In Defense of PERT-PLUS[1]

Dr. Kenneth F. Smith, PMP

In his otherwise excellent hard-hitting January PMWJ article[2] Dr. Paul Giammalvo advocates readers to STOP USING PERT: the standard "PERT" formula **te = (Opt + 4ML + Pess) / 6** to estimate "**Most Likely**" and subsequently-calculated "*Earliest Expected*" times for planning and scheduling activity & project duration; as PERT does not meet the 5 attributes of the Scientific Method, since there are no results that show its successful application.

While it may be *'nothing more than an unsubstantiated marketing claim'*, I maintain the **fundamental flaw with PERT *is not the formula***, but rather **its misapplication by those using it**; as -- *by definition* **-- the resultant t_e is merely a weighted average**. Hence, from the outset, the probability for completing individual activities, as well as the overall project, ***when scheduled by the 'earliest expected time' is only 50%*** -- no better than tossing a coin! *[Indeed, using the PERT formula is even worse than playing Russian Roulette (RR) where the probability of success (surviving) is 83%, and the probability of being killed "only" 17% (i.e. 1 chance in 6).]*

While as yet unproven in practice, my prescription to preclude the inevitable outcome from PERT misapplication is for planners to **add two estimated standard deviations** to their PERT estimates for a more **"Realistic" time (t_r);** thereby *increasing the probability of a successful outcome to 95*%.

I developed an Excel template – Figure 1 on the following page -- to 'crunch the numbers', and also facilitate the 'negotiating' process for planners by demonstrating the unlikelihood of attaining any other 'top down-desired' or imposed deadlines for project activities. However, not being 'all-powerful', if "Top Management" (or the Client) still insist on their deadline or the PERT estimated **te**, I suggest you ask them to acknowledge the data and accept responsibility for whatever related probabilities they choose to use.

Nevertheless, since PERT-Plus does not yet meet all the classic criteria of a "Best Practice" as outlined by Dr. G, inspired by his diligence and persistence -- *and with his help* -- I am taking a deep dive into the details to learn more about Monte Carlo as a possible alternative to PERT-Plus; or perhaps an even Better Practice for future project management practitioners.

I'll update you on the findings in a future letter to the editor.

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[1] How to cite this work: Smith, K.F. (2026). In Defense of PERT-PLUS. *PM World Journal*, Vol. XV, Issue II, February

[2] Giammalvo, P. D. (2026). What Do We Do AFTER Calculating Our Average Costs or Durations? *PM World Journal*, Vol. XV, Issue I, January

*PM World **Journal*** (ISSN: 2330-4480)
Vol. XIV, Issue II – February 2026
www.pmworldjournal.com

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by Dr. Kenneth F. Smith
Letter to the Editor

FIGURE 1

ESTIMATING ACTIVITY DURATIONS FOR PLANNING & SCHEDULING
UNDER CONDITIONS OF UNCERTAINTY

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NOTE: The Probability of SURVIVING Russian Roulette is 83% !

Activity ID	OPTIMISTIC (O) BEST CASE	MOST LIKELY (ML) TIME	PESSIMISTIC (P) WORST CASE	EXPECTED DURATION	REALISTIC DURATION	YOU WANT IT *WHEN?!*	%	XPERT DURATION
1	7	10	20	11.17	15.50	7	3%	17.06
2	7	10	20	11.17	15.50	8	7%	17.06
3	7	10	20	11.17	15.50	9	16%	17.06
4	7	10	20	11.17	15.50	10	29%	17.06
5	7	10	20	11.17	15.50	11	47%	17.06
6	7	10	20	11.17	15.50	12	65%	17.06
7	7	10	20	11.17	15.50	13	80%	17.06
8	7	10	20	11.17	15.50	14	90%	17.06
9	7	10	20	11.17	15.50	15	96%	17.06
10	7	10	20	11.17	15.50	16	99%	17.06
11	7	10	20	11.17	15.50	17	100%	17.06
12	7	10	20	11.17	15.50	18	100%	17.06
13	7	10	20	11.17	15.50	19	100%	17.06
14	7	10	20	11.17	15.50	20	100%	17.06

Column headers (upper section):

THE PERT FORMULA — (Opt + 4 ML + Pess) / 6

ENTER Activity Optimistic, Most Likely & Pessimistic Time Estimates (for up to 400 Activities) in the YELLOW Cells Below. NEXT, ENTER YOUR DESIRABLE DURATION (by 'trial & error') in the YELLOW Cells at the right to see the Probability of completing an Activity in the time YOU WANT, compared to other formulas.

PERT's Expected Duration is ONLY a 50% PROBABILITY of Completing the Activity On-Time

Dr. Ken's REALISTIC FORMULA — PERT + 2ESDs* = 95.44% PROBABILITY of On-Time Completion *where 1ESD = (Pess - Opt)/6

Successful Scheduling Is the Art of reconciling the Possible with the Probable; the Desirable with the Doable.

Your Client's, Your Boss's, or *Your* DEADLINE

% Probability of being completed when you want it. [Rounded]

Crispin Piney's Formula — PERT + 2((P-PERT)/3) Includes Buffer for "Unknown Unknowns" 99%

I hope this is useful to some readers.

Best regards,

Dr. Ken Smith

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