

# Video on the Web

Kevin Lynch, Chief Software Architect, Adobe Systems

November 27, 2007

For the past 25 years, Adobe has been helping revolutionize how the world engages with ideas and information across many mediums. Over recent years Adobe has brought that experience to enabling a video revolution on the internet.

Adobe provides software across the spectrum of video production from creation to delivery<sup>1</sup>. This includes tools that enable professionals to deliver stunning results using video, audio, motion graphics, and interactive content creation for both traditional media such as film and DVD as well as mobile devices and the web, and software for reliable delivery of that video around the world.

## Historical perspective

When video delivery first emerged on the Web in the 1990s, it was not available consistently as many different formats and players were vying for use. Most people didn't have video playback software installed in their browser and getting such functionality often required choosing between incompatible video players and installing software that interrupted the web browsing experience.

Even once video capability was installed, the videos typically launched into a separate window or were trapped inside a rectangular box on the page, and were most often surrounded by user interface elements and an experience primarily controlled by a video technology provider rather than the creator of the web site. This wasn't a good experience for users of the web, nor was it a good experience for those producing video content. This initially dampened wide adoption of web video.

## Flash Player and reliable Web video

In 2002, video enabled by Flash Player changed the user experience to one that was radically better, enabling almost all personal computers to view web video reliably and consistently and doing so in a completely transparent way — not adding clutter or extraneous branding, and delivered under the control and design of the web site creator.

Flash Player quickly became the most widely distributed video capability on the web. Flash Player, including video, reaches over 97% of personal computers connected to the web worldwide, and as high as 99.1% in mature markets<sup>2</sup>. This is greater reach than any other video player, or even any operating system.

This capability has enabled the video revolution through web sites such as YouTube, Google Video, Reuters, Yahoo! Video, MySpace, and more. Flash technology is bringing video to mobile devices as well with Flash Lite 3, arriving first on Nokia phones.

Web video can be placed within HTML in today's browsers using some simple JavaScript to load the video and control playback and interactivity using any HTML user interface, and with the placement of the video indicated by a <div> tag.

---

<sup>1</sup> <http://www.adobe.com/go/broadcast/>

<sup>2</sup> [http://www.adobe.com/products/player\\_census/flashplayer/version\\_penetration.html](http://www.adobe.com/products/player_census/flashplayer/version_penetration.html)

Here's an example of loading MyVideo into a div with the id "videoBox":

```
video = new FAVideo("videoBox", "MyVideo.flv", 500, 500);  
video.play();  
  
<div id="videoBox"></div>
```

The Flash+Ajax Video code and samples to enable this are available at <http://adobe.com/go/favideo> and are free, open source.

## Standard video format

Video on the web has been delivered in a variety of formats over time, including QuickTime, Real Media, Windows Media, Ogg Theora, DivX, and those implemented by the Flash Player. Today Flash Player implements three codecs: Sorensen Spark, On2 VP6, and most recently H.264 (ISO/IEC 14496-10 standard, also known as MPEG4-Part 10).

We are seeing wide adoption of the H.264 format, with its inclusion in mobile phones, settop boxes, game consoles, camcorders, real time hardware encoders, and in web video playback via clients such as QuickTime or Flash Player. We are seeing a broad movement to this standard video encoding, and believe H.264 will become the primary video encoding format for video on the web.

Web video should also be able to scale from the smallest encoding all the way to full HD quality. Flash Player supports this full range with its recent update, including fullscreen HD video on the web up to 1080p. This update to Flash Player is expected to reach over 90% of computers connected to the web within a year.

## The Web is not just within browsers

As software moves to web applications, many are delivered via a web browser and some are now moving outside the browser to the desktop itself. This broader context should be considered as part of the web video discussion, particularly with the variety of standalone video players available today.

We believe that these desktop applications can and should be enabled by web technology, working consistently and reliably across operating systems. We are working to enable this move of web applications to the desktop via Adobe AIR, which supports web applications built with HTML, Flash and PDF, and seamlessly integrates with underlying operating system. All current web development skills, tools, and assets can be used with AIR to create applications for the desktop.

In terms of video for desktop applications, rather than just implementing another native desktop video player, Adobe is delivering this video capability in AIR for anyone to incorporate web video in their desktop applications across operating systems. AIR is in beta currently and freely available at <http://adobe.com/go/air>.

There are a number of desktop applications built on AIR that incorporate web video already, including Adobe Media Player, AOL Top 100 Videos, YourMinis, QVC Shopping, and more.

## Issues

There are a number of areas where video on the web can be further improved and standardized:

- **Metadata:** copyright indication and other information about the video in standard formats.
- **Deep linking:** the ability to link to not only video but particular time positions or markers in video streams. This is also important for rich internet applications in general, as more state changes happen

locally rather than making server requests for every interaction. We need a standard way to express these states and link into them.

- **Searchability:** enable more sophisticated indexing of video based on metadata and relevant deep links into video streams, enabling more useful web video search.
- **Tagging:** standard approach for social networks to annotate and tag video not only overall but also at particular timecodes, and share this information across viewers. Standardize geo-tagging for location based video.
- **Accessibility:** support technologies such as describing the video being displayed, provide closed captioning, enable keyboard control of playback, and present alternate content.
- **Content protection:** some content producers desire to protect their video content on the web, while others support redistribution or even remixing.
- **Device profiling:** pass information such as display size of video so that an appropriate version of video can be delivered, which becomes important across devices with different form factors.
- **<video>:** establish video as a top level element in HTML, and support mapping to player technology. This could be approached even more generally, to enable better integration of technologies such as Flash Player with the HTML document object model.

## Opportunity

With the explosion of video on the Internet, a massive shift is under way in how people consume video worldwide. Television programs are being viewed not only on TV sets but also on computer screens and mobile devices, and whole new video content is being produced by and for a wide array of smaller more distributed audiences.

Flash Player is the leading enabler of this revolution today, delivering the vast majority of video content on the web. We have an opportunity to work together to establish standard approaches to address the issues outlined here to further the move of video to the web and to integrate video and rich media in Flash even more seamlessly with HTML.