

Case Example 8:

Software Paperwork

It's somewhat surprising to learn that for military and defense software applications, the costs of producing paper documents is over 55% of the total cost of software production. This is due mainly to the Department of Defense (DoD) standards, which generate enormous quantities of paper documents.

This example shows software documents sizes and costs for defense software using waterfall, commercial software using iterative, and an internal application using Agile. Agile has greatly reduced software paperwork volumes and costs, and for Agile projects, paperwork is only about 11% of total cost. The largest volume of paper for these projects is usually in the form of bug reports.

Example 8: How Software Risk Master (SRM) Evaluates Software Paperwork Costs					
		Java Language for all 3 Cases			
		10,000 function points for all 3 Cases			
		\$10,000 per month for all 3 Cases			
		Industry norms for work hours, unpaid overtime			
		Defense version uses DoD standards			
		2017 is the 30th anniversary of IFPUG function point metrics			
		Defense	Commercial	Internal	
		Waterfall	Iterative	Agile	Agile reduces paper volumes, costs
0	Proposal	675	75	25	
1	Requirements	2,329	815	245	Requirements < 70% complete
2	Architecture	376	132	39	
3	Initial design	2,875	1,006	302	
4	Detail design	5,607	1,962	425	Design < 80% complete
5	Test plans	1,158	405	122	
6	Development Plans	550	193	5	
7	Cost estimates	376	132	39	
8	User manuals	2,313	809	125	
9	HELP text	1,964	687	206	
10	Courses	1,450	508	50	
11	Status reports	1,465	461	270	
12	Change requests	3,500	1,100	1,400	
13	Bug reports	11,740	8,700	6,500	Bug reports #1 in size

	TOTAL	36,378	16,985	9,753	
	% Complete	78.00%	70.00%	35.00%	Agile requirements, design are sparse
	Total Project \$	\$22,000,000	\$15,000,000	\$11,500,000	
	Paperwork \$	\$12,100,000	\$3,450,000	\$1,265,000	
	% of Project \$	55.00%	23.00%	11.00%	Paperwork is #1 cost driver for defense software
	Pages per FP	3.64	1.70	0.98	Military paperwork 3 times larger than civilian
	Paper \$ per FP	\$1,210.00	\$345.00	\$126.50	
	\$ per page	\$332.62	\$203.12	\$129.70	