

# Comparison of JavaScript-based web frameworks

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This is a comparison of web frameworks for front-end web development that are heavily reliant on JavaScript code for their behavior.

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## General information

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Framework	Version compared	Size	License	Source language
<a href="#"><u>Angular</u></a>	7 18 Oct 2018	563 kB (minified & compressed)	<a href="#"><u>MIT</u></a>	TypeScript
<a href="#"><u>AngularJS</u></a>	1.5.0 5 Feb 2016	144 kB (minified & compressed)	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>Apache Royale</u></a>	0.9.4 5 Nov 2018	19 kB (zipped)	<a href="#"><u>Apache</u></a>	ActionScript 3, MXML, CSS
<a href="#"><u>Backbone.js</u></a>	1.2.1 June 2015	7.3 kB (Packed and gzipped)	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>Dojo</u></a>	1.10.4 18 Jan 2015	Variable. Base size: 41 kB (minified & gzipped), 155 kB (minified), 598 kB (uncompressed) <sup>[1]</sup>	<a href="#"><u>BSD</u></a> & <a href="#"><u>AFL</u></a>	<a href="#"><u>JavaScript</u></a> + HTML
<a href="#"><u>Ember.js</u></a>	1.7.0 19 Aug 2014	95 kB (minified & gzipped), 340 kB (minified), 1.5 MB (uncompressed)	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>Enyo</u></a>	2.0.1 30 Aug 2012	<25 kB (core gzipped)	<a href="#"><u>Apache 2</u></a> <sup>[2]</sup>	JavaScript
<a href="#"><u>Ext JS</u></a>	7.3 15 Sept, 2020	84–502 kB	<a href="#"><u>GPL</u></a> & <a href="#"><u>Commercial</u></a> <sup>[3]</sup>	JavaScript
<a href="#"><u>Google Web Toolkit</u></a>	2.7.0 November 2014	Variable	<a href="#"><u>Apache</u></a>	Java
<a href="#"><u>jQuery (library)</u></a>	3.6.0 03 Mar 2021	70.7KB (slim, minified), 87.4KB (minified), <sup>[4]</sup> 282 KiB (uncompressed) <sup>[4]</sup>	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>jQWidgets</u></a>	3.9.1 29 Oct 2015	3102 KB (minified), 7486 KB (uncompressed)	<a href="#"><u>Creative Commons Attribution-NonCommercial 3.0 and Commercial</u></a> <sup>[5]</sup>	JavaScript, HTML, CSS
<a href="#"><u>Knockout</u></a>	3.5.0 22 February 2019	66.4 KB minified / 309 KB (development mode)	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>MooTools</u></a>	1.6.0 14 Jan 2016	Variable; 7.3–65 KiB ( <a href="#"><u>YUI Compressor</u></a> ), <sup>[6]</sup>  Variable; 7.3–65 KiB ( <a href="#"><u>YUI Compressor</u></a> ), <sup>[7]</sup> 101 KiB (uncompressed) <sup>[8]</sup>	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>React (JavaScript library)</u></a>	16.1.1 28 November 2017	react.production.min.js 6.41KB  react-dom.production.min.js 92.4KB  <b>Total: 98.81KB</b>	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>SAP OpenUI5</u></a>	1.102.1 15 Jun 2022	Variable, starting at 213 kB (gzipped)	<a href="#"><u>Apache 2</u></a> <sup>[9]</sup>	JavaScript
<a href="#"><u>Prototype &amp; script.aculo.us</u></a> <sup>[10]</sup>	Prototype: 1.7.3 22 Sep 2015 script.aculo.us: 1.9.0 23 Dec 2010	46–278 kB	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>qooxdoo</u></a>	5.0.1 15 Sep 2015	Variable, starting at 6 kB (gzipped)	<a href="#"><u>LGPL</u></a> & <a href="#"><u>EPL</u></a>	JavaScript
<a href="#"><u>SproutCore</u></a>	1.11.2 2 May 2016	250–700 kB (gzipped).	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>Svelte</u></a>	3.12.1 14 Oct 2019	Variable	<a href="#"><u>MIT</u></a>	JavaScript
<a href="#"><u>Vue.js</u></a>	2.6.10 20 Mar 2019	33.5 KB (minified & gzipped)  91.48 KB (minified) <sup>[11]</sup>  333.46 KB (uncompressed) <sup>[11]</sup>	<a href="#"><u>MIT</u></a>	JavaScript / TypeScript
<a href="#"><u>Wakanda</u></a>	9 14 Nov 2014	Variable	<a href="#"><u>GPL3</u></a> (framework), <a href="#"><u>AGPL</u></a> (server) & <a href="#"><u>Commercial</u></a> <sup>[12]</sup>	JavaScript + HTML + CSS
<a href="#"><u>Webix</u></a>	4.1 November 2016	188 kB (gzipped)	<a href="#"><u>GPL</u></a> & <a href="#"><u>Commercial</u></a> <sup>[13]</sup>	JavaScript
<a href="#"><u>ZK</u></a>	8.0.1 19 Jan 2016	Variable	<a href="#"><u>LGPL</u></a> & <a href="#"><u>GPL</u></a> & <a href="#"><u>ZOL</u></a> <sup>[14]</sup>	XML + Java (JavaScript optional)

## Features

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	<u>AngularJS</u>	<u>Apache Royale</u>	<u>Cash</u>	<u>Dojo</u>	<u>Ember.js</u>	<u>Enyo</u>	<u>Ext JS</u>	<u>Google Web Toolkit</u>	<u>jQuery</u>	<u>jQueryWidgets</u>	<u>MooTools</u>	<u>O</u>
<b>Feature detection</b> <sup>[15]</sup>	Yes			Yes <sup>[16]</sup>	Yes		Yes <sup>[17]</sup>	No <sup>[18][19]</sup>	Yes <sup>[20]</sup>	Yes	Yes <sup>[21]</sup>	
<b>DOM wrapped</b> <sup>[23]</sup>	Yes		Yes	Yes	No	Yes	Yes	Yes	Yes		No <sup>[24]</sup>	
<b>XMLHttpRequest data retrieval</b>	Yes	Yes	No	Yes <sup>[27]</sup>		Yes	Yes	Yes	Yes	Yes <sup>[28]</sup>	Yes <sup>[29]</sup>	
<b>WebSocket</b>				Yes <sup>[27]</sup>		Yes	Yes	Yes	Yes	No	Yes <sup>[29]</sup>	
<b>Server push data retrieval</b>				Yes <sup>[32]</sup>			Yes <sup>[33]</sup>	Yes <sup>[34]</sup>	Yes <sup>[32]</sup>	No		
<b>Other data retrieval</b>		Yes: XML, HTML, CSV, ATOM, AMF, JSON		Yes: XML, HTML, CSV, ATOM <sup>[36]</sup>			Yes: XML, SOAP, AMF, Ext.Direct	Yes: RPC, RequestFactory	Yes: XML, HTML	Yes: XML, JSON, CSV, TSV <sup>[28]</sup>	Yes: XML, HTML	
<b>Drag and drop</b>		Yes		Yes <sup>[37]</sup>			Yes	With plugin <sup>[38]</sup>	With plugins <sup>[39]</sup>	Yes <sup>[40]</sup>	Yes <sup>[41]</sup>	
<b>Simple visual effects</b>	Yes	Yes	Yes	Yes <sup>[44]</sup>		Yes	Yes	Yes	Yes	Yes	Yes <sup>[45]</sup>	
<b>Animation / advanced visual effects</b>	Yes			Yes <sup>[47]</sup>		Yes <sup>[48]</sup>	Yes	Yes	Yes	Yes	Yes <sup>[49]</sup>	
<b>Back button support / history management</b>				Yes <sup>[51]</sup>	Yes	Yes <sup>[52]</sup>	Yes <sup>[53]</sup>	Yes	With plugins <sup>[54]</sup>	No	With plugin <sup>[55]</sup>	
<b>Input form widgets &amp; validation</b>	Yes	Yes		Yes <sup>[56]</sup>		Yes	Yes	Yes, Validation requires plugin <sup>[57]</sup>	With plugins <sup>[58]</sup>	Yes <sup>[59]</sup>	Yes	
	<u>AngularJS</u>	<u>Apache Royale</u>	<u>Cash</u>	<u>Dojo</u>	<u>Ember.js</u>	<u>Enyo</u>	<u>ExtJS</u>	<u>Google Web Toolkit</u>	<u>jQuery</u>	<u>jQueryWidgets</u>	<u>MooTools</u>	<u>O</u>
<b>Grid</b>		Yes		Yes <sup>[62]</sup>			Yes	Yes	With plugins <sup>[63]</sup>	Yes <sup>[64]</sup>	With plugin <sup>[65]</sup>	
<b>Hierarchical Tree</b>		Yes		Yes <sup>[68]</sup>		Yes <sup>[69]</sup>	Yes <sup>[70]</sup>	Yes	With plugins <sup>[71]</sup>	Yes <sup>[72]</sup>	With plugins <sup>[73]</sup>	
<b>Rich text editor</b>	No	Yes		Yes <sup>[77]</sup>			Yes <sup>[78]</sup>	Yes	With plugins <sup>[79]</sup>	Yes <sup>[80]</sup>	Yes <sup>[81]</sup>	
<b>Autocompletion tools</b>	No			Yes <sup>[84]</sup>			Yes	Yes	Yes <sup>[85]</sup>	Yes <sup>[86]</sup>	With plugin <sup>[87]</sup>	
<b>HTML generation tools</b>	No			Yes <sup>[89]</sup>			Yes	Yes	Yes	Yes <sup>[80]</sup>	Yes <sup>[90]</sup>	
<b>Widgets themeable / skinnable</b>		Yes		Yes <sup>[91]</sup>		Yes	Yes <sup>[92]</sup>	Yes <sup>[93]</sup>	Yes <sup>[94]</sup>		Yes	
<b>GUI resizable panels and modal dialogs</b>		Yes		Yes		Yes	Yes <sup>[95]</sup>	Yes	With plugins	Yes <sup>[96]</sup>	Yes <sup>[97]</sup>	
<b>GUI page layout</b>				Yes			Yes	Yes	With plugin <sup>[100]</sup>	Yes <sup>[101][102]</sup>	Yes <sup>[97]</sup>	
<b>Canvas support</b>		Yes		Yes <sup>[105]</sup>		Yes	Yes	Yes	With plugin <sup>[106]</sup>	Yes <sup>[107]</sup>	Yes <sup>[108]</sup>	
<b>Mobile/tablet support (touch events)</b>	Yes	Yes		Yes <sup>[111]</sup>	Yes	Yes	Yes	With plugin <sup>[112]</sup>	With plugin <sup>[113]</sup>	Yes <sup>[114]</sup>	With plugin <sup>[115]</sup>	
<b>Accessibility / graceful degradation</b> <sup>[120]</sup>	Yes			Yes <sup>[121]</sup>	No	Yes	Yes <sup>[17]</sup>	Yes <sup>[122]</sup>	Yes	Yes <sup>[123]</sup>	Yes	
<b>ARIA compliant</b>				Yes <sup>[121]</sup>			Yes <sup>[17]</sup>		Yes <sup>[126]</sup>	Yes <sup>[123]</sup>		
<b>Developer tools, Visual design</b>				Yes <sup>[128][129]</sup>		in progress <sup>[130]</sup>	Yes <sup>[131][132][133]</sup>	Yes	Yes <sup>[134][135]</sup>	Yes <sup>[136][137][138]</sup>	Yes <sup>[139][140]</sup>	
<b>Offline storage</b> <sup>[145]</sup>		Yes		No <sup>[146]</sup>		Yes	Yes <sup>[147]</sup>	Via Google Gears <sup>[148]</sup>	With plugin <sup>[149]</sup>	Yes <sup>[150]</sup>		
<b>Cross-browser 2d Vector Graphics</b> <sup>[151]</sup>				Yes <sup>[152]</sup>			Yes		With plugin <sup>[153]</sup>	Yes <sup>[107]</sup>	Yes <sup>[154]</sup>	
<b>Charting &amp;</b>		Yes		Yes <sup>[157]</sup>			Yes <sup>[158]</sup>		With	Yes <sup>[161][162]</sup>		

Dashboard <sup>[156]</sup>								plugin <sup>[159]</sup> <sup>[160]</sup>			
RTL Support in UI Components		Yes		Yes			Yes	Depends on the plugin used		Yes <sup>[123]</sup>	

## Browser support

Framework	Internet Explorer	Mozilla Firefox	Safari	Opera	Chrome	Edge
<a href="#">AngularJS (1.3)</a>	8+ (9+)	4+	5+	11+	30+	
<a href="#">Apache Royale</a>	9 (Edge → 10)	21	6	15	23	
<a href="#">Cash</a>	11+	21+	6+	15+	23+	12+
<a href="#">Dojo</a>	6+	3+ <sup>[166]</sup>	4 <sup>[166]</sup>	10.50+ <sup>[166]</sup>	3 <sup>[166]</sup>	
<a href="#">Ember.js</a>	6+	3+	4+	10.6+	14+	
<a href="#">Enyo</a>	8+ <sup>[167]</sup>	>4 <sup>[167]</sup>	>5 <sup>[167]</sup>		>10 <sup>[167]</sup>	
<a href="#">Ext JS</a>	8+	45+	11+	43+	64+ <sup>[168]</sup>	
<a href="#">Google Web Toolkit</a>	8+	1+	5+	9+	1+	
<a href="#">jQuery (3.x)</a>	6+ (9+) <sup>[169]</sup>	2+ <sup>[169]</sup>	3+ <sup>[169]</sup>	9+ <sup>[169]</sup>	1+ <sup>[169]</sup>	
<a href="#">jqWidgets</a>	7+ <sup>[170]</sup>	2+ <sup>[170]</sup>	3+ <sup>[170]</sup>	9+ <sup>[170]</sup>	1+ <sup>[170]</sup>	
<a href="#">MooTools</a>	6+	2+	3+	9+	1+	
<a href="#">Prototype &amp; script. aculo.us<sup>[10]</sup></a>	6+	1.5+	2.0.4+	9.25+	1+ (starting with 1.6.1RC3)	
<a href="#">qooxdoo</a>	6+	2+	3+	9+	2+	
<a href="#">SAP OpenUI5<sup>[171]</sup></a>	11+	Latest Stable and ESR	Last 2		Latest Version	
<a href="#">SproutCore</a>	6+	3+	4+	9+	1+	
<a href="#">Svelte</a>		21+	6+	15+	23+	12+
<a href="#">Vue</a>	10+	21+	6+	15+	23+	12+
<a href="#">Wakanda</a>	9+	4+	5+		11+	
<a href="#">ZK</a>	6+	2.0+	3+	9+	2+	
<a href="#">Webix</a>	8+ <sup>[172]</sup>	3+ <sup>[172]</sup>	4+ <sup>[172]</sup>	9+ <sup>[172]</sup>	1+ <sup>[172]</sup>	

## Notes

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