

# A COMPARISON OF FRAMEWORKS

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Which one may you choose?

# Framework Comparison



React

Learning Curve



Downscaling/ MPAs



Upscaling/ SPAs



Performance



(better for bigger apps)



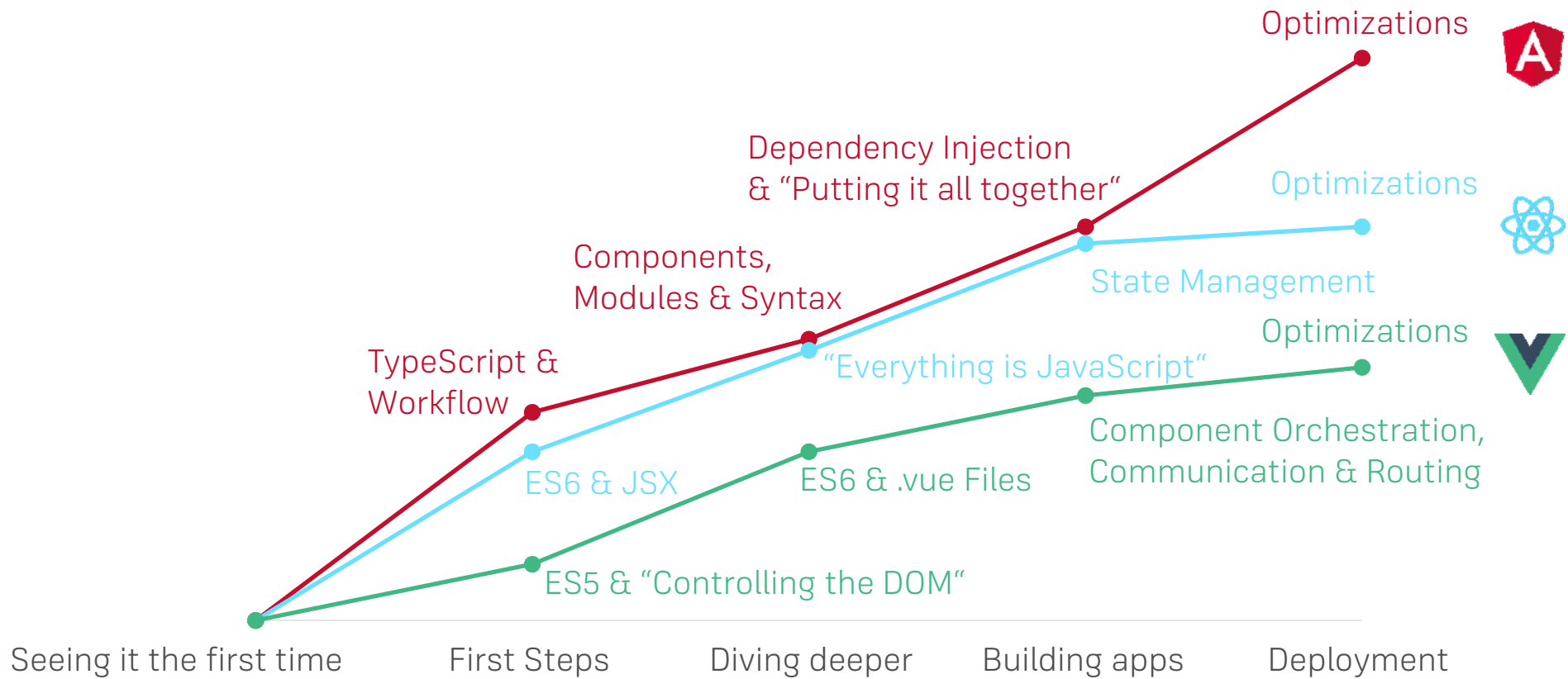
Dev to Production



Popularity/ Jobs



# (Possible) Learning Curve



# Downscaling/ MPAs

Can you just drop in a JS import and get started?



Is the framework suited for Multi-Page-Applications (MPAs)?



Is a more complex build workflow required/recommended (for "simple" apps)?



Does the framework come with a lot of overhead?



# Upscaling/ SPAs

Can you write and maintain complex/ a lot of code?

 	 	 
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Do you need to rely on a lot of third-party packages (e.g. for form validation)?

  (No)	  (a bit)	  (Yes)
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Optimization capabilities

  (A lot)	  (Decent)	  (Decent)
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Ease of managing the State

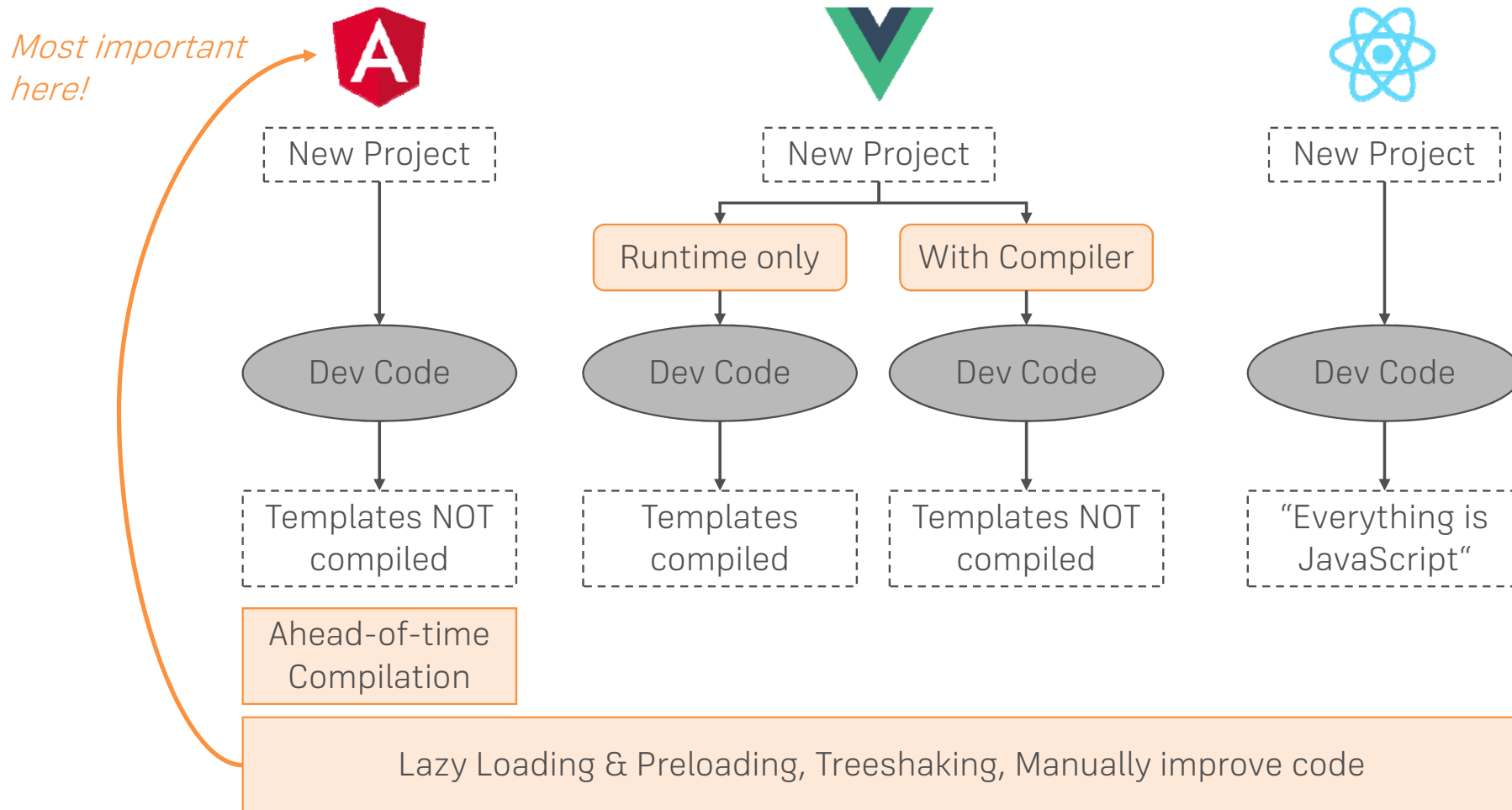
 	 	 
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# Performance

Duration in milliseconds (Slowdown = Duration / Fastest)

	angular v1.6.3-keyed	angular v2.4.9-keyed	angular v4.0.0-keyed	binding.sofala v10.0.1	bobril v6.2.0	domvm v2.1.3-keyed	elm v0.18.0	ember v2.10.0-beta.3	ember v2.6.1	glimmer v0.3.9	inferno v1.6.0-keyed	ivi v0.5.0	kivi v1.0.0-rc2	knockout v3.4.1	marionette v3.1.0	marko v4.2.0	mithril v0.2.5	mithril v1.0.1	nx v1.0.0-beta.1.1.0-keyed	pico-dom v0.18.0	plastiq v1.33.0	preact v7.1.0	react v0.8.9-keyed	react-lite v0.15.30	react v15.4.2-keyed	react v15.4.2-mobx-v3.0.1	react v15.4.2-redux-v3.6.0	rx-domh v0.0.2-rxjs-v5.3.0	surplus v0.4.0-keyed	vidom v0.7.1	vue v2.2.4-keyed	vanillajs-keyed
create rows Duration for creating 1000 rows after the page loaded.	250.93 ± 6.29 (1.82)	199.04 ± 13.99 (1.44)	204.42 ± 13.35 (1.48)	358.72 ± 18.72 (2.60)	165.06 ± 12.53 (1.20)	155.41 ± 11.55 (1.13)	179.54 ± 14.20 (1.30)	351.40 ± 20.40 (2.54)	402.52 ± 20.71 (2.81)	350.71 ± 27.16 (2.54)	152.27 ± 6.63 (1.10)	149.74 ± 12.08 (1.06)	148.80 ± 16.33 (1.06)	367.02 ± 13.43 (2.66)	733.32 ± 29.08 (5.31)	166.02 ± 8.08 (1.20)	249.95 ± 17.00 (1.81)	164.45 ± 11.98 (1.18)	234.92 ± 13.79 (1.70)	149.62 ± 8.18 (1.08)	188.93 ± 22.77 (1.37)	187.01 ± 13.99 (1.35)	347.75 ± 25.32 (2.52)	173.82 ± 15.70 (1.26)	193.78 ± 9.66 (1.40)	249.61 ± 8.71 (1.81)	217.21 ± 12.42 (1.57)	551.44 ± 14.46 (3.98)	145.38 ± 6.77 (1.06)	167.39 ± 18.10 (1.21)	167.57 ± 13.08 (1.21)	138.12 ± 4.39 (1.00)
replace all rows Duration for updating all 1000 rows of the table (with 5 warmup iterations).	263.59 ± 14.39 (1.72)	191.84 ± 5.45 (1.25)	216.00 ± 25.34 (1.41)	216.55 ± 11.09 (1.41)	179.40 ± 5.57 (1.17)	163.78 ± 4.48 (1.07)	187.60 ± 5.28 (1.22)	300.43 ± 8.93 (1.98)	307.23 ± 11.43 (2.00)	287.13 ± 6.23 (1.87)	160.88 ± 4.80 (1.05)	155.60 ± 9.00 (1.01)	153.88 ± 4.30 (1.00)	377.96 ± 8.27 (2.46)	534.59 ± 8.02 (9.48)	178.04 ± 4.42 (1.16)	257.82 ± 5.46 (1.68)	179.02 ± 9.79 (1.17)	1037.83 ± 8.42 (5.76)	157.33 ± 3.47 (1.00)	186.30 ± 10.88 (1.21)	202.49 ± 6.26 (1.32)	323.20 ± 11.79 (2.19)	236.60 ± 3.48 (1.54)	203.40 ± 6.38 (1.32)	239.24 ± 6.27 (1.56)	215.57 ± 4.78 (1.40)	1487.03 ± 15.66 (9.68)	157.01 ± 3.75 (1.00)	168.34 ± 7.83 (1.10)	174.96 ± 6.17 (1.14)	153.54 ± 4.80 (1.00)
partial update Time to update the text of every 10th row (with 3 warmup iterations).	12.51 ± 1.32 (1.00)	10.50 ± 0.94 (0.80)	9.96 ± 0.34 (0.80)	11.77 ± 0.96 (1.00)	13.70 ± 1.51 (1.00)	12.69 ± 0.94 (1.00)	28.64 ± 6.70 (1.76)	16.31 ± 0.93 (1.00)	39.88 ± 2.02 (2.49)	34.10 ± 3.71 (2.13)	11.21 ± 1.12 (1.00)	12.36 ± 2.81 (1.00)	10.19 ± 0.97 (1.00)	10.83 ± 0.98 (1.00)	38.58 ± 1.77 (2.41)	20.72 ± 2.66 (1.30)	60.60 ± 4.34 (3.78)	21.49 ± 2.60 (1.34)	11.51 ± 0.73 (1.00)	12.94 ± 0.78 (1.00)	14.97 ± 0.89 (1.00)	14.12 ± 0.82 (1.00)	16.76 ± 1.13 (1.28)	29.59 ± 2.87 (1.85)	16.76 ± 1.30 (1.05)	15.42 ± 1.11 (1.00)	17.88 ± 1.02 (1.10)	273.83 ± 7.78 (0.71)	10.42 ± 0.88 (1.00)	13.55 ± 2.92 (1.00)	17.37 ± 1.83 (1.08)	9.84 ± 0.48 (1.00)
select row Duration to highlight a row in response to a click on the row. (with 5 warmup iterations).	5.35 ± 2.52 (1.00)	5.93 ± 3.37 (1.00)	3.56 ± 1.63 (1.00)	7.52 ± 3.12 (1.00)	11.63 ± 4.71 (1.00)	5.37 ± 3.19 (1.00)	20.40 ± 4.71 (1.28)	7.06 ± 0.94 (1.00)	10.57 ± 1.98 (1.00)	26.70 ± 4.51 (1.87)	6.03 ± 1.20 (1.00)	6.76 ± 4.15 (1.00)	3.78 ± 2.37 (1.00)	9.42 ± 1.06 (1.00)	8.31 ± 3.80 (1.00)	11.46 ± 3.58 (1.00)	42.16 ± 1.48 (2.64)	11.64 ± 0.87 (1.00)	6.49 ± 2.90 (1.00)	8.16 ± 3.71 (1.00)	8.81 ± 4.27 (1.00)	8.27 ± 3.52 (1.00)	8.60 ± 2.55 (1.00)	19.99 ± 1.34 (1.25)	6.11 ± 2.35 (1.00)	7.23 ± 3.13 (1.00)	9.91 ± 3.55 (1.00)	7.48 ± 2.57 (1.00)	4.50 ± 3.44 (1.00)	6.72 ± 4.26 (1.00)	8.70 ± 0.88 (1.00)	4.70 ± 4.65 (1.00)
SWAP ROWS Time to swap 2 rows on a 1K table. (with 5 warmup iterations).	14.70 ± 0.77 (1.00)	13.20 ± 0.69 (1.00)	13.49 ± 0.58 (1.00)	12.83 ± 0.94 (1.00)	12.30 ± 0.80 (1.00)	16.41 ± 0.50 (1.03)	32.73 ± 3.46 (2.00)	17.05 ± 0.88 (1.07)	41.16 ± 1.66 (2.57)	36.82 ± 3.04 (2.30)	12.06 ± 0.75 (1.00)	12.33 ± 0.80 (1.00)	12.07 ± 0.87 (1.00)	15.01 ± 1.02 (1.00)	139.20 ± 3.40 (8.70)	25.21 ± 3.83 (1.58)	58.86 ± 2.52 (3.68)	22.61 ± 1.01 (1.41)	180.53 ± 5.98 (10.93)	13.74 ± 0.50 (1.00)	13.19 ± 1.13 (1.00)	14.05 ± 0.47 (1.00)	19.23 ± 0.65 (1.20)	29.12 ± 1.98 (1.82)	14.60 ± 0.94 (1.00)	18.32 ± 0.86 (1.15)	15.28 ± 0.68 (1.00)	123.24 ± 3.87 (7.70)	11.92 ± 0.81 (1.00)	15.28 ± 1.81 (1.28)	20.45 ± 0.92 (1.00)	10.87 ± 0.75 (1.00)
remove row Duration to remove a row. (with 5 warmup iterations).	58.94 ± 8.87 (1.25)	55.97 ± 4.00 (1.17)	52.25 ± 3.48 (1.08)	53.15 ± 3.73 (1.11)	58.24 ± 5.88 (1.21)	51.16 ± 2.21 (1.07)	75.84 ± 4.49 (1.58)	63.70 ± 5.80 (1.33)	88.82 ± 4.93 (1.85)	124.68 ± 6.01 (2.60)	53.82 ± 7.11 (1.12)	47.97 ± 2.19 (1.00)	55.54 ± 8.34 (1.16)	59.89 ± 6.85 (1.28)	57.85 ± 8.61 (1.21)	57.70 ± 8.68 (1.25)	101.74 ± 6.73 (2.12)	68.42 ± 4.62 (1.43)	171.46 ± 5.32 (3.57)	56.60 ± 8.88 (1.18)	57.47 ± 4.03 (1.20)	57.52 ± 8.88 (1.20)	71.26 ± 2.85 (1.48)	77.45 ± 2.44 (1.61)	61.06 ± 6.03 (1.27)	66.57 ± 8.24 (1.38)	64.93 ± 7.83 (1.35)	136.01 ± 5.32 (2.84)	52.45 ± 6.13 (1.08)	56.66 ± 2.50 (1.18)	65.91 ± 7.01 (1.37)	51.11 ± 5.32 (1.07)
create many rows Duration to create 10,000 rows	2395.92 ± 63.51 (1.75)	1917.70 ± 57.88 (1.40)	1953.90 ± 87.19 (1.43)	2459.00 ± 88.30 (1.80)	1523.50 ± 21.82 (1.11)	1566.94 ± 43.28 (1.16)	1728.92 ± 68.78 (1.26)	2694.67 ± 80.62 (1.97)	3031.05 ± 99.37 (2.22)	4300.09 ± 340.98 (3.14)	1500.82 ± 22.32 (1.10)	1488.21 ± 23.90 (1.08)	1478.76 ± 34.80 (1.06)	3516.65 ± 129.80 (2.57)	4852.32 ± 78.13 (5.48)	1674.12 ± 35.31 (1.22)	2974.26 ± 33.18 (2.17)	1775.78 ± 28.82 (1.30)	2450.15 ± 58.44 (1.76)	1529.44 ± 14.03 (1.12)	1840.94 ± 42.13 (1.36)	1988.79 ± 85.11 (1.45)	3093.91 ± 126.35 (2.26)	2351.24 ± 42.51 (1.72)	1944.25 ± 73.49 (1.42)	2274.59 ± 71.89 (1.66)	2032.73 ± 82.80 (1.48)	4835.71 ± 88.57 (3.30)	1510.20 ± 18.47 (1.10)	1556.85 ± 29.01 (1.14)	1705.37 ± 34.06 (1.25)	1368.01 ± 24.71 (1.00)
append rows to large table Duration for adding 1000 rows on a table of 10,000 rows.	446.44 ± 45.06 (1.55)	316.28 ± 10.57 (1.10)	342.96 ± 30.28 (1.16)	345.55 ± 21.85 (1.20)	308.15 ± 12.98 (1.07)	324.08 ± 11.26 (1.12)	511.58 ± 22.23 (1.77)	501.72 ± 20.13 (1.74)	668.38 ± 13.82 (2.32)	2009.59 ± 173.34 (8.97)	294.71 ± 4.82 (1.02)	311.68 ± 9.78 (1.06)	288.35 ± 10.83 (1.00)	4257.44 ± 71.95 (14.78)	3997.34 ± 69.10 (13.86)	380.67 ± 8.14 (1.32)	1419.12 ± 82.72 (8.82)	465.87 ± 15.32 (1.62)	367.18 ± 10.76 (1.27)	325.01 ± 10.86 (1.13)	335.82 ± 11.80 (1.16)	355.36 ± 11.80 (1.23)	499.48 ± 9.78 (1.73)	1952.23 ± 43.42 (8.77)	347.66 ± 18.01 (1.21)	436.35 ± 24.87 (1.51)	372.52 ± 16.82 (1.29)	1946.63 ± 26.02 (6.76)	293.84 ± 6.20 (1.02)	366.36 ± 17.20 (1.27)	412.28 ± 10.48 (1.43)	295.28 ± 10.46 (1.02)
clear rows Duration to clear the table filled with 10,000 rows.	804.06 ± 37.61 (2.58)	365.09 ± 4.15 (1.62)	376.80 ± 27.72 (1.68)	380.56 ± 8.59 (1.68)	238.77 ± 5.49 (1.06)	251.82 ± 5.49 (1.12)	246.35 ± 8.79 (1.10)	381.70 ± 82.22 (1.70)	571.24 ± 27.51 (2.54)	225.77 ± 4.93 (1.00)	236.45 ± 3.39 (1.05)	237.20 ± 6.88 (1.02)	228.24 ± 5.21 (1.02)	598.95 ± 70.11 (2.67)	1146.61 ± 37.90 (3.15)	317.78 ± 8.18 (1.41)	318.88 ± 11.64 (1.42)	262.55 ± 10.24 (1.17)	287.43 ± 6.19 (1.28)	243.10 ± 5.88 (1.08)	248.61 ± 9.31 (1.11)	354.58 ± 9.31 (1.58)	658.46 ± 9.39 (2.93)	362.77 ± 9.08 (1.81)	422.67 ± 11.78 (1.88)	483.49 ± 16.70 (2.15)	435.98 ± 12.88 (1.94)	723.35 ± 8.69 (3.22)	235.02 ± 4.44 (1.05)	225.22 ± 4.44 (1.00)	273.02 ± 7.38 (1.21)	224.72 ± 5.49 (1.00)
startup time Time for loading, parsing and starting up	124.04 ± 2.91 (3.17)	101.45 ± 2.61 (2.55)	125.44 ± 4.96 (3.15)	95.47 ± 3.64 (2.40)	50.39 ± 7.66 (1.27)	39.80 ± 1.71 (1.00)	58.48 ± 6.81 (1.47)	243.98 ± 5.38 (8.12)	214.47 ± 3.86 (3.38)	86.05 ± 2.53 (2.18)	44.42 ± 6.34 (1.12)	40.01 ± 1.48 (1.01)	40.46 ± 1.28 (1.02)	58.90 ± 1.79 (1.48)	85.95 ± 2.67 (2.18)	47.29 ± 5.97 (1.18)	45.34 ± 2.02 (1.14)	44.61 ± 1.43 (1.12)	57.19 ± 1.05 (1.44)	42.91 ± 5.10 (1.08)	43.41 ± 1.86 (1.08)	42.53 ± 1.75 (1.07)	96.48 ± 2.08 (2.42)	47.20 ± 2.20 (1.19)	92.65 ± 3.75 (2.33)	112.91 ± 4.49 (2.34)	88.83 ± 4.16 (2.23)	91.68 ± 2.32 (2.30)	40.32 ± 1.36 (1.01)	45.64 ± 2.00 (1.15)	54.52 ± 1.70 (1.37)	40.49 ± 4.37 (1.00)
slowdown geometric mean	1.61	1.30	1.35	1.43	1.11	1.07	1.45	1.74	2.34	2.33	1.05	1.03	1.03	2.04	3.46	1.25	2.30	1.28	2.11	1.07	1.14	1.21	1.75	1.77	1.34	1.53	1.39	4.37	1.03	1.10	1.23	1.01

# From Development to Production



# Popularity of Frameworks



23,276 Github Stars  
428 Contributors



50,787 Github Stars  
93 Contributors



64,790 Github Stars  
984 Contributors



*> 12,000 for  
"angular.js" or  
"angularjs"*

674 Job Listings for  
"Angular 2" or "Angular 4"  
on indeed.com



183 Job Listings for  
"vue.js" or "vuejs" on  
indeed.com



3,020 Job Listings for  
"react.js" or "reactjs" on  
indeed.com