



POV

# Rendering Graphics Effectively for Broadcast and Web: A Study of Adobe Flash Payer's Exit and its Impact

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Today, Digital communication is indispensable to attracting and interacting with current and potential clients. Here, the importance of good graphics for quickly capturing consumer attention must be emphasized. Well-designed graphics can help clearly communicate concepts, generate strong impressions, and provide crisp pointed information that supports brand recognition – a must for business. Digital imagery can also better explain statistics, implant context into a consumer’s memory. Overall, it plays a significant role in the decision-making process in viewing content, customer journey, purchasing products, and heightening the consumer experience.

Transforming and changing the core architecture from hardware to software-based stacks has been crucial to support the scale of increasing cross-platform distribution channels, consumer engagement, higher operational excellence, and lower operating cost. These are the key ingredients that are required for a consumer to associate digital imagery to a brand’s identity.

## Rendering Without Plugins

There are several authoring software packages that are currently used for graphics production. Adobe Illustrator, Photoshop, and Adobe InDesign are among the most used software packages. Rendering engines have several classes, hardware, and software for on-air broadcast and rendering engine plug-ins for web browsers and video players. Hardware rendering engines are on the decline, especially due to the movement of broadcast operations to the cloud environment and the high cost of scaling. Software authoring tools connect and load into rendering engines by graphics file packages.

## Decline in Flash Player Adoption

The current trend is to author in HTML 5 Canvas and deliver the package to the rendering engine. The recent trend in browsers is to provide rendering engines in the browser, thus eliminating the need for a rendering plug-in like Adobe Flash. For on-air playback, some broadcast companies use Adobe Flash for on-air rendering of graphics. Adobe Flash, to its credit, filled a gap while WC3 slowly evolved HTML 5. Even with a substandard IDE for its ActionScript scripting language and some security flaws, it was the plug-in of choice for millions of websites. However, Adobe Flash has been on decline for the past eight years due to the rollout of HTML 5 and web browsers blocking the use of the plug-in. It has dropped from 28.5% in 2011 to 4.9% in 2019 for Internet website market share. In this regard and with the strong uptake of HTML 5 Canvas, Adobe has announced that Adobe Flash, will not be supported and its end-of-life is Q4, 2020. Clearly, the impact will affect broadcast on-air operations and websites that embed video players.



## Identifying Suitable Alternatives

In order to fill the gap that will soon be created by the retiring of Adobe Flash, broadcasters, content providers, and web sites that use video players will need to find alternative ways of rendering graphics. There are several options that can be evaluated in selecting a replacement for Adobe Flash – both Opensource and proprietary. For operators that provide global distribution of multi-channel playback to affiliates, proprietary rendering engines carry a cost-per-channel, and they were not considered. The Opensource variety is free, offers more flexibility, and is supported by various Operating System vendors, as can be seen in the diagram below.

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Engine	Windows	macOS	iOS	Android	Linux	BSD
WebKit	Yes	Yes	Yes	Yes	Yes	Yes
Blink <sup>[7]</sup>	Yes	Yes	No	Yes	Yes	Yes
Gecko	Yes	Yes	No	Yes	Yes	Yes
Servo <sup>[8]</sup>	Yes	Yes	No	Yes	Yes	Yes
Goanna <sup>[9]</sup>	Yes	Yes	No	No	Yes	Yes
NetSurf <sup>[10]</sup>	Yes	Yes	No	No	Yes	Yes

**Operating Systems** that actively-developed Opensource rendering engines running without emulation

To fill the gap that the retiring of Adobe Flash creates, we have evaluated the active rendering engine solutions indicated in the diagram specifically to broadcast on-air and video player graphics rendering. The metrics we considered as priorities are long term community support, Operating System support, and support for HTML 5 graphics packages.

- Webkit, a popular cross-operating rendering engine is now developed by Apple and used mostly in Safari. Webkit has been forked by Google to the Blink engine. Webkit does not have as much community support other than Apple since the Google fork.
- The Chromium/Blink rendering engine is Opensource, has a flexible architecture, and a thriving development community. It supports most browsers and will be well-supported in the future. The Chromium rendering engine has the advantage of collapsing graphics property tree objects into a single object, thus eliminating the use of multiple rendering engines for the same task. This is useful for multiple composited graphics that constantly are repeated in on-air playback.
- The Servo rendering engine is still in early stages of development and for this reason, it is not a stable long-term choice.
- Netsurf is a browser with a layout engine for graphics. It is limited in operating system support and for this reason we choose not to use it.
- Goanna, which is a fork of Gecko, the Mozilla rendering engine, is limited in operating system support and for this reason we choose not to use it.

## Industry Reactions and Future Trends

Since Adobe's announcement in 2017, there has been more than a 95% decrease in the use of Flash. The industry has been experimenting with replacing Flash assets and moving to HTML 5 asset packages by converting to HTML 5 providing that the source code was retained and using Adobe Edge and Google Web Designer tools for asset conversion. If the asset source code was not retained, then the asset must be re-created in HTML 5. After the HTML 5 package is created it can then be rendered using the Google Chromium rendering engine.

Major browsers are publishing roadmaps that [announce the removal of Adobe Flash](#). On the whole, the industry is moving towards open standards, which means Java will also be impacted.

LTIMindtree has developed a solution that serves the broadcaster and the streaming video website and can be a great replacement for Adobe Flash engine and player plugin. For more information about the LTIMindtree Chromium Graphics Plugin Solution, contact [info@ltimindtree.com](mailto:info@ltimindtree.com)

## About the Author



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John is the Senior Advisor and Senior Solutions Architect for Media, Entertainment Information Services at LTIMindtree, providing architectural solutions for media clients in ML, AI, Digital Transformation, cloud, and software technology. John worked as a CTO for four leading global media companies. Also, he was the President and Founder of Rant Technology, Inc., and implemented Cyberstar, the first global CDN for Loral Space and Communication. He developed the 31 David Sarnoff patents for MPEG 4 and H.264 for the eVue Corporation. John's work on streaming digital video distribution over a public fiber optic network received the Technical Emmy Award from SMPTE in 1996.

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