

By François Daoust

## W3C Work in Web and Telecommunications and General Media Activities

The web is the open platform for mobile. Telecommunication service providers and network equipment providers have long been critical actors in the deployment of web technologies to the public at large. The convergence of web and mobile industries is now in full march, driven by the convergence of the underlying technologies to IP-based systems. As the web platform matures, it brings service providers richer capabilities to extend their existing services to new users and devices and propose new and innovative services to their subscribers. The April 2018 edition of the Roadmap of Web Applications on Mobile<sup>1</sup> explores the technologies developed in World Wide Web Consortium (W3C) that increase the capabilities of web applications in mobile contexts.

Now that IT and the Telcom industry have converged, more coordination and cooperation is needed. What's next for telecommunication on the web?

- Follow-ups to Web5G Workshop (Interest Group, Business Group?);
- Publishing Web Realtime Communications (WebRTC) 1.0 as standard and pushing new 2.0 features to the market;
- Enabling telecommunication operators as identity providers and payment providers for the web;
- Advancing web stack for 5G use cases: virtual reality (VR)/augmented reality (AR), automotive, Internet of Things (IoT), and 4K/8K media.

The W3C Timed Text Working Group<sup>2</sup> published Internet Media Subtitles and Captions (IMSC) 1.0.1 Recommendation,<sup>3</sup> which adds two useful features to the IMSC profile of Timed Text Markup Language 2 (TTML2),<sup>4</sup> and has been working on updates to TTML2 and their adoption in IMSC 1.1 (both at Candidate Recommendation stage) with a view to publishing them as Recommendation before the end of the calendar year 2018.

Those updates include improved support for global script layout and image handling, especially to support the Japanese language, high dynamic range images, and stereoscopic 3D in IMSC 1.1.<sup>5</sup> TTML2 also includes a large set

of new features concerning conditional processing (which could be used for responsive presentation with media queries), audio presentation (which could be used for audio description), and profile management, to name a few. The group also advanced Web Video Text Tracks (WebVTT)<sup>6</sup> to Candidate Recommendation and was rechartered for another two years.<sup>7</sup>

## Virtual/Mixed/Augmented Reality → XR

Important milestones last year contributed to making the web platform great for VR experiences: WebVR 1.1 is now available by default in a few browsers (notably Firefox version 55) and as an experimental feature in many more (including Chrome and Edge). In parallel to the development and adoption of WebVR 1.1, a major rewrite of WebVR was started to take into account a number of design issues that had emerged.

2017 was also a year with many announcements enabling more robust usage of AR technologies (notably, ARCore and ARKit on mobile operating systems), and the WebVR community eagerly experimented with these new capabilities to see how the web could become a major platform for augmented reality.

This combination of the WebVR specification rewrite and the need to prepare for augmented and mixed realities experiences have led the WebVR Community Group to change its name, reflecting a new scope. It is now known as the Immersive Web Community Group,<sup>8</sup> with a scope encompassing not only VR but also augmented and mixed realities. In the same vein, what had been known as WebVR 2 has now become the WebXR Device application programming interface (API).

Following a web and VR Workshop in October 2016,<sup>9</sup> a workshop focused on authoring content with WebVR was held in December 2017.<sup>10</sup> The report from that workshop is still in progress. Discussions with the Community Group on transitioning that work to the Recommendation track are still ongoing.<sup>8-10</sup>

## Web5G

The planned deployment of 5G, fifth-generation networks, in the next few years is creating a set of challenges and opportunities for which the web platform will have to adjust. These new network capabilities, higher bandwidth, lower latency, and better coverage than today's networks, present a need the W3C hopes to address under a Web5G plan:

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- Important application layer innovation: XR, IoT, automotive, and 4K and 8K videos;
- Multiple network and transport layer innovations: 5G, Network Function Virtualization, Software-Defined Networking, Mobile Edge Computing, and Quick UDP Internet Connections;
- Artificial intelligence (AI) and machine learning impact across layers.

Will they work together or against one another?

W3C organized the May 2018 Web5G workshop to gather representatives from telecommunication operators, network equipment vendors, platform and application developers, and browser vendors in order to look at the intersection of the evolution of network and application layers.<sup>11</sup>

## Realtime Communications

WebRTC has reshaped the whole communication landscape by making any connected device a potential communication endpoint, bringing audio and video communications anywhere, on any network, vastly expanding the ability of operators to reach their customers. WebRTC 1.0 reached Candidate Recommendation last November, indicating the stability of this specification, which now serves as a cornerstone of many online communication and collaboration services.

The WebRTC Working Group and W3C members are providing input on the future of WebRTC by assessing a new charter to finish existing work and consider new use cases and extensions identified as needed in the existing deployments of the technology.<sup>12,13</sup>

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## About the Author



**François Daoust** is the media and entertainment champion at W3C. He takes part in ongoing discussions and developments on new media experiences, including 360° videos, VR/AR, media track exposure, and synchronization issues to help build a roadmap of media technologies for the web.

Daoust is also W3C staff contact for the Second Screen Working Group, which defines APIs to enable web pages to use secondary screens to display web content.

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