statistical preparation of comparison for all 10 goal instances
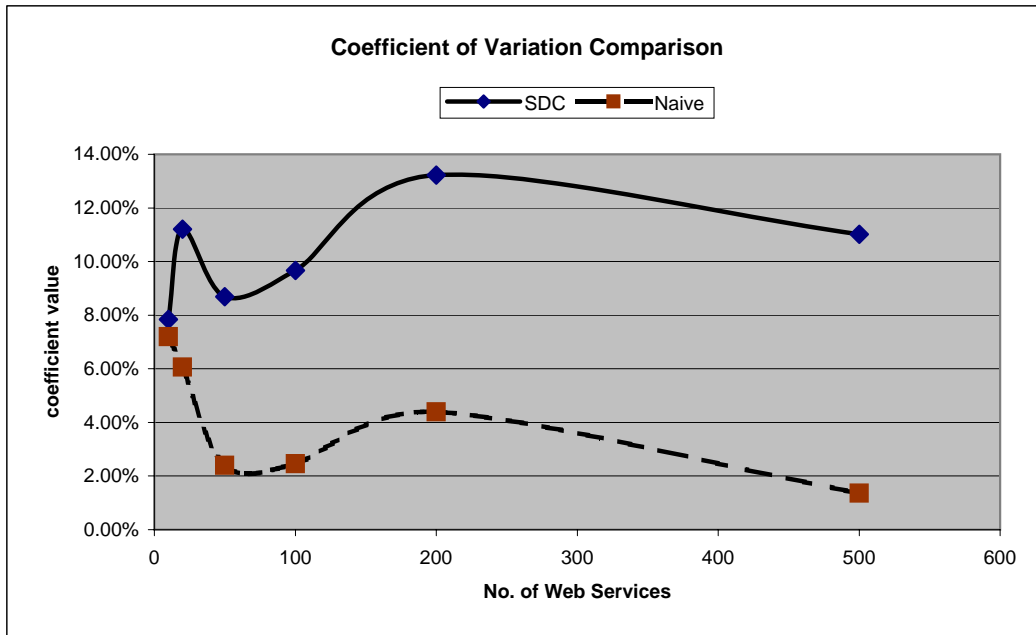data = arithmetic mean of the data for the individual goal instances (see following worksheets)
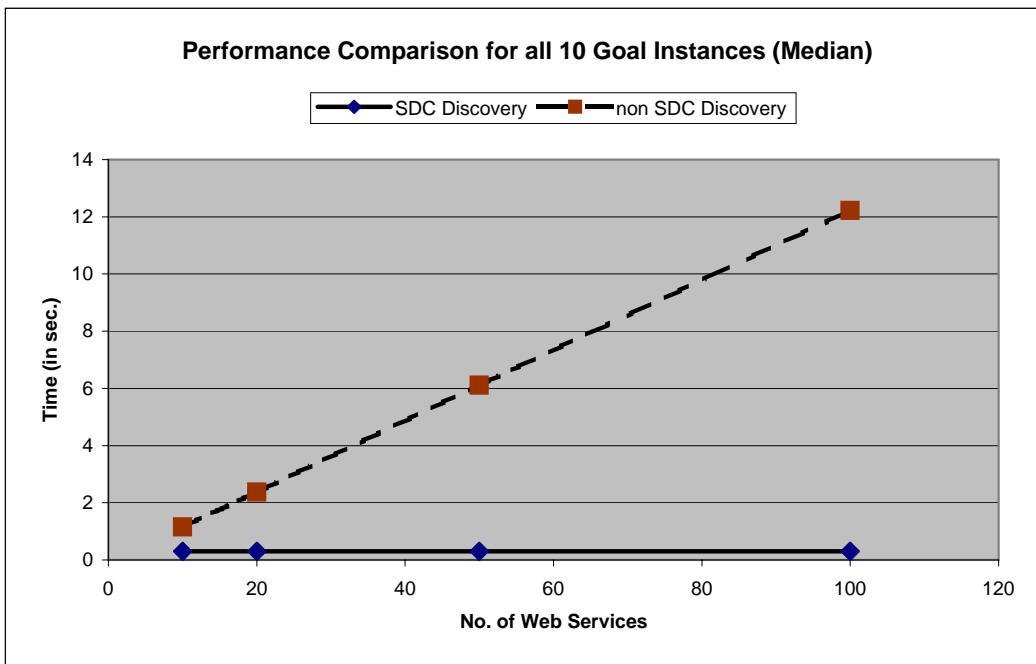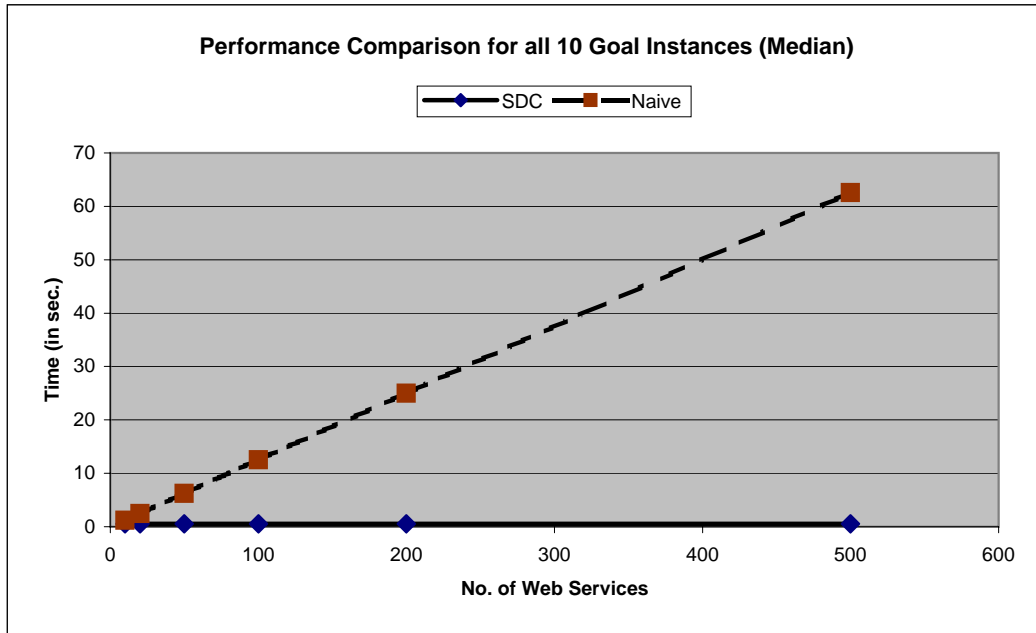
SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.61170333	0.5173	0.172	1.375	2874.326756	0.047997041	7.85%
20	0.542768	0.5204	0.172	1.546	4547.62144	0.060826677	11.21%
50	0.538904	0.5235	0.172	1.25	2476.9536	0.046824448	8.69%
100	0.543928	0.5282	0.187	1.531	3630.85152	0.052585175	9.67%
200	0.556588	0.5329	0.187	1.406	7902.54592	0.073572342	13.22%
500	0.552796	0.5328	0.187	1.203	4672.3232	0.060899596	11.02%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.260316	1.2284	1.109	2.36	11198.04448	0.090773467	7.20%
20	2.516364	2.4623	2.281	5.531	48682.45344	0.152662011	6.07%
50	6.251204	6.2484	5.937	7.266	26293.7744	0.149851803	2.40%
100	12.60728	12.5362	12.11	18.594	245302.9066	0.310062596	2.46%
200	25.22192	24.9663	24.251	60.455	5428979.82	1.106453467	4.39%
500	62.71876	62.556	61.33	72.345	1119068.732	0.851542384	1.36%

Performance Comparison for all 10 Goal Instances (Median)

Performance Comparison for all 10 Goal Instances (Median)

Goal Instance 1   (discover all 3 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.33983333	0.297	0.281	0.5	4291.555556	0.065509965	19.28%
20	0.31688	0.297	0.281	0.454	2489.3856	0.049893743	15.75%
50	0.31188	0.297	0.281	0.453	1700.1056	0.041232337	13.22%
100	0.30752	0.297	0.281	0.453	1578.7296	0.03973323	12.92%
200	0.31248	0.297	0.281	0.672	5473.8496	0.073985469	23.68%
500	0.32072	0.297	0.282	0.484	2406.7616	0.049058757	15.30%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.23316	1.156	1.109	2.36	59361.9744	0.243643129	19.76%
20	2.40876	2.375	2.297	2.516	5845.7824	0.076457716	3.17%
50	6.16756	6.109	6.016	7.266	54467.6064	0.233382961	3.78%
100	12.24712	12.219	12.11	12.531	10677.7856	0.103333371	0.84%
200	26.3744	24.563	24.251	60.455	51876569.2	7.20253908	27.31%
500	62.52396	62.517	61.673	65.033	431599.5584	0.656962372	1.05%

Goal Instance 2   (discover all 4 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand. deviation (in sec)	coefficient of variation
10	0.71624	0.688	0.656	0.844	4215.0624	0.064923512	9.06%
20	0.70376	0.687	0.656	0.844	2639.3824	0.05137492	7.30%
50	0.70688	0.688	0.672	0.86	2254.5056	0.047481634	6.72%
100	0.71376	0.703	0.687	0.875	2213.7024	0.047049999	6.59%
200	0.7158	0.703	0.687	0.891	2293.76	0.047893215	6.69%
500	0.74004	0.703	0.687	0.891	5031.3184	0.070931787	9.58%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand.deviation (in sec)	coefficient of variation
10	1.79316	1.781	1.718	1.953	3770.1344	0.06140142	3.42%
20	3.01312	2.984	2.906	3.141	6248.7456	0.079049008	2.62%
50	6.70768	6.719	6.501	6.829	5586.9376	0.07474582	1.11%
100	12.94832	12.953	12.782	13.141	11192.9376	0.10579668	0.82%
200	25.42416	25.438	24.953	26.125	64034.8544	0.25305109	1.00%
500	62.77916	62.423	61.845	71.767	3478501.974	1.865074254	2.97%

Goal Instance 3   (discover the only usable Web service from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.39056	0.391	0.375	0.407	59.1264	0.007689369	1.97%
20	0.40504	0.391	0.375	0.579	2702.7584	0.05198806	12.84%
50	0.39944	0.391	0.375	0.579	1420.9664	0.037695708	9.44%
100	0.4126	0.391	0.39	0.594	2750	0.052440442	12.71%
200	0.40128	0.406	0.39	0.422	130.5216	0.011424605	2.85%
500	0.41816	0.406	0.39	0.594	3137.5744	0.056014055	13.40%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.22944	1.188	1.172	1.375	4906.8864	0.070049171	5.70%
20	2.44252	2.406	2.359	2.579	6721.2096	0.081982984	3.36%
50	6.17392	6.172	5.984	6.797	20469.1936	0.14307059	2.32%
100	12.29532	12.297	12.125	12.485	10611.3376	0.103011347	0.84%
200	24.74364	24.703	24.516	25.469	41332.2304	0.203303297	0.82%
500	61.89524	61.829	61.47	62.658	103721.7824	0.322058663	0.52%

Goal Instance 4   (discover all 2 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.51004	0.5	0.484	0.688	1391.1584	0.037298236	7.31%
20	0.54112	0.515	0.5	0.703	3854.1056	0.062081443	11.47%
50	0.52328	0.516	0.5	0.672	1119.0816	0.033452677	6.39%
100	0.53432	0.516	0.5	0.687	3049.1776	0.055219359	10.33%
200	0.52436	0.516	0.5	0.688	1257.2704	0.035458009	6.76%
500	0.55188	0.516	0.5	1.172	17221.5456	0.131230887	23.78%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.20064	1.172	1.156	1.391	4901.0304	0.07000736	5.83%
20	2.41696	2.391	2.344	2.578	5615.2384	0.074934894	3.10%
50	6.16196	6.187	6.016	6.25	5446.2784	0.073798905	1.20%
100	12.38836	12.329	12.25	13.016	22116.3104	0.148715535	1.20%
200	24.75756	24.719	24.516	25.422	42576.9664	0.206341868	0.83%
500	61.9808	61.939	61.595	62.781	103622.24	0.321904085	0.52%

Goal Instance 5   (discover all 4 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.47432	0.453	0.437	0.64	3389.1776	0.058216644	12.27%
20	0.46692	0.453	0.437	0.625	2311.4336	0.048077371	10.30%
50	0.4832	0.453	0.437	0.657	4769.12	0.069058816	14.29%
100	0.46808	0.468	0.437	0.625	1165.9936	0.034146648	7.30%
200	0.4956	0.468	0.453	0.938	10554.16	0.102733441	20.73%
500	0.46688	0.469	0.453	0.485	84.1056	0.009170911	1.96%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.14876	1.125	1.109	1.328	4573.1424	0.067625013	5.89%
20	2.41352	2.359	2.281	3.015	20821.3696	0.144296118	5.98%
50	6.08824	6.125	5.937	6.188	6571.4624	0.081064557	1.33%
100	12.38576	12.375	12.156	12.937	33475.8624	0.182964101	1.48%
200	25.00168	24.735	24.469	29.407	868604.6976	0.931989645	3.73%
500	62.35452	62.204	61.907	63.329	139178.6496	0.373066548	0.60%

Goal Instance 6   (discover all 2 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand. deviation (in sec)	coefficient of variation
10	0.92004	0.891	0.875	1.094	3568.1184	0.059733729	6.49%
20	0.95936	0.891	0.875	1.546	20374.3104	0.142738609	14.88%
50	0.92688	0.906	0.875	1.094	3611.0656	0.060092143	6.48%
100	0.94932	0.907	0.875	1.531	16737.5776	0.12937379	13.63%
200	0.94828	0.922	0.891	1.109	5431.2416	0.073696958	7.77%
500	0.93688	0.906	0.89	1.125	4807.9456	0.069339351	7.40%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand.deviation (in sec)	coefficient of variation
10	1.21636	1.188	1.172	1.453	5103.5104	0.071438858	5.87%
20	2.40812	2.39	2.359	2.563	3572.5056	0.059770441	2.48%
50	6.13872	6.172	5.953	6.828	30300.6816	0.17407091	2.84%
100	12.25392	12.235	12.14	12.438	5754.3136	0.075857192	0.62%
200	24.67192	24.596	24.407	25.377	68226.3136	0.261201672	1.06%
500	61.88704	61.861	61.33	62.517	111151.4784	0.333393879	0.54%

Goal Instance 7   (discover all 3 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand. deviation (in sec)	coefficient of variation
10	1.03384	1	0.984	1.375	7617.4944	0.087278258	8.44%
20	1.02424	1	0.984	1.172	3042.5024	0.055158883	5.39%
50	1.02308	1	0.984	1.25	3406.8736	0.05836843	5.71%
100	1.03876	1.015	0.984	1.203	4555.6224	0.067495351	6.50%
200	1.05252	1.016	0.984	1.406	9049.6096	0.095129436	9.04%
500	1.03372	1.015	0.984	1.203	3187.8816	0.056461328	5.46%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in $msec^2$)	stand.deviation (in sec)	coefficient of variation
10	1.18392	1.157	1.14	1.376	4857.9136	0.069698735	5.89%
20	2.44812	2.39	2.343	3.016	21333.3056	0.146059254	5.97%
50	6.16576	6.172	5.937	6.344	9197.0624	0.095901316	1.56%
100	12.44592	12.406	12.188	13.016	45387.2736	0.213042891	1.71%
200	24.996	24.953	24.61	25.61	85638.88	0.292641214	1.17%
500	62.87256	62.392	61.673	72.345	4208540.326	2.051472721	3.26%

Goal Instance 8　　(discover all 3 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.30812	0.297	0.281	0.484	1353.3856	0.036788389	11.94%
20	0.3308	0.313	0.297	0.641	5325.36	0.072975064	22.06%
50	0.32688	0.312	0.297	0.516	3216.2656	0.056712129	17.35%
100	0.33244	0.313	0.297	0.5	2625.2064	0.051236768	15.41%
200	0.33248	0.313	0.297	0.516	2769.4496	0.05262556	15.83%
500	0.32396	0.313	0.297	0.516	1634.8384	0.040433135	12.48%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.17376	1.157	1.125	1.36	3243.4624	0.056951404	4.85%
20	2.5912	2.406	2.343	5.531	386378.96	0.621593887	23.99%
50	6.19248	6.172	5.968	6.844	35215.5296	0.187658012	3.03%
100	12.52412	12.5	12.188	13.141	39081.7856	0.197691137	1.58%
200	25.088	25.032	24.751	25.703	72919.2	0.270035553	1.08%
500	62.60312	62.658	61.845	63.236	162737.5456	0.403407419	0.64%

Goal Instance 9　　(discover all 2 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	1.2246	0.469	0.453	0.5	100.3424	0.010017105	0.82%
20	0.48384	0.469	0.468	0.657	1329.5744	0.03646333	7.54%
50	0.47868	0.484	0.468	0.485	55.3376	0.007438925	1.55%
100	0.4806	0.484	0.469	0.5	100.24	0.010011993	2.08%
200	0.57864	0.485	0.468	1.125	40299.0304	0.200746184	34.69%
500	0.50876	0.5	0.484	0.688	1474.1824	0.038395083	7.55%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.2246	1.188	1.172	1.828	16658.56	0.129068044	10.54%
20	2.47132	2.422	2.375	2.64	10028.2176	0.100140989	4.05%
50	6.23748	6.203	5.953	7.047	58252.8896	0.241356354	3.87%
100	12.60428	12.47	12.142	15.172	332393.6416	0.576535898	4.57%
200	25.13124	24.955	24.532	26.188	219573.0624	0.468586238	1.86%
500	65.4042	65.064	63.564	69.784	1597720.96	1.264009873	1.93%

Goal Instance 10   (discover all 4 usable Web services from search space)

SDC Runtime Discoverer

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand. deviation (in sec)	coefficient of variation
10	0.19944	0.187	0.172	0.391	2757.8464	0.052515202	26.33%
20	0.19572	0.188	0.172	0.375	1407.4016	0.037515352	19.17%
50	0.20884	0.188	0.172	0.407	3216.2144	0.056711678	27.16%
100	0.20188	0.188	0.187	0.39	1532.2656	0.039144164	19.39%
200	0.20444	0.203	0.187	0.407	1766.5664	0.042030541	20.56%
500	0.22696	0.203	0.187	0.609	7737.0784	0.087960664	38.76%

Naive Engine

no. WS	arith. mean (in sec)	median (in sec)	min (in sec)	max (in sec)	variance (in msec^2)	stand.deviation (in sec)	coefficient of variation
10	1.19936	1.172	1.125	1.437	4603.8304	0.067851532	5.66%
20	2.55	2.5	2.437	3.078	20259.2	0.142334817	5.58%
50	6.47824	6.453	6.265	7.172	37430.1024	0.193468608	2.99%
100	13.97968	13.578	13.048	18.594	1942337.818	1.393677803	9.97%
200	26.0306	25.969	24.516	28.36	950322.8	0.974845013	3.74%
500	62.887	62.673	61.517	65.267	853912.8	0.924074023	1.47%