

# Web Time

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Despite two decades of web history<sup>1</sup>, the variable of time has rarely been considered as a building material for the web infrastructure. In technical sense, it basically only serves a function of sequential ordering of data. Since I didn't find any comprehensive study into this field, I will shortly outline several views on time on the web.

## 1 HTML time

Concept of time-based HTML elements has been discussed in W3C framework as early as 1995<sup>2</sup>. Later on, Microsoft introduced its own HTML+TIME standard in Internet Explorer<sup>3</sup>, allowing to position the HTML data elements (*p*, *div*, *span*, *img*, ..) on a timeline with  $t=0$  fixed to a moment the page has fully loaded. Further, the particular elements could also be put in sequences, inherit time attributes from parent objects, or their display being triggered by events (mouse click, start or end of display of other element, and so on). However the standard was never included in W3C recommendations, and no other browser adapted it. Original proposal was heavily transformed by W3C to SMIL standard which now serves as a sequence layout for media files playlist in XML fashion (kept separately from XHTML)<sup>4</sup>.

With small effort, similar behavior can be achieved via JavaScript or Flash but practically the concept of time-conditioned display of HTML objects was never widely adapted<sup>5</sup>. I have no knowledge of why this failed. One of the reasons could have been the problem of indexing

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<sup>1</sup>Originated in 1989 in CERN, WWW was made publicly available on the Internet in 1991, and got wider attention along the launch of Mosaic graphic browser in 1993.

<sup>2</sup>Birds of a Feather session "Towards a Real-Time Multimedia Web", 4th WWW conference, Boston, Dec 1995. <http://www.w3.org/AudioVideo/>

<sup>3</sup>Debbie Newman, "Spice Your Web Pages with HTML+TIME", 2000. <http://msdn.microsoft.com/en-us/library/ms976099.aspx>

<sup>4</sup>SMIL, Synchronized Multimedia. <http://www.w3.org/AudioVideo/>

<sup>5</sup>Inspired by Michael Murtaugh's script for timeline-based DIV elements, I built the website for the music festival mapping the data objects on simple timeline, thus creating the 'website player'. <http://2008.nextfestival.sk/>

data for search - particular content of a site would be accessible only after certain amount of time spent on a website or requiring special behaviour of user.

## 2 Web memory / archive

There is a handful of efforts to keep track of data being lost by continuous web content updates, including archive.org, wiki versioning system, Google Cache, or Google Wave's timeline. However there is no system solution for web archiving, not even talking about W3C standard. And currently massively popular sites like Facebook or Twitter make it very hard for the user to access the past data.

Memento Project proposes the technical framework which would enable surfing the web in a state it was in any chosen time<sup>6</sup>. The idea here is to add time element to HTTP protocol, so that user can access the archived content via original URL rather than search one by one in a number of discrete archives. The initiative started in November 2009 and so far didn't publish any formal technical specifications of its framework.

## 3 Web as a patched instrument

### 3.1 Dynamic web

Design concept of the Web has changed by the introduction of PHP and SQL database. Idea of a network of interlinked static HTML pages edited offline and uploaded via FTP, was updated to a dynamic Web: a network of database-driven PHP page templates edited online. Textual and visual content got separated from the page structure and began to be stored separately, though still on the same server (or spread across distributed servers). Simultaneously, design structure was separated from HTML structure via CSS (eg. CMS design templates).

### 3.2 Syndicated web

XML-based RSS format was meant to keep track of the blogs and other frequently updated sites in "email" fashion, eg. without a need to visit original site. XML translates the page content into structure easily readable by software clients, including websites.

Today, content aggregation is an ubiquitous phenomenon as seen in embedding the feeds from blogs and web 2.0 massive-user centers (Twitter, Facebook, Flickr) on websites (eg.

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<sup>6</sup><http://www.mementoweb.org/>

netvibes.com, Google News). Portions of many websites are being generated literally in front of the user's eyes.

### 3.3 From link to feed, cast, and stream

Years before the arrival of RSS feeds, international X-change network broadcasted live webcam images and audio streams over the internet since 1997<sup>7</sup> <sup>8</sup>. Today, internet radios and live video streaming channels are commonplace. Interestingly, recently launched Pachube website brings online the feeds from physical objects (plants), environments (air, water) or GPS positions of moving objects<sup>9</sup>.

The *link* has much broader connotations than being merely one-dimensional vector pointing from static A to static B. It has also become the multimedia channel. Web infrastructure has evolved to resemble more a huge Pure Data patch with live data links rather than Ted Nelson's personal file system. The patch offers a metaphor for thinking about the *time-based web*.

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<sup>7</sup><http://xchange.re-lab.net/>

<sup>8</sup>I collected broader historical overview of networked art projects which is available at <http://societyofalgorithm.org/networktime/>

<sup>9</sup><http://www.pachube.org>