

**Real Time Simulation:  
Value Kept vs. Money Wasted on IT Projects in the USA  
Background White Paper**

This short white paper is intended to demonstrate the calculations I used to generate the above-noted simulation on my blog, Papercut Edge.

This data is not intended to usurp or poke holes at any of the sources cited here, it's merely an attempt to visualize the horrific overages experienced by IT projects, and hopefully make them a little more relevant to the average person.

Despite repeated warnings from industry experts, there seems to be a marked disinterest in these numbers, and a sense "that doesn't happen at my company".

I started with Roger Sessions white paper, "IT Complexity Crisis". The focus of this report was on the size of IT project budgets.

Measurement	Calculation	Source
Fraction of GDP spent on "Information Communications Technology (ICT)"	6.4%	World Technology and Services Alliance
Fraction of ICT spent on IT	43%	World Technology and Services Alliance
Fraction of IT spent on "At Risk" projects	66%	2009 U.S. Budget
Failure rate of "At Risk" projects	65%	Assumption in white paper
Ratio of indirect to direct costs for failed projects	7.5 : 1	Assumption in white paper

To arrive at his coefficient to predict the cost of annual IT failure, Mr. Sessions does the following calculation:

$$GDP \times 6.4\% \times 43\% \times 66\% \times 65\% \times 7.5 = 8.9\%$$

According to the CIA World Factbook, the 2009 GDP of the United States was \$14,430,000 million. Plugging that number into Sessions' formula results in:

Measurement	Result
US GDP	\$14,430,000 MM
Fraction of GDP spent on IT	\$397,114 MM
Fraction of IT spent on "At Risk" projects	\$262,095 MM
Fraction of IT spent on "Failed" projects	\$170,362 MM
Indirect Costs Associated with Failed Projects	\$1,277,713 MM

My next step was to review the figures from the Standish Group's "2009 Chaos Report". The focus of this report was on the number of IT projects in a year, rather than the size of the budgets. The first problem is to make sure we're comparing apples to apples.

The Chaos Report found the following:

Measurement	Finding
Fraction of all projects that were "successful"	32%
Fraction of all projects that were "challenged"	44%
Fraction of all projects that "failed"	24%
Average cost overrun for all projects	45%
Average time overrun for all projects	63%
Average functionality delivered	67%

Because the number of projects does not necessarily represent the number of dollars spent on them, it's important to make a few assumptions about the data in question.

**Assumption 1:** Sessions' definition of "At Risk" includes Standish's definition of both "Challenged" projects and "Failed" projects, but does not include Standish's definition of "Successful" projects.

Therefore the money spent on "At Risk" projects should equal the sum of the money spent on "Challenged" and "Failed" projects.

According to Standish, 44% (percent of "Challenged" projects) + 24% (percent of "Failed" projects) = 68%.

Sessions cites the 2009 U.S. Budget, saying that 66% of IT expenditures are spent on "At Risk".

I split the difference and called it 67% (\$266,066 MM).

*That means that 33% of the IT budget was spent on "Successful" projects according to this assumption (\$87,802 MM).*

**Assumption 2:** Sessions' definition of "Failed" is inclusive of some "Challenged". He assumed that 65% the "At Risk" projects would fail. He also felt that in comparison to the Chaos Report his estimates were conservative. However, he mistakenly called Standish's "Failed" figure 68% (which was "Challenged" + "Failed").

To ensure we're comparing apples to apples as much possible, I replaced Sessions' 43% (65% x 66%) that represents "Failed" projects with Standish's 24%.

**Assumption 3:** Sessions' logic allows Standish's "Failed" projects ratio to be used against the budget. By comparing his 43% to Standish's 68% he suggests he's being conservative. If his estimate was mistaken (Assumption 2), then 24% of the total IT budget can account for "Failed" projects.

*By that logic, \$397,114 MM x 24% = \$63,856 MM spent on "Failed" projects.*

*That leaves \$397,114 - \$87,802 MM - \$63,856 MM = \$245,456 MM spent on "Challenged" projects.*

**Assumption 4:** We still need to apply Sessions' indirect costs' ratio to the newly calculated cost of "Failed" projects. I also subtracted the direct cost of "Failed" projects from that result, to avoid double counting.

$$(7.5 \times \$63,856) - \$63,856 = \$415,064$$

**Assumption 5:** According to Standish's results, on "Challenged" projects, the receiving organization got 67% of expected functionality, and overran their budgets by 45% on average.

To calculate the baseline cost of "Challenged" projects then,

$$\$245,456 \text{ MM} \times (1 / (1 + 45\%)) = \$169,280 \text{ MM}$$

That leaves \$76,176 MM to the cost overruns.

To calculate the retained value of "Challenged" projects,

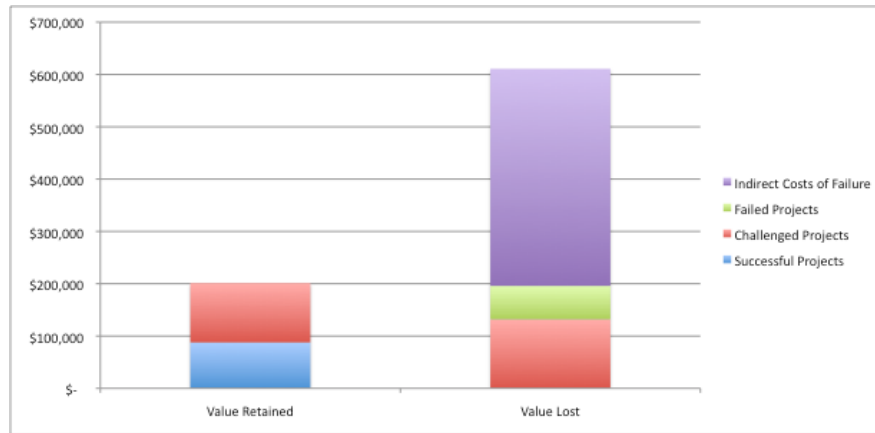
$$\$169,280 \text{ MM} \times 67\% = \$113,418 \text{ MM of project value retained}$$

$$\$245,456 \text{ MM} - \$113,418 \text{ MM} = \$132,038 \text{ MM of work wasted}$$

After all of the foregoing calculations, I arrived at the following table that I used in the simulation:

	<b>Total Cost (millions)</b>	<b>Cost per Day (millions)</b>	<b>Cost per Hour (millions)</b>	<b>Cost per Minute (dollars)</b>	<b>Cost per Second (dollars)</b>
Total Money Spent on IT in the USA:	\$397,114	\$1,088	\$45	\$755,543	\$12,592
Value Retained from Successful Projects:	\$87,802	\$241	\$10	\$167,051	\$2,784
Value Retained from Challenged Projects:	\$113,418	\$311	\$13	\$215,787	\$3,596
Value Lost on Challenged Projects:	\$132,038	\$362	\$15	\$251,215	\$4,187
Money Wasted on Failed Projects:	\$63,856	\$175	\$7	\$121,491	\$2,025
Indirect Costs of Failed Projects:	\$415,063	\$1,137	\$47	\$789,694	\$13,162

Proportions are in the following graph:



I find it interesting that the approximate proportion of value retained is very close to that of the value lost at the same time. It's the indirect costs, of course, that blow the value lost out of the water.