

Quick Start Guide for **Statistical PERT® Bootstrap Edition Version 1.0**

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Statistical PERT[®] Bootstrap Edition *Quick Start Guide for Version 1.0.1* © 2021, William W. Davis, MSPM, PMP

Quick Start for using a Statistical PERT® Bootstrap Edition Excel spreadsheet

Using a Statistical PERT[®] spreadsheet is easy! First, <u>download the *Statistical PERT® Bootstrap Edition* example workbook for Microsoft Excel</u>, and then use this *Quick Start* to understand the basics behind using and modifying your SPERT[®] spreadsheet.

This Quick Start was created from the Version 1.0 Statistical PERT® Bootstrap Edition example workbook.

Before you download any *Statistical PERT®* example workbooks or templates from https://www.statisticalpert.com, be sure you have Microsoft Excel installed on your computer. You must be running Microsoft Excel 2010, Excel 2013, Excel 2016, Excel 2019 or Microsoft 365 (*your best experience will be with Excel 2016 or later*). Statistical PERT is not compatible with Excel Online, Google Sheets, or other spreadsheet software programs. Also, Excel 2013 and older cannot display histogram charts included in some SPERT® spreadsheets.

When you first open a downloaded SPERT file from the Internet, the spreadsheet opens to the **Welcome!** tab. Excel may prompt you with a Protected View notice. To use Statistical PERT, you must press the **Enable Editing** button. (You can run your computer's virus-scanner, firstly, if you wish).

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Using the SPERT® Bootstrap Scrum worksheet

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1	1 Statistical PERT [®] (SPERT [®]) Bootstrap Edition Bootstrap Scrum										
2							Total	To-Do &			
4	ID	Iteration	Finish Dates	Capacity	Product Backlog	"Done"	"Done"	All "Done"	Number of iterations to forecas	16	
5	1	1	3/8/2022		552	47	47	552	Iteration duratior	2	weeks
6	2	2	3/22/2022		505	26	73	552	Total Product Backlog	690	(To-do, doing, done)
7	3	3	4/5/2022		479	39	112	552	Start From date	6/14/2022	
8	4	4	4/19/2022		440	21	133	552	Finish By date	1/24/2023	
9	5	5	5/3/2022		419	39	172	552	Percentile Rank	48.2%	
10	6	6	5/17/2022		380	15	187	552	Instructions:		
11	7	7	5/31/2022		365	29	216	552	1) Enter your iteration Finish Dates	for every comp	eted iteration in
12	8	8	6/14/2022		365	24	240	581	column C (column B is optional). T	hen, add future i	iteration finish dates
13	9	9	6/28/2022		375			615	(in column C) to match your foreca	st time horizon.	
14	10	10	7/12/2022		385			625			
15	11	11	7/26/2022		395			635	2) For each completed iteration, en	nter the amount	of work "Done" in
16	12	12	8/9/2022		405			645	column F, then, re-calculate the an	nount of work le	ft to-do on the Total
17	13	13	8/23/2022		415			655	Product Backlog and enter it in col	umn E (next row	down).
18	14	14	9/6/2022		425			665	After a few completed iterations	versing the Ellin	- ForecastIM
19	15	15	9/20/2022		430			670	chart which tracks the work done	each iteration ar	nd creates forecast
20	16	16	10/4/2022		435			675	lines showing a confidence interva	for the most pr	obable outcome (the
21	17	17	10/18/2022		440			680	average outcome) plus the feasible	e region for near	ly all other, possible
22	18	18	11/1/2022		445			685	outcomes.	0	, , , , , , , , , , , , , , , , , , , ,
23	19	19	11/15/2022		450			690			

This worksheet will calculate a probable *Finish By* date based upon the amount work on the **Product Backlog**, the rate at which work is **"Done"**, and the number **Iterations** that are included in the forecast. This worksheet uses bootstrap simulation to calculate finish dates with different likelihoods of success.

In the example above, there is a **48.2%** chance that all the remaining work of the **Product Backlog** (450 story points in cell C23) will be finished within the next 16 iterations (*Finish By* date of January 24, 2023).

<u>A Closer Look:</u> A Scrum Team completed their first sprint on March 8, 2022. The team works in 2-week sprints and use story point estimates to size their work efforts. This example forecast includes 36 iteration finish dates between March 8, 2022 and July 11, 2023 (note: the screenshot above only shows the first 19

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iteration finish dates). The Scrum Team has finished eight sprints and has logged how much work they got "**Done**" in column F. Each time they complete a sprint, they log what was done for that sprint in column F and recalculate how much work is left to do in the **Product Backlog** so they can enter that in column E.

Since the Scrum Team finished their 8th sprint (which ended on June 14, 2022), they entered how much work they got done for the just-completed sprint in cell F12 (24 story points), recalculated how much work is left on their Product Backlog, and entered that amount in cell E13 (375 story points). Note that when they began working together, the Product Backlog initially had 552 units of work (cell E5).

In column F, the Scrum team has recorded how much work they completed over eight iterations. The **Total "Done"** work is calculated in column H. The remaining work in the **Product Backlog** to complete in future iterations is tracked in column E. The example shows an option of showing *expected* Product Backlog growth over time (cells E13:E23); the alternative approach is to enter what's remaining in the Product Backlog (cell E13) <u>without</u> showing the expected growth of the Product Backlog over time (to do that, just leave cells E14:E23 blank).

Now, press F9 to recalculate the spreadsheet formulas and then start experimenting with different forecast horizon lengths in cell L5.

When you choose a forecast horizon length *that results in some likelihood of completing all the work of the Product Backlog*, then a percentile between 0% and 100% will appear in cell L9. When a percentile is displayed in cell L9, it is the percentile of 1000 simulated trials where the <u>entire</u> Product Backlog was finished by the *Finish By* date in cell L8. The *Finish By* date is automatically calculated for you based upon the integer value you entered in cell L5 that indicates your forecast time horizon.

The shorter your forecast horizon length is (and the smaller the value in cell L5), the fewer simulated trials will have completed all the work of the Product Backlog and the smaller the percentile will be in cell L9. Conversely, the longer your forecast horizon length is (and the larger the value in cell L5), the more simulated trials will have completed all the work of the Product Backlog and the larger the percentile will be in cell L9.

To calculate a probabilistic finish date for the remaining work in the Product Backlog, first examine right-side of the worksheet to find table cells which are highlighted in magenta. This table data identifies five different probabilistic finish dates using the simulated data in the *BootstrapData* worksheet:

- 10% this is a highly optimistic forecast that uses the normal distribution and historical data to obtain a bootstrapped mean and standard deviation
- Optimistic this shows an optimistic (5th percentile) where 95% of finish dates will be *after* this optimistic forecast
- Expected this shows the most likely (50th percentile) calculation where finishing by this finish date has a 50/50 chance of occurring
- Conservative this shows a conservative (95th percentile) where 95% of finish dates will be *before* this conservative forecast
- 90% this is a highly conservative forecast that that uses the normal distribution and historical data to obtain a bootstrapped mean and standard deviation

Using the SPERT® Bootstrap Kanban worksheet

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1	1 Statistical PERT® (SPERT®) Bootstrap Edition Bootstrap Kanban									
2 By Nov										
4	ID	Period	Finish Dates	Capacity	"Done"	Current Backlog 375 Total Product = 615	Likelihood	we'll complete at least		
5	1	1	7/12/2022		47	Number of time periods to forecast 13	95%	329		
6	2	2	7/19/2022		26	Time period duration 1 weeks	90%	343		
7	3	3	7/26/2022		39	Start From date 8/30/2022	85%	352		
8	4	4	8/2/2022		21	Finish By date 11/29/2022	80%	359		
9	5	5	8/9/2022		39	Percentile Rank 65.0%	75%	365		
10	6	6	8/16/2022		15	Instructions:	70%	370		
11	7	7	8/23/2022		29	1) Enter your iteration <i>Einish Dates</i> for every completed iteration in	65%	374		
12	8	8	8/30/2022		24	column C <i>(column B is optional).</i> Then, add future iteration finish dates	60%	379		
13	9	9	9/6/2022			(in column C) to match your forecast time horizon.	55%	383		
14	10	10	9/13/2022				50%	388		
15	11	11	9/20/2022			2) For each completed time period, enter the amount of work "Done" in	45%	393		
16	12	12	9/27/2022			column E, then, re-calculate the amount of work left to-do on the	40%	397		
17	13	13	10/4/2022			Current Backlog and enter it in cell I4.	35%	403		
18	14	14	10/11/2022				30%	408		
19	15	15	10/18/2022			After a few completed time periods, examine the 5-Line Forecast™	25%	414		
20	16	16	10/25/2022			chart, which tracks the work done each time period and creates forecast	20%	420		
21	17	17	11/1/2022			lines snowing a confidence interval for the most probable outcome (the	15%	427		
22	18	18	11/8/2022			outcomes	10%	435		
23	19	19	11/15/2022			outcomes.	5%	449		

The Bootstrap Kanban worksheet works very similarly to the Bootstrap Scrum worksheet. The primary difference is that this worksheet does not track the rising and falling Product Backlog line over time; instead, it's just a horizontal line showing the sum of all **"Done"** work (column E) and remaining work left to do (cell I4). Otherwise, this worksheet performs very similarly in the way you create a forecast for a Scrum Team.

Note: Although many Kanban teams track their completed work items *daily*, this forecasting model is intended to work with *weekly* time intervals or greater. Teams that track completed *daily* work items can simply sum their *daily* totals to arrive at a *weekly* totals for this forecasting model.

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Using the SPERT® Vlookups worksheet

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227				Team C	apacity v	alues		
228	0% =	team will	not work	this itera	ation		0%	
229	20% = capacity reduced by 80% 20%							
230	30% = capacity reduced by 70% 30%							
231	40% = capacity reduced by 40% 40%							
232	50% = capacity reduced by 50% 50%							
233	60% = capacity reduced by 40% 60%							
234	70% =	= capacity	reduced	by 30%			70%	
235	80% = capacity reduced by 20% 80%							

For the most part, you will not need to modify the lookup values in the Vlookups worksheet. Most of the lookup tables are used to dynamically control how much simulated data to use during the bootstrapping simulation process.

There is one lookup value you might choose to modify: the **Team Capacity** values. In this table, you can choose different team capacity values to indicate reduced team capacity, as shown in the example above. Another option is to indicate *increased* team capacity where the existing team capacity might be greater than 100%—this this might occur if a team scales upward to include new team members and/or new teams working on the same product backlog. Values in column B are used for the Team Capacity lookup in the Bootstrap Scrum and Bootstrap Kanban worksheets. Explanatory notes in column A are informational only and not used in any VLOOKUP functions.

Get More Information on Statistical PERT®

There are many ways to get more information about Statistical PERT. Visit the Statistical PERT website at https://www.statisticalpert.com and click on the Learn More tab to get more information about Statistical PERT. Also, click on the News & Blog tab to get access to blogs and new information about Statistical PERT.

Have any Questions? Find a Bug? Want to Connect?

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