

Results Summary

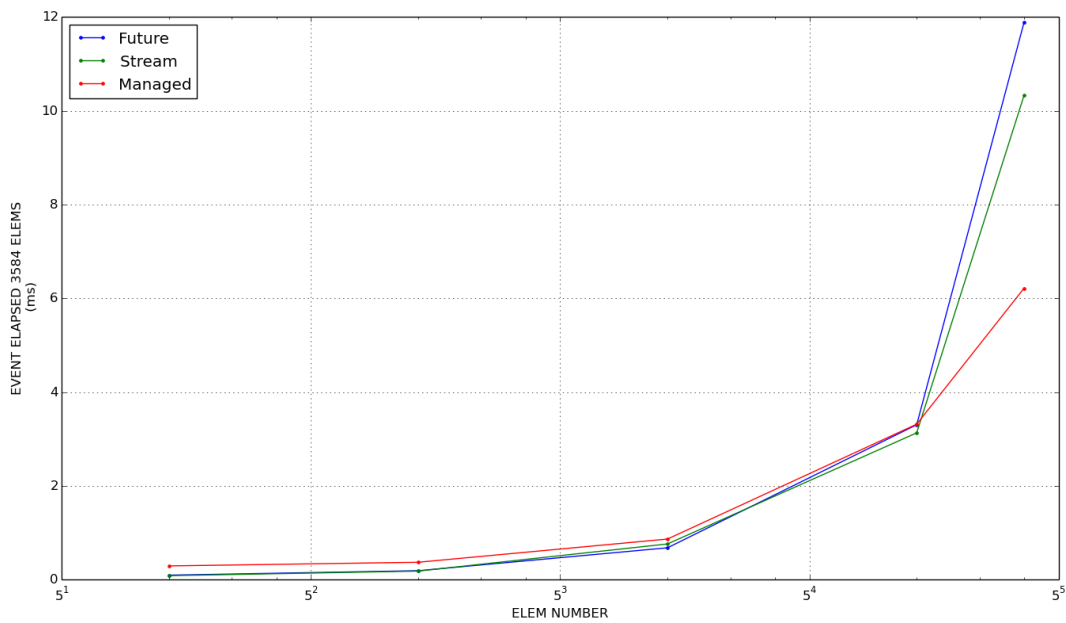
In this new version of the project, the code has been slightly modified.
The kernel loads are now balanced between Future, Streams and Managed Memory Streams.

Tests were run for the following input parameters:

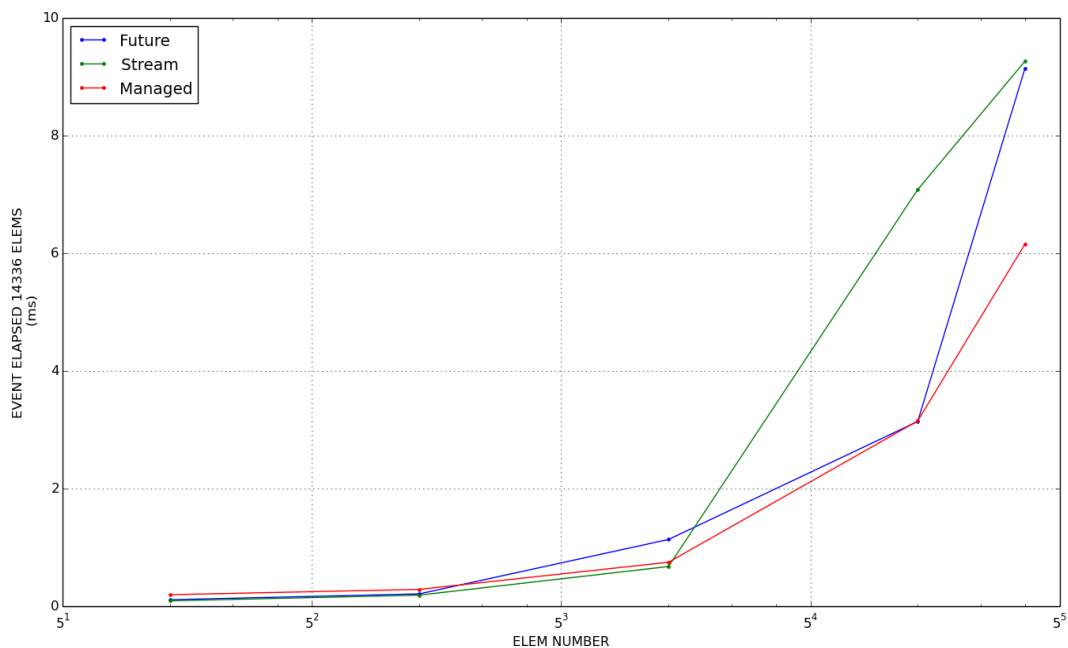
- number of elements $N = 1792, 3584, 7168, 14336, 28672, 57334$
- number of kernel iterations $M = 10, 50, 250, 1250, 2500$

Below we show some graphs on obtained measures.

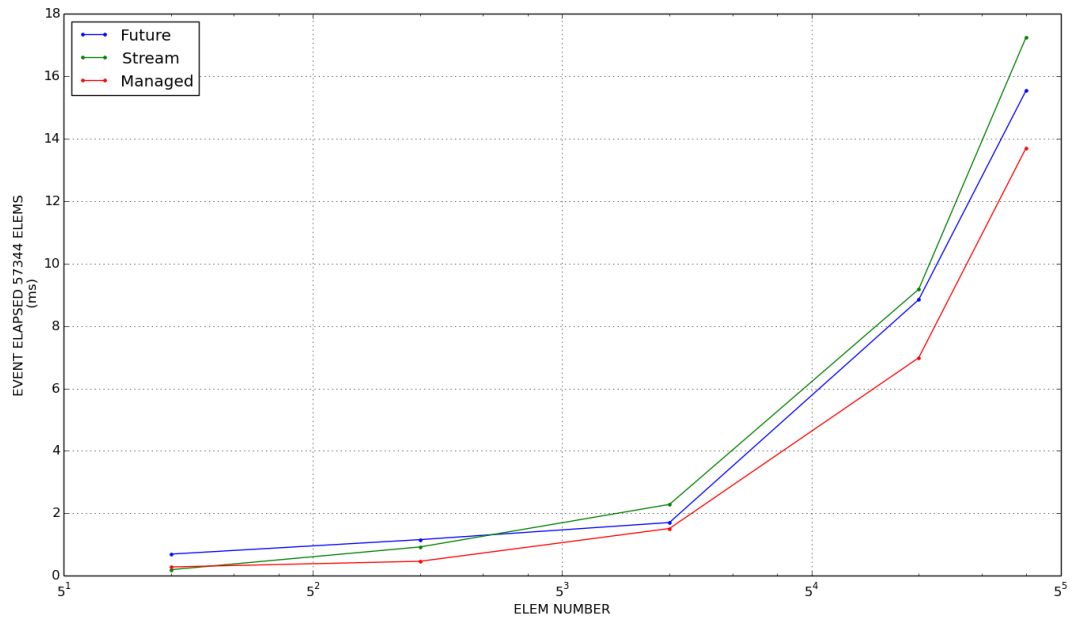
N=3584 COMPARISON



N=14336 COMPARISON



N=57344 COMPARISON

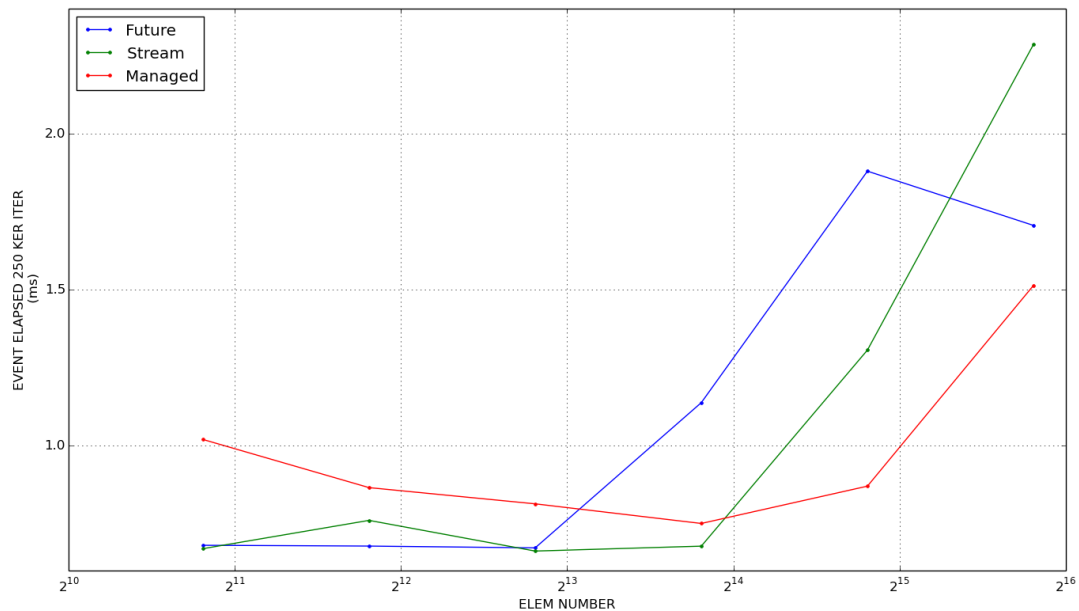


The three graphs above gives us an idea on how the measured times grows as the number of iterations grows, given a specific elements number.

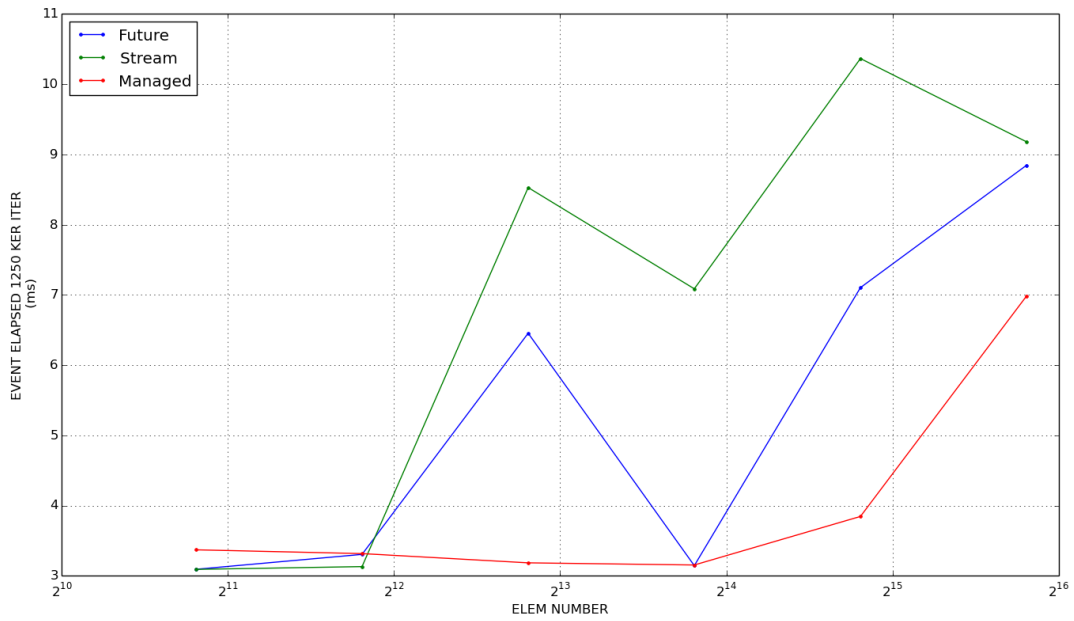
We can see that here the growth is “smooth” as there aren't peaks.

In general Managed Mem Streams seems to have a better behavior as the number of iterations (but also elements number) grows.

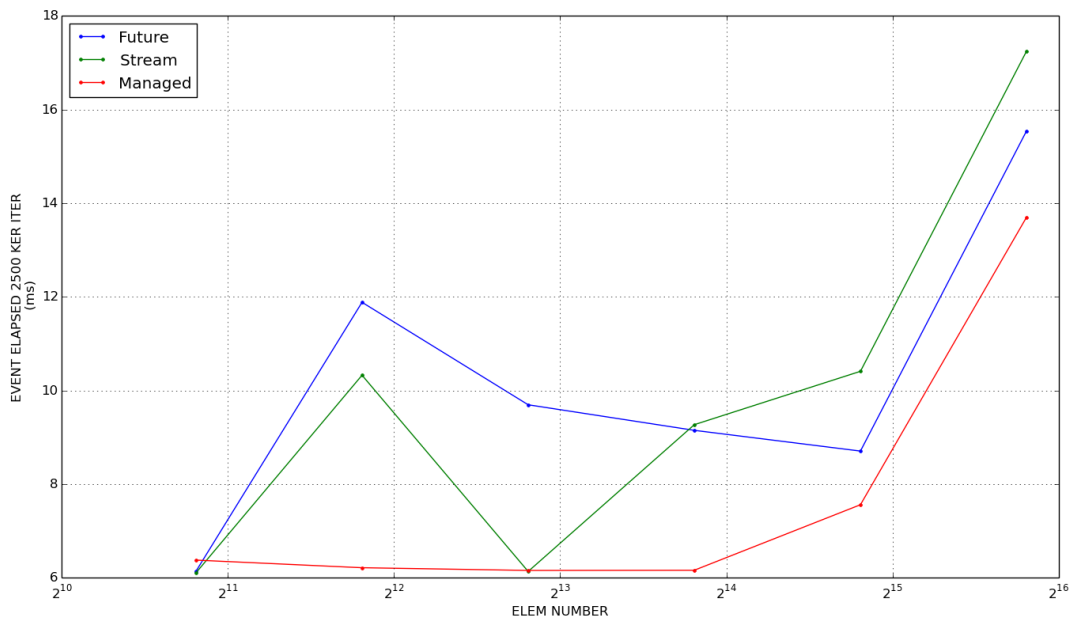
M=250 COMPARISON



#M=1250 COMPARISON



#M=2500 COMPARISON

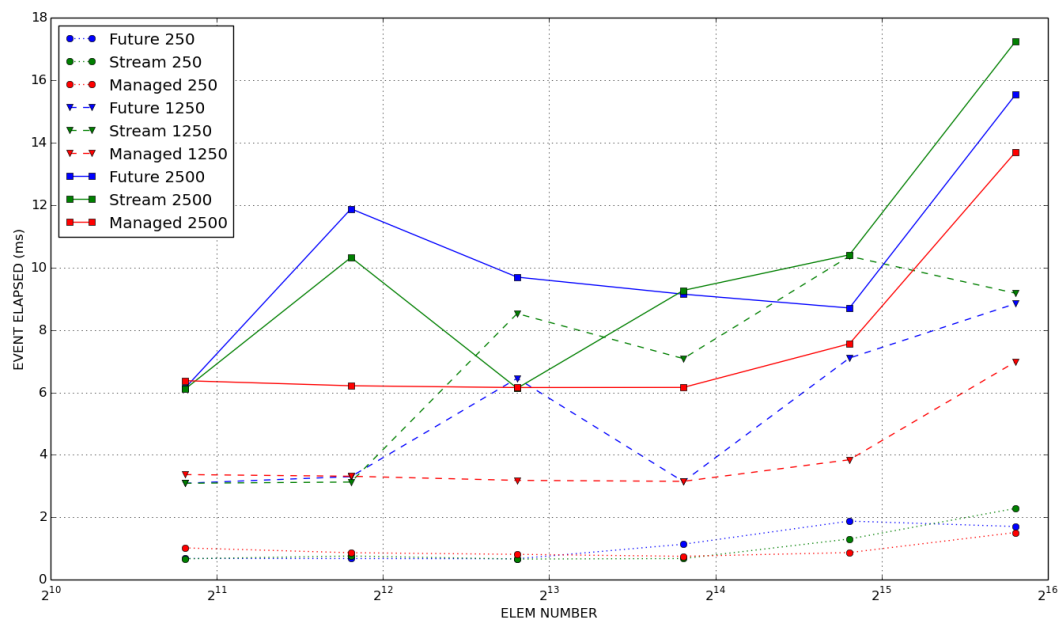


The three graphs above show us how the time grows as the number of elements grows, given a specific kernel iterations number.

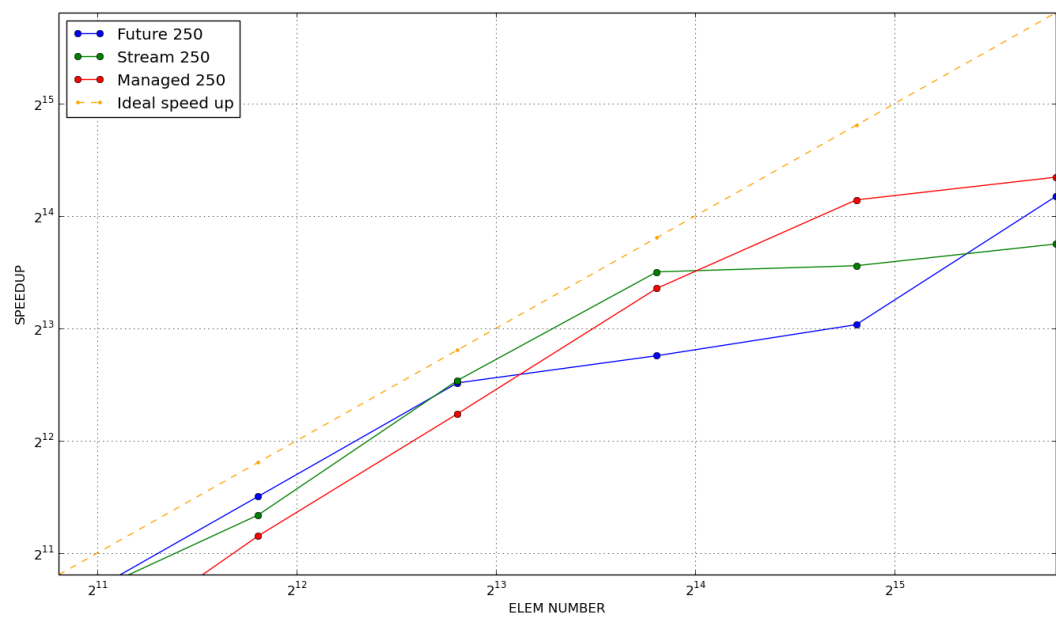
As we can see Future and Streams show a strange behavior, we can see some peaks w.r.t. Managed trend.

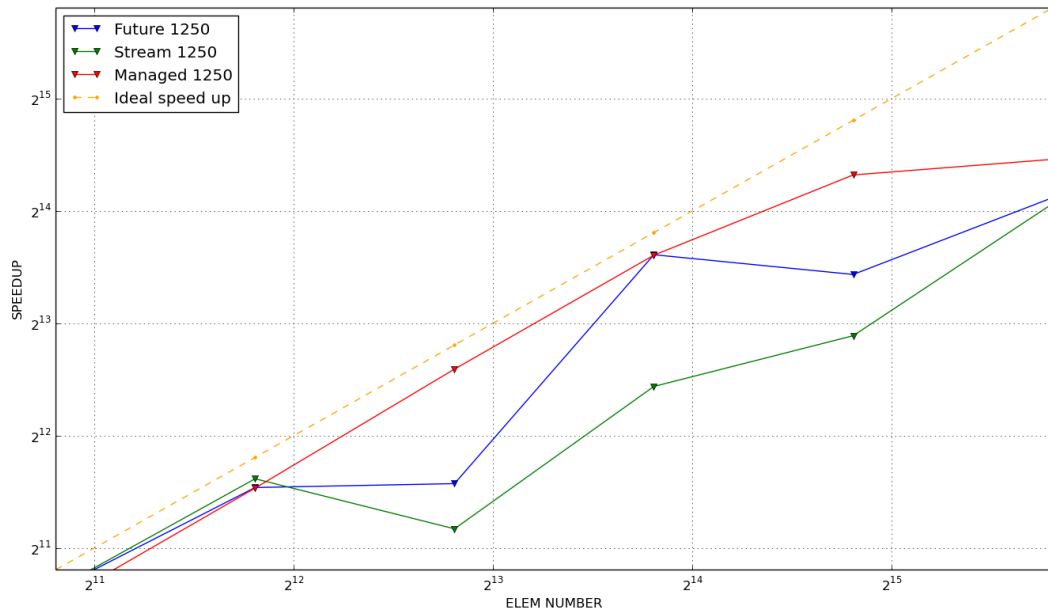
Comparing this with results, in fact, we can see that some iterations take much more time than the average measures. While all Managed iterations seem to take almost always the same time.

The three graphs above in one:



SPEEDUP GRAPHS





FUTURE					
M iterations →	10	50	250	1250	2500
N elements ↓					
1792	0.10544	0.205536	0.6816	3.09206	6.1368
3584	0.096431	0.191184	0.6791039	3.3042249	11.88256
7168	0.090312	0.1859119	0.67336	6.4529049	9.694315
14336	0.114452	0.213688	1.13853625	3.144245	9.14837125
28672	0.196628	0.303878	1.880057	7.1020875	8.705446875
57334	0.694250625	1.15817	1.70613625	8.84453343	15.543275
STREAM					
1792	0.088608	0.187104	0.670752	3.09101	6.10419
3584	0.085264	0.18296	0.761408	3.130515	10.32562
7168	0.081616	0.1842639	0.6630959	8.526845	6.13483
14336	0.095359	0.19268	0.678896	7.0853375	9.26907625
28672	0.1172959	0.23772	1.30698012	10.36361749	10.408754375
57334	0.1947889	0.92436024	2.286461562	9.177777	17.24651249
MANAGED					
1792	0.396704,	0.451616	1.02061	3.36941	6.37699
3584	0.292736	0.371312	0.866354	3.315615	6.21437
7168	0.2252719	0.340296	0.8144005	3.18403	6.15661

14336	0.20022	0.29026	0.751528	3.1533525	6.160719
28672	0.2107059	0.32524	0.871042	3.844489375	7.559499375
57334	0.282609	0.4644649	1.514324687	6.9831315625	13.70058125
ONE SM					
1792	45.4321	214.11	984.983	4914.09	9826.29
3584	82.3552	396.721	1972.495	9833.5649	19669.55
7168	166.5485	795.40149	3940.19749	19669.35	39330.675
14336	330.486625	1587.69249	7878.82875	39328.6875	78638.25
28672	661.9558749	3176.23624	15756.15624	78653.80625	157272.1875
57334	1313.16749	6347.33343	31507.0875	157304.46875	314541.875

FUTURE SPEEDUP					
	10	50	250	1250	2500
1792	430.8810698	1041.715319	1445.10416	1589.2608811	1601.1996421
3584	854.02356064	2075.074274	2904.555119	2976.0579258	1655.3293229
7168	1844.14584994	4278.3763285	5851.546720	3048.1387840	4057.0865502
14336	887.55657393	7429.9562914	6920.138686	12508.14981	8595.874374
28672	3366.53922636	10452.340248	8380.68008	11074.744749	18065.95224
57334	1891.48911461	5480.484812	18466.92343	17785.502181	20236.52512

STREAM SPEEDUP					
	10	50	250	1250	2500
1792	512.73135609	1144.3368394	1468.475681	1589.8007447	1609.7614917
3584	965.88478138	2168.3482728	2590.588751	3141.1972151	1904.9267743
7168	2040.63541462	4316.6407979	5942.122256	2306.7558985	6411.04561985
14336	3465.6735004	8240.0482665	11605.354502	5550.7147683	8483.936034
28672	5643.46503717	13361.249579	12055.39085	7589.4161715	15109.606955
57334	6741.48694228	6866.731274	13779.84568	17139.713193	18237.998841

MANAGED SPEEDUP					
	10	50	250	1250	2500
1792	114.52392716	474.09746333	965.0924447	1458.4422792	1540.8978217
3584	281.3292523	1068.4303227	2276.77716	2965.8343927	3165.1720126
7168	739.32179765	2337.3812798	4838.157024	6177.5014682	6388.3655128
14336	1650.61744581	5469.8976779	10483.746114	12472.02382	12764.457725
28672	3141.60904293	9765.8229307	18088.85937	20458.84344	20804.57708
57334	4646.5876882	13665.90257	20806.0317	22526.35044	22958.286897