Socio-technical analysis result (matplotlib)

	range.date		devs	ml.only.devs	code.only.devs	ml.code.devs	perc.ml.only.devs	perc.code.only.devs	perc.ml.code.devs	sponsored.devs	ratio.sponsored	sponsored.core.devs	ratio.sponsored.core	num.tz	core.global.devs	core.mail.devs	core.code.devs	org.silo	prima.donnas	radio.silence	black.cloud	missing.links		st.congruence	communicability	global.turnover	code.turnover
1	2013-0	5 - 2013-(08 117	28	72	17	0.2393	0.6154	0.1453	8 0.0	684	0	0.0000	1	24	23	3	3	0	11	0	3	0.500	00	0.9719	0.0000	0.0000
2	2013-08	8 - 2013-	11 70	17	37	16	0.2429	0.5286	0.2286	11 0.1	571	1	0.0189	1	16	15	5	6	0	14	0	7	0.416	37	0.9434	0.8235	0.8310
3	2013-1	1 - 2014-0	02 73	23	41	9	0.3151	0.5616	0.1233	11 0.1	507	0	0.0000	1	15	15	0	0	0	2	0	0	1.000	00	1.0000	0.5874	0.6019
4	2014-05	2 - 2014-0	05 126	18	95	13	0.1429	0.7540	0.1032	18 0.1	429	3	0.0278	1	19	13	12	20	0	2	0	21	0.000	00	0.9414	0.2312	0.1266
5	2014-0	5 - 2014-0	08 82	16	55	11	0.1951	0.6707	0.1341	15 0.1	329	0	0.0000	1	23	14	13	40	0	0	0	40	0.047	76	0.8571	0.8654	0.8966
6	2014-08	8 - 2014-1	11 89	24	58	7	0.2697	0.6517	0.0787	13 0.1	461	1	0.0154	1	22	13	11	70	0	7	0	71	0.000	00	0.7872	0.5146	0.5496
7	2014-1	1 - 2015-0	02 91	31	52	8	0.3407	0.5714	0.0879	12 0.1	319	0	0.0000	1	21	17	11	19	0	4	0	20	0.000	00	0.8800	0.6111	0.7040
8		2 - 2015-0		29	72	7	0.2685	0.6667	0.0648	13 - 0.1	204	4	0.0506	1	27	17	18	44	0	12	0	45	0.000	00	0.8940	0.5126	0.5180
9	2015-0	5 - 2015-0	08 113	28	78	7	0.2478	0.6903	0.0619	12 0.1	062	0	0.0000	1	22	14	16	62	0	2	0	63	0.045	55	0.8037	0.5701	0.5854
10	2015-08	8 - 2015-	11 82	21	51	10	0.2561	0.6220	0.1220	14 0.1	707	2	0.0328	1	21	15	12	32	0	8	0	32	0.030)3	0.8674	0.7487	0.7945
11		1 - 2016-0		15	50		0.2027	0.6757	0.1210	11 0.1		0	0.0000	1	15	12	5	16	0	6	0	16	0.157		0.9010	0.6538	0.6500
_12	2016-03	2 - 2016-0	05 123	26	90	7	0.2114	0.7317	0.0569	13 0.1	057	1	0.0103	1	21	16	9	22	2	11	0	24	0.000	00	0.9076	0.2640	0.2436
	core.global.turnover	core.mail.turnover	core.code.turnover		ratio.smelly.quitters	ratio.smelly.devs	global.truck		code	-	0103011033.001101	betweenness.centr	degree.centr		global.mod		mail.mod		code.mod		density	mail.only.core.devs	code.only.core.devs	ml.code.core.devs	ratio.mail.only.core	ratio.code.only.core	ratio.ml.code.core
1	0.0000	0.0000	0.0000	0.00		0.1111	0.7949			0.006		0924	0.3373		.2310		2137	-0.38		0.02		22	2	1	0.8800	0.0800	0.0400
2	0.6500	0.6842	0.2500	0.07		0.3000	0.7714			0.012		0929	0.3093		.2533		2772	-0.2		0.03		13	3	2	0.7222	0.1667	0.1111
3	0.6452	0.6000	2.0000	0.23		0.0274	0.7945			0.009		0443	0.1416		.4595		4595	0.00		0.02		15	0	0	1.0000	0.0000	0.0000
4	0.4706	0.7857	0.0000	0.04	35	0.1825	0.8492	0.5806	0.8889	0.005	0.0	0422	0.1159	0	0.6921	0.3	3174	0.64	467	0.01	121	11	10	2	0.4783	0.4348	0.0870
5																											
	0.4762	0.5926	0.8000	0.13	33	0.3171	0.7195	0.4815	0.8030	0.013		1522	0.1843	0	.3469		5151	0.33		0.02		11	10	3	0.4583	0.4167	0.1250
6	$0.4762 \\ 0.7111$	$0.5926 \\ 0.6667$	$0.8000 \\ 0.9167$	$0.13 \\ 0.34$	33 09	$0.3171 \\ 0.4045$	0.7195 0.7528	0.4815 0.5806	0.8030 0.8308	0.013 0.013	2 0.1	1245	0.1843 0.2251	0	.3723	0.1	1466	0.3	184	0.03	363	11 12	10	1	0.5217	0.4348	0.0435
7	$0.4762 \\ 0.7111 \\ 0.6047$	0.5926 0.6667 0.4000	0.8000 0.9167 0.5455	0.13 0.34 0.34	33 09 55	$\begin{array}{c} 0.3171 \\ 0.4045 \\ 0.2527 \end{array}$	0.7195 0.7528 0.7692	0.4815 0.5806 0.5641	0.8030 0.8308 0.8167	0.013 0.013 0.011	2 0.1 3 0.0	1245 0816	0.1843 0.2251 0.2276	0 0 0	.3723 .5077	$0.1 \\ 0.1$	1466 1922	$0.3 \\ 0.4$	184 117	0.03 0.03	363 391	11 12 14	10 8	3 1 3	$0.5217 \\ 0.5600$	$0.4348 \\ 0.3200$	$0.0435 \\ 0.1200$
6 7 8	$\begin{array}{c} 0.4762 \\ 0.7111 \\ 0.6047 \\ 0.3750 \end{array}$	0.5926 0.6667 0.4000 0.4118	0.8000 0.9167 0.5455 0.6207	0.13 0.34 0.34 0.23	33 09 55 53	$\begin{array}{c} 0.3171 \\ 0.4045 \\ 0.2527 \\ 0.4167 \end{array}$	0.7195 0.7528 0.7692 0.7500	0.4815 0.5806 0.5641 0.5278	0.8030 0.8308 0.8167 0.7722	0.013 0.013 0.011 0.009	2 0.1 8 0.0 9 0.0	1245 0816 0866	0.1843 0.2251 0.2276 0.2695	0 0 0 0	.3723 .5077 .6946	0.1 0.1 0.2	1466 1922 2889	0.31 0.41 0.62	184 117 264	0.03 0.03 0.02	363 391 296	11 12 14 16	10 8 17	1	0.5217 0.5600 0.4706	0.4348 0.3200 0.5000	0.0435 0.1200 0.0294
7	0.4762 0.7111 0.6047 0.3750 0.5714	0.5926 0.6667 0.4000 0.4118 0.5806	0.8000 0.9167 0.5455 0.6207 0.9412	0.13 0.34 0.34 0.23 0.44	33 09 55 53 44	$\begin{array}{c} 0.3171 \\ 0.4045 \\ 0.2527 \\ 0.4167 \\ 0.3540 \end{array}$	0.7195 0.7528 0.7692 0.7500 0.8053	0.4815 0.5806 0.5641 0.5278 0.6000	0.8030 0.8308 0.8167 0.7722 0.8118	0.013 0.013 0.011 0.009 0.010	2 0.1 8 0.0 9 0.0 4 0.1	1245 0816 0866 1045	0.1843 0.2251 0.2276 0.2695 0.1930	0 0 0 0	.3723 .5077 .6946 .4016	0.1 0.1 0.2 0.1	1466 1922 2889 1301	0.3 0.4 0.6 0.3	184 117 264 609	0.03 0.03 0.02 0.03	363 391 296 302	11 12 14 16 10	10 8 17 12	1 3 1 4	0.5217 0.5600 0.4706 0.3846	0.4348 0.3200 0.5000 0.4615	0.0435 0.1200 0.0294 0.1538
7 8 9 10	0.4762 0.7111 0.6047 0.3750 0.5714 0.5116	0.5926 0.6667 0.4000 0.4118 0.5806 0.6207	0.8000 0.9167 0.5455 0.6207 0.9412 0.7857	0.13 0.34 0.34 0.23 0.44 0.28	33 09 55 53 44 77	$\begin{array}{c} 0.3171 \\ 0.4045 \\ 0.2527 \\ 0.4167 \\ 0.3540 \\ 0.3659 \end{array}$	0.7195 0.7528 0.7692 0.7500 0.8053 0.7439	0.4815 0.5806 0.5641 0.5278 0.6000 0.5161	0.8030 0.8308 0.8167 0.7722 0.8118 0.8033	0.013 0.013 0.011 0.009 0.010 0.014	2 0.1 8 0.0 9 0.0 4 0.1 4 0.1	1245 0816 0866 1045 1044	0.1843 0.2251 0.2276 0.2695 0.1930 0.2662	0 0 0 0 0	0.3723 0.5077 0.6946 0.4016 0.2900	0.1 0.1 0.2 0.1 0.0	1466 1922 2889 1301 0947	0.33 0.41 0.62 0.30 0.08	184 117 264 609 548	0.03 0.03 0.02 0.03 0.04	363 391 296 302 125	11 12 14 16 10 13	10 8 17 12 10	1 3 1 4 2	0.5217 0.5600 0.4706 0.3846 0.5200	0.4348 0.3200 0.5000 0.4615 0.4000	0.0435 0.1200 0.0294 0.1538 0.0800
7 8 9	0.4762 0.7111 0.6047 0.3750 0.5714	0.5926 0.6667 0.4000 0.4118 0.5806	0.8000 0.9167 0.5455 0.6207 0.9412	0.13 0.34 0.34 0.23 0.44	33 09 55 53 44 77 37	$\begin{array}{c} 0.3171 \\ 0.4045 \\ 0.2527 \\ 0.4167 \\ 0.3540 \end{array}$	0.7195 0.7528 0.7692 0.7500 0.8053	0.4815 0.5806 0.5641 0.5278 0.6000 0.5161 0.5000	6 0.8030 6 0.8308 0.8167 8 0.7722 0 0.8118 0 0.8033 0 0.9153	0.013 0.013 0.011 0.009 0.010	2 0.1 8 0.0 9 0.0 4 0.1 4 0.1 5 0.0	1245 0816 0866 1045	0.1843 0.2251 0.2276 0.2695 0.1930	0 0 0 0 0 0	.3723 .5077 .6946 .4016	0.1 0.2 0.1 0.0 0.3	1466 1922 2889 1301	0.3 0.4 0.6 0.3	184 117 264 609 548 498	0.03 0.03 0.02 0.03	363 391 296 302 425 285	11 12 14 16 10	10 8 17 12	1 3 1 4	0.5217 0.5600 0.4706 0.3846	0.4348 0.3200 0.5000 0.4615	0.0435 0.1200 0.0294 0.1538

Community smells: Pearson's correlation (matplotlib)

															(I		,						
	devs	ml.only.devs	code.only.devs	ml.code.devs	perc.ml.only.devs	perc.code.only.devs	perc.ml.code.devs	sponsored.devs	ratio.sponsored	sponsored.core.devs	ratio.sponsored.core	num.tz	core.global.devs	core.mail.devs	_	org.silo	prima.donnas	radio cilence	black.cloud	missing.links	st.congruence	communicability	global.turnover	code.turnover
org.silo	0.17	0.20	0.24	-0.59	-0.01	0.41	-0.57	0.35	0.09	0.19	0.22	-	0.53	-0.38	0.77	· -	-0.08	-0.20	-	1.00	-0.64	-0.93	-0.05	-0.00
prima.donnas	0.42	0.17	0.46	-0.28	-0.19	0.40	-0.36	0.05	-0.30	0.00	-0.05	-	0.04	0.07	-0.03	-0.08	-	0.30	-	-0.06	-0.19	0.06	-0.52	-0.49
radio.silence	0.07	0.18	-0.03	0.27	0.07	-0.24	0.26	-0.43	-0.35	0.33	0.45	-	0.17	0.45	-0.13	-0.20	0.30	-	-	-0.19	0.01	0.21	-0.01	-0.01
black.cloud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
missing.links	0.18	0.21	0.25	-0.60	-0.01	0.42	-0.58	0.35	0.08	0.20	0.23	-	0.54	-0.38	0.78	1.00	-0.06	-0.19	-	-	-0.65	-0.93	-0.07	-0.02
		core.global.turnover	core.mail.turnover	core.code.turnover	ratio.smelly.quitters	ratio.smelly.devs	global.truck	mail.truck	code.truck	closeness.centr	betweenness.centr		degree.centr	global.mod	mail.mod	code.mod	density	mail.only.core.devs	code.only.core.devs	ml.code.core.devs	ratio.mail.only.core	ratio.code.only.core	ratio.ml.code.core	
or	g.silo	-0.09	-0.07	-0.04	0.50	0.81	-0.34	0.44	-0.76	0.38	0.58	-0.			0.34	0.57		-0.42	0.76	0.29	-0.77	0.81	0.08	
prima.do		-0.54	-0.54	-0.29	-0.39	-0.09	0.40	-0.17	0.17	-0.44	-0.28	-0.			0.26		-0.47		-0.04	0.00	0.01	-0.00	-0.02	
radio.si		-0.17	-0.27	-0.38	-0.25	0.20	-0.05	-0.23	0.09	-0.06	-0.06	0.	68 -0	0.20 -	0.42	-0.38	0.22	0.49	-0.06	-0.35	0.22	-0.16	-0.23	
black.		- 0.10	-	-	- 0.40	- 0.01	-	-	-	-	-	0	-	-	-	-	- 0.01	-	-	-		-	-	
missing	.lınks	-0.10	-0.09	-0.06	0.49	0.81	-0.33	0.46	-0.76	0.37	0.57	-0.	07 (0.21 -	0.35	0.58	0.21	-0.42	0.77	0.30	-0.78	0.82	0.08	

Community smells: Pearson's correlation - p-values (matplotlib)

			_	O11111		J			~ ·				1011	1-	vara	(- I		,					
	devs	ml.only.devs	code.only.devs	ml.code.devs	perc.ml.only.devs	perc.code.only.devs	perc.ml.code.devs	sponsored.devs	ratio.sponsored	sponsored.core.devs	ratio.sponsored.core	num.tz	core.global.devs	core.mail.devs	oro oboo		org.silo	prima.donnas	radio.silence	black.cloud	missing.links	st.congruence	communicability	global.turnover	code.turnover
org.silo	0.60	0.54	0.46	0.04	0.97	0.18	0.05	0.27	0.79	0.55	0.49	-	0.07	0.22	0.00)	- 0.8	80 0	.53	- 0.	00	0.02	0.00	0.89	0.99
prima.donnas	0.18	0.60	0.13	0.39	0.54	0.20	0.26	0.87	0.34	1.00	0.88	-	0.89	0.82	0.92	0.8	30	- 0	.35	- 0.	85	0.56	0.86	0.10	0.13
radio.silence	0.84	0.58	0.92	0.40	0.82	0.45	0.41	0.17	0.26	0.29	0.14	-	0.60	0.14	0.68	0.5	63 0.5	35	-	- 0.	56	0.98	0.52	0.97	0.98
black.cloud	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
missing.links	0.57	0.52	0.43	0.04	0.97	0.18	0.05	0.26	0.81	0.53	0.48	-	0.07	0.22	0.00	0.0	0.0	85 0	.56	-	-	0.02	0.00	0.85	0.95
		core.global.turnover	core.mail.turnover	core.code.turnover	ratio.smelly.quitters	${\rm ratio.smelly.devs}$	global.truck	mail.truck	code.truck	closeness.centr	betweenness.centr		degree.centr	global.mod	mail.mod	code.mod	density	mail.only.core.devs	code.onlv.core.devs		ml.code.core.devs	ratio.mail.only.core	ratio.code.only.core	ratio.ml.code.core	
	org.silo	0.80	0.83	0.90	0.12	0.00	0.27	0.15	0.00	0.22	0.05	0.6				0.05	0.49	0.18	0.00			0.00	0.00	0.80	
prima.		0.09	0.09	0.39	0.24	0.79	0.19	0.60	0.60	0.15	0.38	0.3				0.96	0.13	0.85	0.91			0.98	1.00	0.95	
	silence	0.62	0.43	0.24	0.46	0.53	0.89	0.47	0.77	0.85	0.85	0.0)1 ()	.54 (0.18	0.22	0.50	0.10	0.85	0.2	27	0.49	0.62	0.48	
	k.cloud	- 0.77	0.00	0.06	0.19	0.00	0.20	0.14	0.00	0.92	0.05	0.9	- on o	- 6	-	- 0.05	- 0 = 1	0.19	0.00	-	-	- 0.00	0.00	- 0.00	
missin	g.links	0.77	0.80	0.86	0.12	0.00	0.29	0.14	0.00	0.23	0.05	0.8	52 0	.52 ().27	0.05	0.51	0.18	0.00	0.3))	0.00	0.00	0.80	

					Con	nmur	ity s	mells	s: Sp	earn	nan's	s c	orrel	ation	(ma	atplo	$ ext{tlib}$)						
	devs	ml.only.devs	code.only.devs	ml.code.devs	perc.ml.only.devs	perc.code.only.devs	perc.ml.code.devs	sponsored.devs	ratio.sponsored	sponsored.core.devs	ratio.sponsored.core	num.tz	core.global.devs	core.mail.devs	core.code.devs	org.silo	prima.donnas	radio.silence	black.cloud	missing.links	st.congruence	communicability	global.turnover	code.turnover
org.silo	0.29	0.19	0.46	-0.62	0.05	0.49	-0.63	0.64	-0.04	0.35	0.34	-	0.57	-0.28	0.83	-	0.04	-0.11	-	1.00	-0.65	-0.89	-0.26	-0.25
prima.donnas	0.39	0.13	0.39	-0.36	-0.22	0.39	-0.48	0.13	-0.39	0.14	0.05	-	-0.04	0.22	-0.13	0.04	-	0.26	-	0.04	-0.32	0.13	-0.40	-0.40
radio.silence	-0.02	0.22	-0.10	0.01	0.14	-0.31	0.03	-0.31	-0.27	0.47	0.53	-	0.15	0.50	-0.20	-0.11	0.26	-	-	-0.11	-0.07	0.26	-0.07	-0.08
black.cloud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
missing.links	0.29	0.19	0.46	-0.62	0.05	0.49	-0.63	0.64	-0.04	0.35	0.34	-	0.57	-0.28	0.83	1.00	0.04	-0.11	-	-	-0.65	-0.89	-0.26	-0.25

	core.global.turnover	core.mail.turnover	core.code.turnover	ratio.smelly.quitters	ratio.smelly.devs	global.truck	mail.truck	code.truck	closeness.centr	betweenness.centr	degree.centr	global.mod	mail.mod	code.mod	density	mail.only.core.devs	code.only.core.devs	ml.code.core.devs	ratio.mail.only.core	ratio.code.only.core	ratio.ml.code.core
org.silo	-0.30	-0.26	0.08	0.29	0.86	-0.30	0.30	-0.78	0.41	0.59	0.01	0.29	-0.42	0.59	0.27	-0.36	0.89	0.25	-0.85	0.89	0.14
prima.donnas	-0.50	-0.50	-0.30	-0.40	-0.13	0.39	-0.22	0.22	-0.39	-0.22	-0.31	0.04	-0.22	-0.04	-0.39	0.18	-0.13	0.00	0.13	-0.13	0.00
radio.silence	-0.02	-0.07	-0.39	-0.18	0.22	-0.07	-0.16	0.08	-0.04	-0.02	0.67	-0.24	-0.36	-0.35	0.22	0.51	-0.10	-0.40	0.36	-0.12	-0.34
black.cloud	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
missing.links	-0.30	-0.26	0.08	0.29	0.86	-0.30	0.30	-0.78	0.41	0.59	0.01	0.29	-0.42	0.59	0.27	-0.36	0.89	0.25	-0.85	0.89	0.14

Community smells: Spearman's correlation - p-values (matplotlib) sponsored.core.devs ratio.sponsored.core perc.code.only.devs perc.ml.only.devs communicability core.global.devs ratio.sponsored sponsored.devs global.turnover ${\it code.only.} devs$ core.code.devs core.mail.devs prima.donnas code.turnover st.congruence ml.code.devs missing.links ml.only.devs radio.silence black.cloud ${\rm org. silo}$ 0.55 0.45 0.13 0.89 0.11 0.03 0.03 0.90 0.26 0.29 0.05 0.38 0.89 0.00 0.02 0.00 org.silo prima.donnas 0.21 0.680.21 0.260.500.680.210.890.490.680.890.89 0.32 0.680.22 0.220.210.110.660.890.41radio 0.81

black.cloud missing.links 0.36 0.55 0.13 0.03 0.89 0.11 0.03 0.03 0.90 0.26 0.29 0.26 0.29 0.05 0.38 0.00 0.00 0.00 0.00 0.00 0.00 0.00	adio.silence 0.95	0.48	0.76	0.97	0.65	0.32	0.93	0.32	0.39	0.12	0.08	- 0.	.64	0.10	0.54	0.74	4 0.4	41		0.74	0.84	0.41	0.83	
Second S	olack.cloud -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	-	-	
org.silo 0.37 0.43 0.82 0.39 0.00 0.34 0.34 0.00 0.18 0.05 0.37 0.18 0.05 0.39 0.20 0.68 0.21 0.49 0.50 0.30 0.30 0.20 0.66 0.30 0.36 0.36 0.38 0.23 0.59 0.50 0.82 0.63 0.79 0.90 0.94 0.02 0.45 0.25 0.27 0.49 0.09 0.77 0.20 0.26 0.70 0.28	issing.links 0.36	0.55	0.13	0.03	0.89	0.11	0.03	0.03	0.90	0.26	0.29	- 0.	.05	0.38	0.00	0.00	3.0 C	89 0	.74 -	-	0.02	0.00	0.43	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$.turnov			ratio.smelly.quitters	smelly.	tr	mail.truck	code.truck	closeness.centr	betweenness.centr	ě.	5	OIII	mail.mod	code.mod	density	mail.only.core.devs	code.only.core.devs	.core.	only.	code	.ml.code.	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	org.sile	0.37	0.43	0.82	0.39	0.00	0.34	0.34	0.00	0.18	0.05	0.97	0.3	7 0.	.18 (0.05	0.39	0.25	0.00	0.44	0.00	0.00	0.66	
	prima.donna	0.12	0.12	0.37	0.22	0.68	0.21	0.49	0.50	0.21	0.50	0.33	0.8	9 0.	.50 (0.89	0.21	0.59	0.68	1.00	0.68	0.68	1.00	
black.cloud	radio.silenc	0.96	0.83	0.23	0.59	0.50	0.82	0.63	0.79	0.90	0.94	0.02	0.4	5 0.	.25 (0.27	0.49	0.09	0.77	0.20	0.26	0.70	0.28	
	black.cloud	1 -	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	
missing.links 0.37 0.43 0.82 0.39 0.00 0.34 0.34 0.00 0.18 0.05 0.97 0.37 0.18 0.05 0.39 0.25 0.00 0.44 0.00 0.06 0.66 0.00	missing.link	0.37	0.43	0.82	0.39	0.00	0.34	0.34	0.00	0.18	0.05	0.97	0.3	7 0.	.18 (0.05	0.39	0.25	0.00	0.44	0.00	0.00	0.66	

0.45