Case Example 7:

Sizing with Software Risk Master (SRM)

SRM has a unique automatic sizing feature that can size any application in about 2 minutes or less. SRM sizing is based on pattern matching.

This example shows the results in terms of effort, staffing, schedules, costs, and quality for four size plateaus: 100, 1,000, 10,000, and 100,000 function points. Software risks go up with application size, as do schedules and paperwork volumes. Quality declines with application size unless very effective quality control steps are used that include static analysis and inspections.

Example	7: How Software Risk N	Iaster (SRM) E	valuates Applica	ation Sizes					
_	,								
	Java Langua	Java Language for all 4 Cases							
		, , ,	o function point	samples					
		month for all	-						
		velopment for a							
			er month for all .						
	SRM automa	atic sizing pred	icts size in < 2 m	inute					
	2017 is the 3	Oth anniversar	y of IFPUG func	tion point metrics					
	100	1000	10,000	100.000					
	Function Points		<i>,</i>	100,000 Function Points					
			Corporate app	Global app					
		Free construction of F	····F·······						
Risks									
Cancellation	9.97%	15.44%	27.80%	55.79%					
Negative ROI	12.63%	19.56%	35.21%	70.67%					
Cost overrun	10.97%	16.99%	30.58%	61.37%					
Schedule slip	13.30%	20.59%	37.06%	74.39%					
Unhappy									
customers	7.98%	12.36%	22.24%	44.63%					
Litigation	4.39%	6.80%	12.23%	24.55%					
Average Risks	9.8 7%	15.29%	27.52%	55.24%	Risks increase rapidly with size				

Source code size	5,330	53,300	550,000	5,700,000	Code volume increases with size
Average complexity	4.00	5.00	6.00	8.00	Complexity increases with size
Application staffing	1.66	7.00	51.00	366.00	Staffing increases with size
Application schedule	7.31	16.37	29.47	70.26	Schedules grow rapidly with size
Application effort months	12.15	128.70	1,498	25,716	Effort months grow with size
Application costs	\$121,497	\$1,287,000	\$14,984,000	\$257,162,000	Costs grow rapidly with size
Function points/month	8.23	7.77	6.67	3.89	Productivity sags as size goes up
Work hours/function pt	16.04	16.99	19.78	33.95	
\$ cost per function pt	\$1,214.97	\$1,287.00	\$1,498.40	\$2,571.62	

					Development speed declines
LOC per month	438.68	414.14	367.16	221.65	with size
\$ cost per LOC	\$22.79	\$24.15	\$27.24	\$45.12	
Defect					
potential/funct					Defect potentials
pt	1.85	3.00	4.25	6.00	increase with size
Defect					
potentials	185	3,000	42,500	600,000	
Defect removal efficiency	99.00%	95.00%	91.00%	87.00%	Defect removal efficiency (DRE) declines with size
Delivered defects	2	150	3,825	78,000	Delivered defects increase with size
Delivered defects/FP	0.02	0.15	0.38	0.78	
High-severity defects	0	15	383	7,800	High-severity defects increase with size
Security flaws	0	2	38	780	Security flaws increase with size

			END OF EXAM	IPLE		
	Table 1: Siz	es of 100 Sof	tware Applica	tions in Funct	ion points, SNAP,	
			and LO		ion points, sinn ;	
			allu LO	C		
			I			
	Applications	Size in	SNAP	Size in		
	Applications					
-	NOTE: SRM	Function	Non-function	Logical		
	sizing takes					
	about 1.8					
	minutes	Points	Points	Source Code		
		Tomus	Tomes	Source coue		
	per application					
	for sizing any					
	application,	IFPUG 4.3	IFPUG	Statements		
	IBM Future					
	System FS/1					
	(circa 1985 not					
1	completed)	515,323	108,218	68,022,636		
		•				
	Star Wars missile					
2	defense	352,330	42,280	32,212,992		
	World-wide					
	military					
	command and					
	control					
3	(WWMCCS)	307,328	56,856	28,098,560		
	U.S. Air Traffic					
4	control	306,324	59,121	65,349,222		
	Israeli air					
5	defense system	300,655	63,137	24,052,367		

	North Korean				
6	Border defenses	273,961	50,957	25,047,859	
	Iran's air defense				
_			.(==0		
7	system	260,100	46,558	23,780,557	
8	SAP	253,500	32,070	18,480,000	
	Aegis destroyer	0.0			
9	C&C	253,088	49,352	20,247,020	
10	Oracle	229,434	29,826	18,354,720	
	Windows 10 (all				
11	features)	198,050	21,786	12,675,200	
	Obamacare web				
12	(all features)	107.050	5 700	10.045.050	
12	(all leatures)	107,350	5,720	12,345,250	
	Microsoft Office				
	Professional				
13	2010	93,498	10,285	5,983,891	
	Airline	90, 1 90	10,205	5,905,091	
	reservation				
14	system	38,392	5,759	6,142,689	
	North Korean				
	Long-Range				
15	Missile controls	37,235	4,468	5,101,195	
	NSA code				
16	decryption	35,897	3,590	3,829,056	
17	FBI Carnivore	31,111	2,800	3,318,515	
10	FBI fingerprint				
18	analysis	25,075	3,260	2,674,637	
10	NASA space shuttle	00.150	0.010	0 116 0-0	
19	VA Patient	23,153	3,010	2,116,878	
20	monitoring	00.100	9.004	4 000 010	
20	monitoring	23,109	3,004	4,929,910	
21	Data Warehouse	21,895	2,846	1,077,896	
		-1,090	_ ,0 + 0	_,0//,030	<u>I</u>

	NASA Hubble				
22	controls	21,632	2,163	1,977,754	
	Skype				
23	Shipboard gun	21,202	3,392	1,130,759	
2.4	controls				
24		21,199	4,240	1,938,227	
	American			0	
25	Express billing	20,141	3,223	1,432,238	
	M1 Abrams				
-	battle tank				
26	operations	19,569	3,131	1,789,133	
~-	Apple I Phone v6		0	(
27	oprations IRS income tax	19,366	2,518	516,432	
28	analysis	10.010	a		
28		19,013	2,472	1,352,068	
20	Cruise ship	10.000	a 1=(
29	navigation MRI medical	18,896	2,456	1,343,713	
20		-0 -0-			
30	imaging	18,785	2,442	1,335,837	
24	Google search	.0.6			
31	engine	18,640	2,423	1,192,958	
22	Amazon web site	10 000		100 100	
32	State wide child	18,080	2,350	482,126	
00			0.001		
33	support	17,850	2,321	952,000	
34	Linux	17,505	2,276	700,205	
	FEDEX shipping				
35	controls	17,378	2,259	926,802	
- 1	Tomahawk				
36	cruise missile	17,311	2,250	1,582,694	
	Deserve				
07	Denver Airport		6 · ((
37	luggage (original)	17,002	2,166	1,554,497	
-0	Inventory				
38	management	16,661	2,111	1,332,869	
	EBAY				
	transaction				
39	controls	16,390	2,110	1,498,554	

	Patriot missile				
40	controls	16,239	2,001	1,484,683	
1.	IBM IMS data	10,209	2,001	1,707,005	
41	base	15,392	1,939	1,407,279	
	Toyota robotic				
42	manufacturing	14,912	1,822	3,181,283	
	Android				
43	operating system	14,019	1,749	690,152	
44	Quicken 2015	13,811	1,599	679,939	
	State				
	transportation				
45	ticketing	12,300	1,461	656,000	
	State Motor vehicle				
16	registrations		1 101		
46	registrations	11,240	1,421	599,467	
	Insurance claims				
47	handling	11,033	1,354	252,191	
+/	SAS statistical	11,055	1,004	232,191	
48	package	10,927	1,349	999,065	
•	Oracle CRM	-) / 1	,017	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
49	Features	10,491	836	745,995	
50	DNA Analysis	10,380	808	511,017	
	EZPass vehicle	- 10		0 //	
51	controls	4,751	594	253,400	
	Cat scan medical				
52	device	4,575	585	244,000	
	Chinese				
53	submarine sonar	4,500	522	197,500	
	Microsoft Excel				
54	2007 Oitigene her her	4,429	516	404,914	
	Citizens bank on- line		(
55		4,017	655	367,224	
56	MapQuest	3,969	493	254,006	

	Bank ATM				
57	controls	3,917	571	208,927	
5/	NVIDIA graphics	3,91/	3/1	200,92/	
58	card	3,793	464	151,709	
	Lasik surgery	3,/93	404	151,/09	
59	(wave guide)	3,625	456	178,484	
	Sun D-Trace	3,025	456	1/0,404	
60	utility	2 505	400	373,832	
00	Microsoft	3,505	430	3/3,032	
61	Outlook	0.450	416		
01	Microsoft Word	3,450	410	157,714	
62	2007	0.000	388	176 501	
02	2007	3,309	300	176,501	
63	Adobe Illustrator	2,507	280	178,250	
03	SpySweeper	2,50/	200	1/0,250	
64	antispyware	0.007	074	109,647	
04	Norton anti-virus	2,227	274	109,04/	
65	software	0.151	060	150.040	
05	Microsoft Project	2,151	369	152,942	
66	2007	2,108	055	100 757	
00	Microsoft Visual	2,100	255	192,757	
67	Basic	2,068	247	110,300	
0/	All-in-one	2,000	24/	110,300	
68	printer	1,963	231	125,631	
69	AutoCAD				
69	Garmin hand-	1,900	230	121,631	
	helc GPS	. 0-0	a.(0		
70	neic GPS	1,858	218	118,900	
	Intel Math				
	function library	1 - (0			
71	PBX switching	1,768	211	141,405	
70	system	16-0	0.0-		
72	Motorola cell	1,658	207	132,670	
	phone contact				
70	list	1 550	106	144 400	
73	1151	1,579	196	144,403	
74	Seismic analysis	1 = 6 4	10.4	80.000	
74	Seisinic analysis	1,564	194	83,393	

Sidowindon				
	1 518	188	60 720	
	1,507	103	60,347	
	1 402	170	126 428	
	1,492	1/9	130,430	
Mozilla Firefox				
(original)	1,450	174	132,564	
Google Gmail		170		
Digital camera				
controls	1,344	167	286,709	
	1,340	167	71,463	
	1,332	165	53,288	
	1,310	163	119,772	
	1.006	160	-0.000	
	1,300	103	52,232	
	1 285	162	82 242	
	1,205	102	02,245	
JAVA compiler	1,281	162	91,096	
Smart bomb	,			
targeting	1,267	150	67,595	
Wikipedia	1,257	148	67,040	
Casio atomic				
compass, tides	1,250	129	66,667	
			((()-	
	1,250	135	66,667	
	1.948	110	150 605	
	1,240	113	159,095	
Computer BIOS	1.215	111	86.400	
Automobile fuel	-,0			
injection	1,202	109	85,505	
	(original)Google GmailDigital camera controlsIRA account managementIRA account managementConsumer credit reportSun Java compilerAll in one printer driverLaser printer driverJAVA compilerSmart bomb targetingWikipediaCasio atomic watch with compass, tidesCochlear implant (embedded)APAR analysis and routingComputer BIOSAutomobile fuel	missile controls1,518Apple I Pod1,507Property tax assessments1,492assessments1,492Mozilla Firefox (original)1,450Google Gmail1,379Digital camera controls1,344IRA account management1,340Consumer credit report1,332Sun Java compiler1,306All in one printer driver1,306JAVA compiler1,285JAVA compiler1,287Smart bomb targeting1,257Casio atomic watch with compass, tides1,250APAR analysis and routing1,215Automobile fuel1,215	missile controls $1,518$ 188 Apple I Pod $1,507$ 183 Property tax assessments $1,492$ 179 Mozilla Firefox (original) $1,450$ 174 Google Gmail $1,379$ 170 Digital camera controls $1,344$ 167 IRA account management $1,344$ 167 Consumer credit report $1,344$ 167 Sun Java compiler $1,310$ 163 All in one printer driver $1,306$ 163 Laser printer driver $1,281$ 162 Smart bomb targeting $1,267$ 150 Wikipedia $1,257$ 148 Cochlear implant (embedded) $1,250$ 129 Cochlear implant (embedded) $1,248$ 113 APAR analysis and routing $1,215$ 111 Automobile fuel $1,215$ 111	missile controls 1,518 188 60,730 Apple I Pod 1,507 183 80,347 Property tax

	Anti-lock brake				
94	controls	1,185	107	63,186	
95	Ccleaner utility	1,154	103	73,864	
		1,104	105	/3,004	
96	Hearing aid (multi program)	1,142	102	30,448	
97	LogiTech cordless mouse	1,134	96	90,736	
98	Instant messaging	1,093	89	77,705	
99	Twitter (original circa 2009)	1,002	77	53,455	
	Denial of service				
100	virus	866	-	79,197	
	Averages	42,682	6,801	4,250,002	