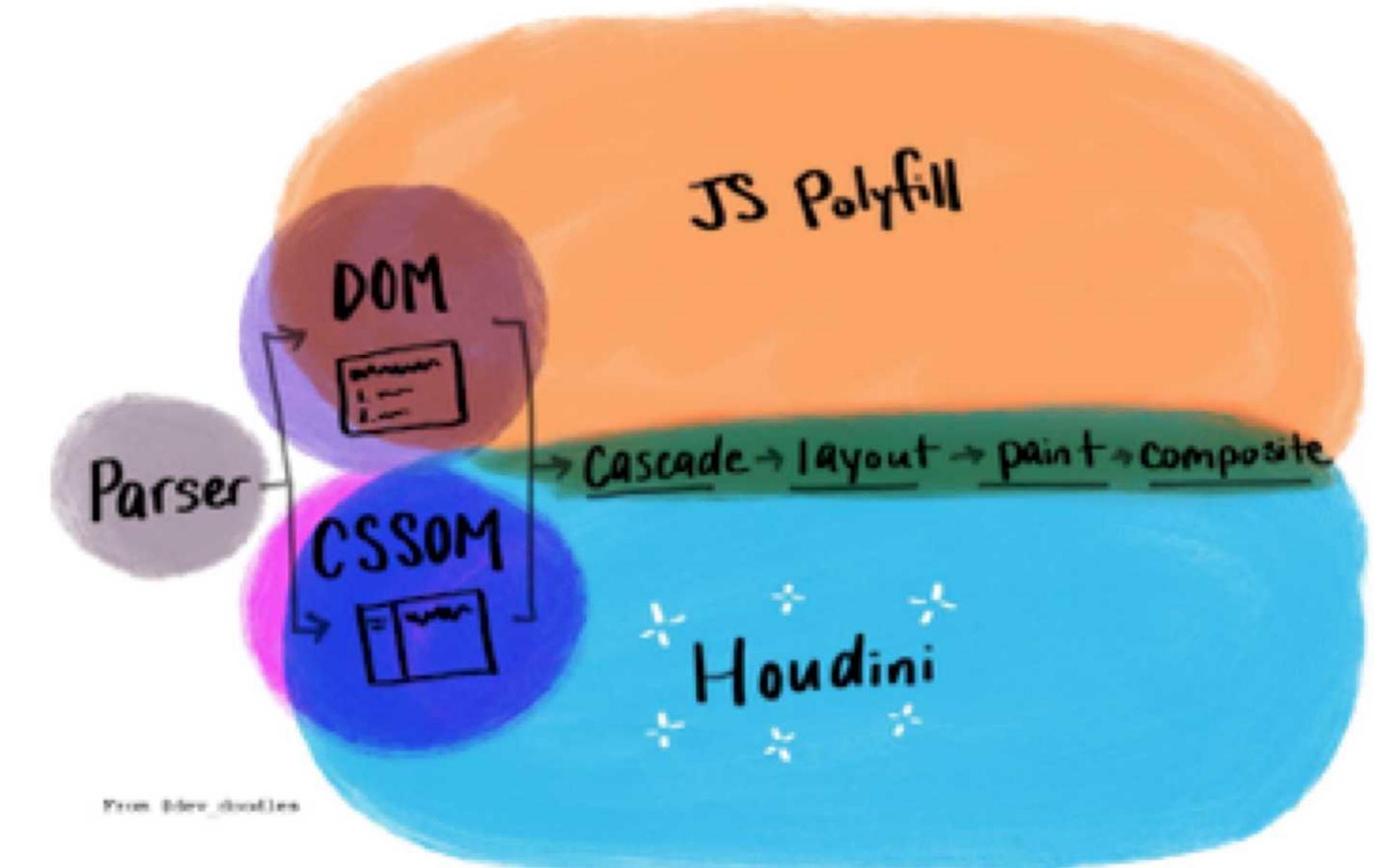
Web Fonts

- WOFF 2.0 improved compression
- For Chinese: fonts > 20,000 glyphs,
web pages uses < 2,400
- Proposals for subsetting
 - API for on-the-fly subsets
 - Dictionaries and patch
 - Streamable Fonts
- Evaluation of prototypes in 2020



Rendering

- Worklets: rendering pipeline independent scripts
paint, layout, animation, audio
- Houdini: Extend CSS with Javascript
 - Typed Object Model
 - Properties and Values API
 - Paint API: based on Canvas
 - Layout API: beyond grid and flexbox
- Web Audio API: filters, channels, etc.



Web and machine learning

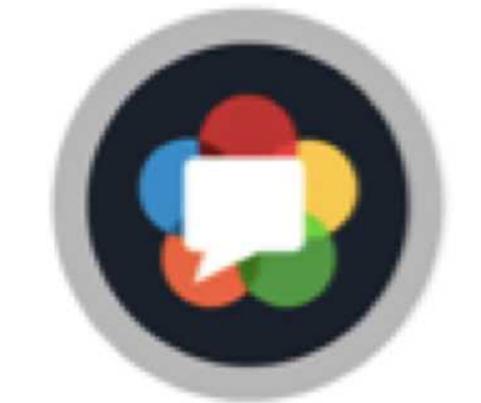
- Machine learning is helping solve many old and new challenges.
- Making use of machine learning in Web browsers opens the opportunity of bringing this capability to everyone on every device.
- What standards are needed to make it fast and interoperable?
- [Machine Learning for the Web Community Group](#)
- Planned workshop end of 2019.

Web Neural Network API

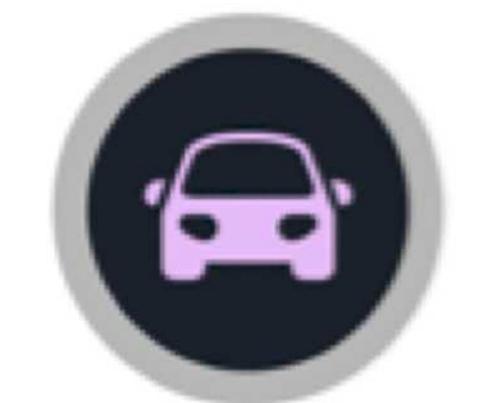
- Dedicated low-level API for neural network inference hardware acceleration
- Use cases: Person Detection, Semantic Segmentation, Emotion Analysis, Image Classification, etc.
- Can take advantage of pre-trained deep neural network (DNN) models
- [Proposal from Intel](#)

Web and networks

- 5G, QUIC, Edge Computing are changing the topology of network-based services.
- What is needed for the Web to take advantage of these new opportunities?
- [Web5G workshop](#) leading to a [proposed charter for a Web & Networks](#).
- Interest Group to accompany that evolution.

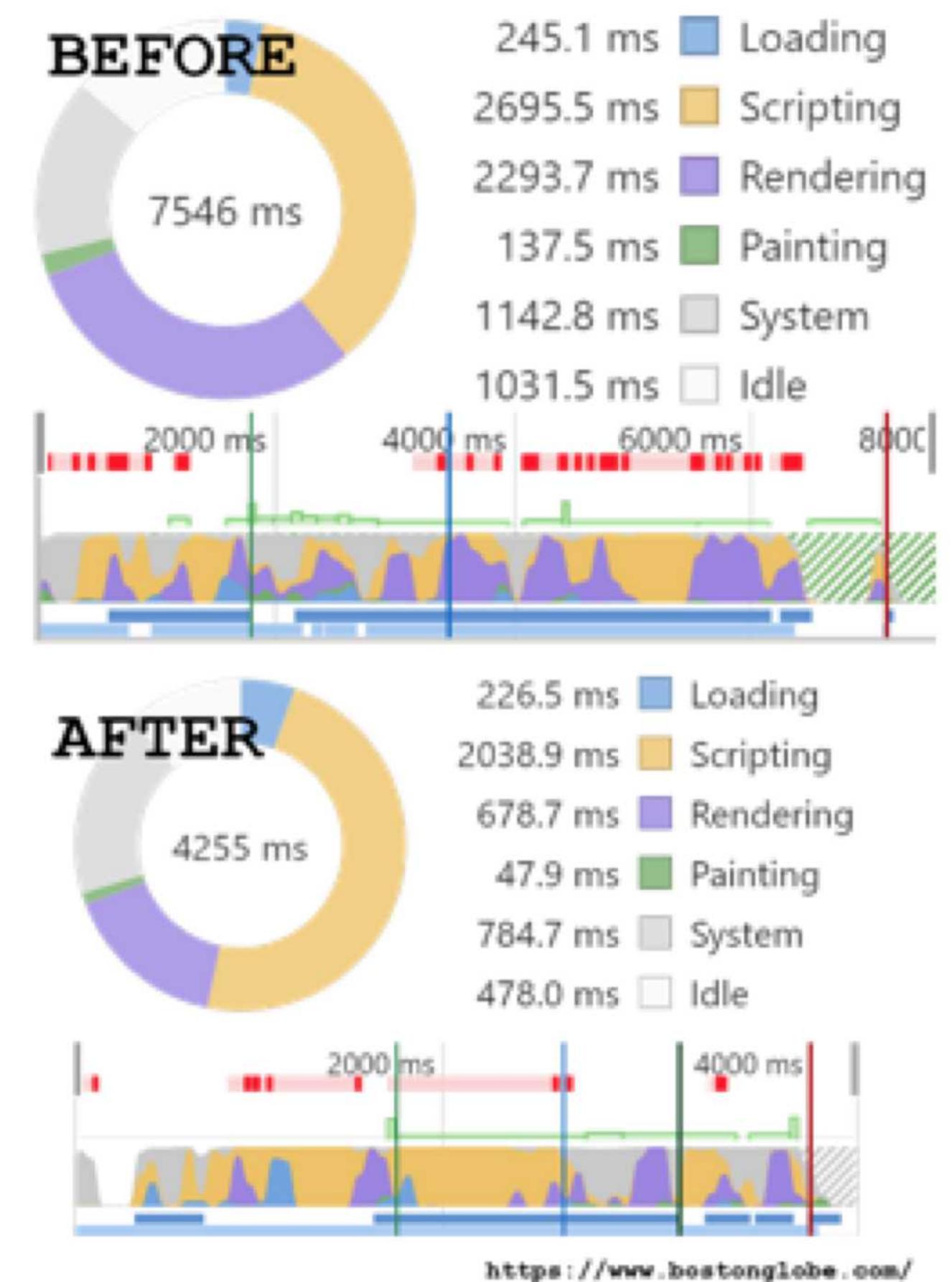
SUPERCHARGED
WEBRTCNEXT GEN TV
HDR, 360

VR, AR

EXAMPLES OF
WEB 5G APPLICATIONSCONNECTED
CARDRIVERLESS
CARSINTERNET
OF THINGS

Web Performance

- Monitoring: Performance Timeline
 - server, resources
 - tasks, element, paint
- Improving:
 - scheduling background tasks
 - resource loading
 - visibility
- Reporting: beacon, network error





Web Applications Security

Enlisting the User Agent in Cooperative Policy Enforcement

- origin policy: CORS, CSP, Secure Context
- Mixing content: Mixed Content (https/http), subresource integrity, Timing-Allow-Origin
- feature policy: framework, delivery, FeaturePolicy API, Permission API

```
Feature-Policy: fullscreen 'none'; geolocation 'none'
```

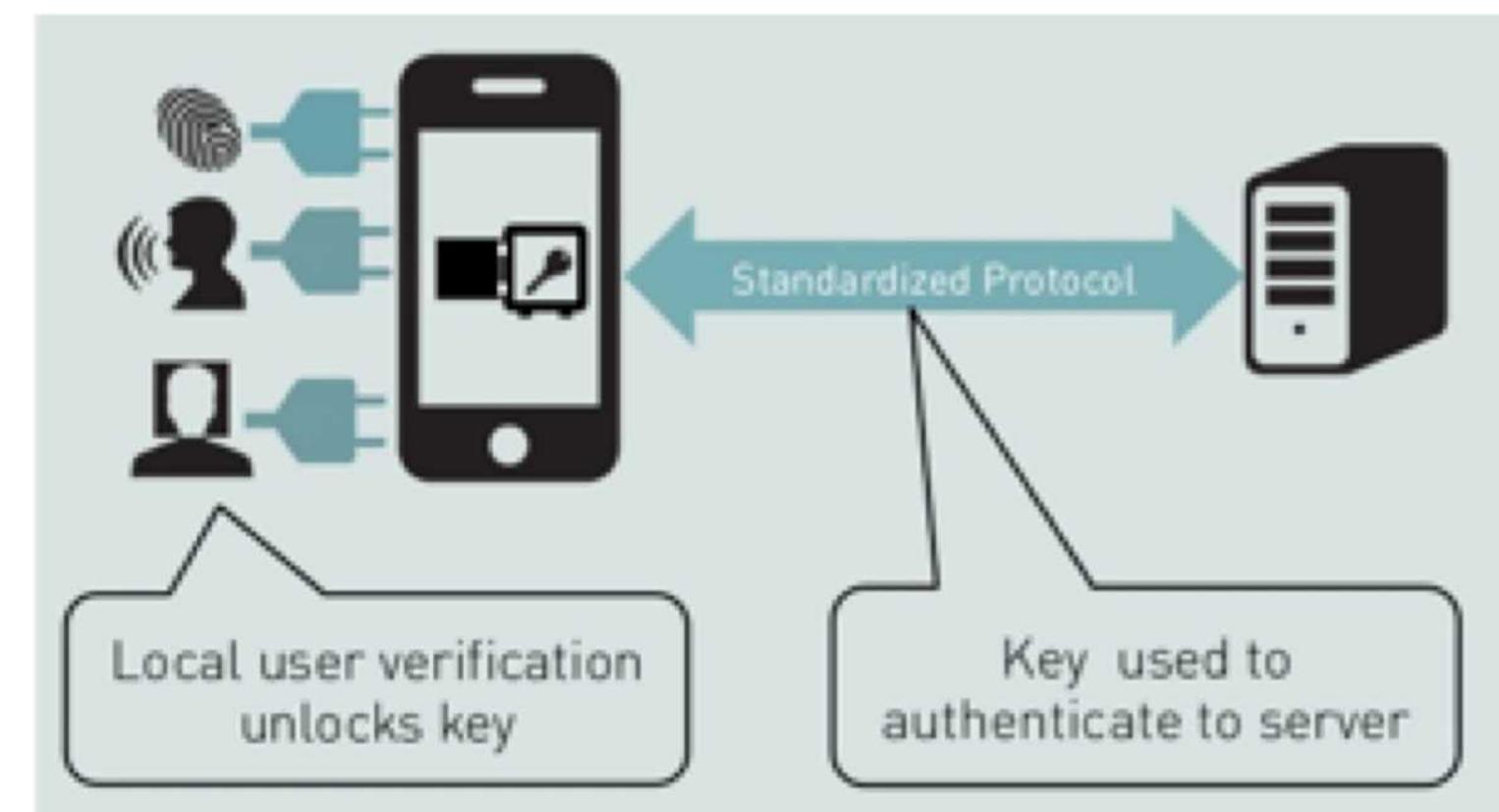
Security and Privacy Considerations Everywhere

- Build for Open.
- Review, review, review!
- Make spec authors think about -- and mitigate -- security and privacy risks.
- Offer guidance to developers using these specs.
- Watch for an upcoming workshop on permissions / capabilities

Authentication: Make Sign-on Credentials Unphishable

- WebAuthn, a Web API for FIDO 2.0, uses a cryptographic challenge unique to each website and bound to its origin.
- Local authentication such as biometrics never leaves the device.
- Level 1 approved in March 2019:

<https://www.w3.org/TR/webauthn/>



Accessibility of Digital Technologies

- [Video Introduction to Web Accessibility and W3C Standards](#)
- Ensuring that people with disabilities can also use the Web
 - hearing, vision, motor, cognitive
- Over a billion people in the world with disabilities
 - accessible online education, commerce, work, entertainment
- Accessibility standards with authorized Chinese translations
 - [Web Content Accessibility Guidelines 2.1](#)
 - China taking up a similar version into national standard
 - [Authoring Tool Accessibility Guidelines 2.0](#)



Implementing and Advancing Accessibility

- [Business Case for Digital Accessibility](#)
- Developer resources
 - [How to meet WCAG 2.1, Techniques, Tutorials](#)
- Evaluating your website and web applications
 - [Easy checks, evaluation tools](#)
 - Leveraging AI to further automate testing
- Making emerging technologies accessible
 - Creating multimodal virtual reality user experience
 - Accessible web-based environmental controls
- More information on [accessibility at W3C](#)

W3C Chinese Interest Group

A new attempt: to discuss technical ideas and unique requirements of the Web in the local language (Chinese)

Face-to-face meeting every 3 months, topics include <video-image> element, commentary subtitles, Mini Programs...



Mini Programs & Quick Apps

- A new form of mobile Apps (install-free, richer UI, more powerful, native or OS).
- [Next Generation Mobile Web Apps Task Force face-to-face meeting in Beijing](#) on 11 May, includes the following topics:
 - What problems do Mini Programs and Quick Apps solve and how
 - Problems met when developing and using Mini Programs and Quick Apps
 - Differences between different Mini Programs / Quick Apps APIs, cross-



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Thank you

Questions?

<https://www.w3.org/2019/Talks/0506-qcon-plh/>

plh@w3.org