

Avoid Common Proposal Figure Mistakes

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Including figures in your proposal can be extremely effective in engaging your reviewers, communicating the key concepts of the project you're proposing, and convincing reviewers that your approach is likely to succeed. However, when including figures many PIs fall into common traps that undermine the effectiveness of those figures. When figures are not done well, they not only fail to accomplish their purpose, they can actually become a liability by wasting valuable space and irritating the reviewer. Below is a list of the most common figure mistakes that we often see in proposals.

1. The illegible figure.

This proposal cardinal sin is, unfortunately, extremely common. It comes in two flavors: either, in an effort to meet the page limit, the entire figure has been shrunk down to the point that the reader cannot discern the important features of the figure (e.g., Figure 1), or only the text in the figure (such as axis labels in a graph, feature labels in a micrograph, or text in a flow chart) is so small that it is illegible (e.g., Figure 2). Usually, this problem is caused by taking a figure that was originally published in a larger form such as a journal article or PowerPoint slide, and simply reducing its size to fit into a proposal. To avoid this, decide in advance how large your figure will be, and then **redraw your figure** so that all important features are legible at that size. This may be as simple as increasing the fonts of your axis labels, or you may need to reduce the number of your figures or cut text so that your figure is large enough to be effective. If you're using a large screen, keep in mind that your reviewer may be reading your proposal on a small laptop, or she may print it out to read. Make sure you evaluate your figure without the zoom feature on.

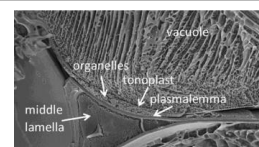


Figure 1. By making this figure so tiny, the important features are difficult to decipher.

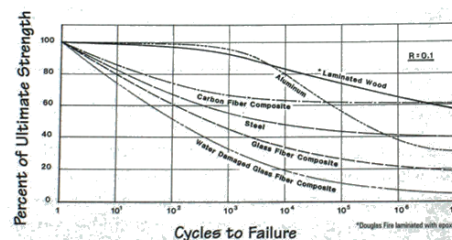
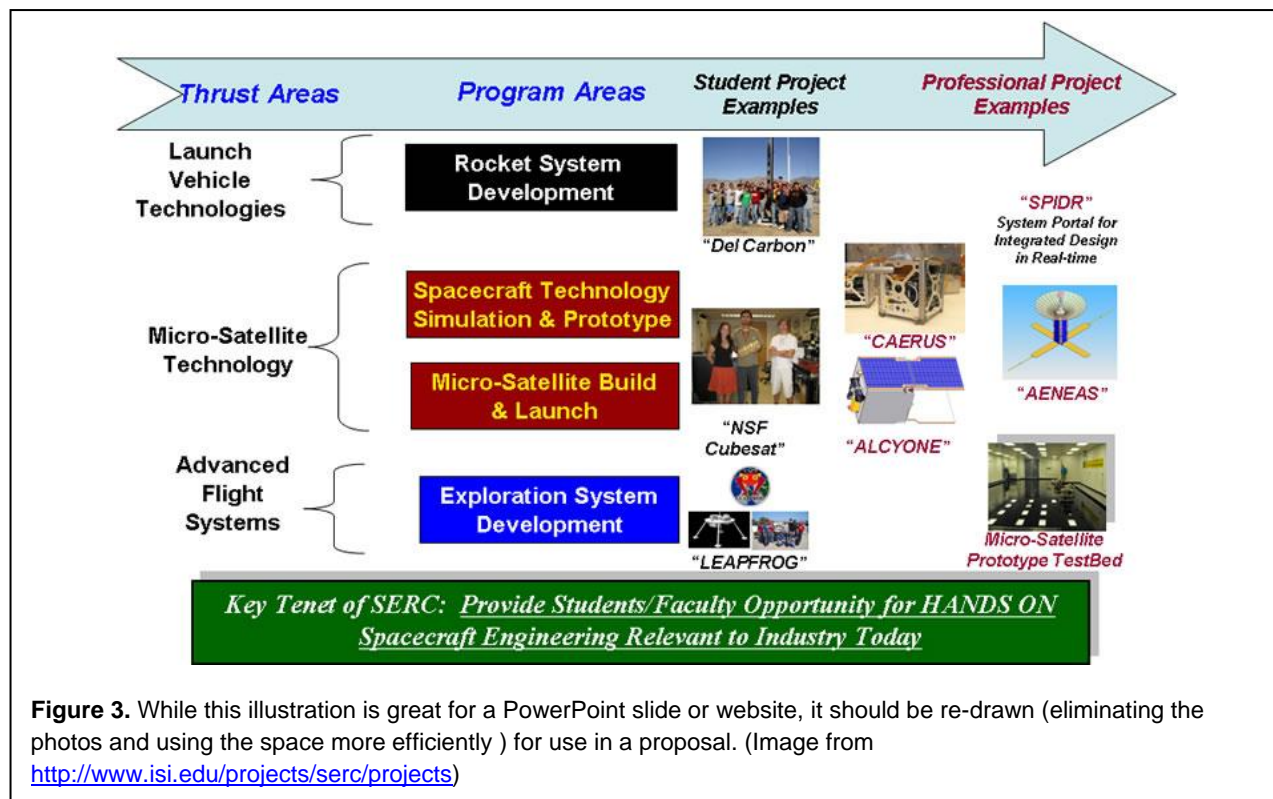


Figure 2. It's easy to see the trends of the plot lines, but that's meaningless when the reader can't read the labels for each line or the axis units.

2. The too-large figure.

This would seem to be the opposite mistake compared to mistake 1 above, but the cause is often the same: the PI took a PowerPoint slide and converted it directly into a figure without reformatting it (e.g., Figure 3). While a PowerPoint slide takes up an entire screen and can include lots of white space, taking up a third or half a page in a proposal with one figure is not only a waste of precious space, it can also convey to the reviewer that you don't have enough to say and are padding your proposal.

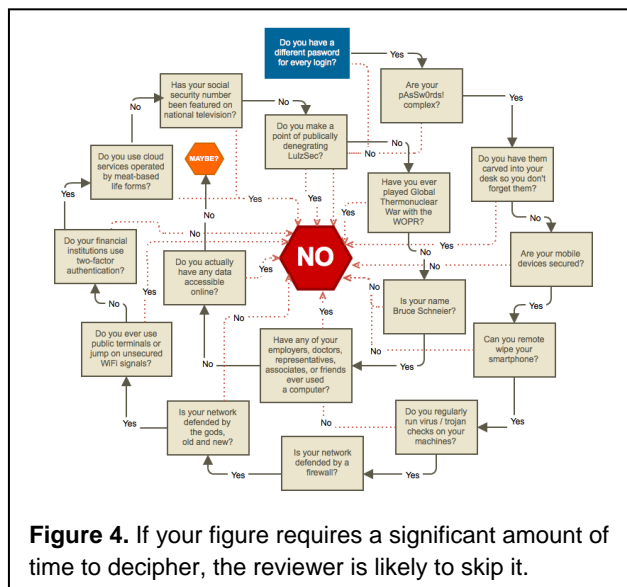


3. The too-complex figure.

While figures are a great way to communicate complex ideas and non-linear relationships, if your figure is so complex that the reviewer will need to spend time trying to decipher it, you have defeated the purpose of the figure. A figure should be easily and quickly understandable and should draw the reader's eye. If your figure includes, for example a spaghetti bowl of lines and arrows (Figure 4), the reader will actively avoid looking at the figure – the opposite of what you're trying to accomplish.

4. The "fluff" figure.

While it's a good idea to include figures in your proposal not only to communicate complex concepts more effectively, but also to make your proposal more reader-friendly, these figures should communicate something substantive. A figure that is included solely for eye appeal (e.g., Figure 5) will irritate your reviewers and, particularly for technical proposals, give the impression that your project is "light weight."



5. The unexplained figure.

The principal that you should never force your reviewer to think applies to figures as well to your text. If you include a figure in your proposal, you should be very clear about what you are trying to communicate with that figure, and you should explicitly state that in your text and in your figure caption. So, instead of saying in your text, “Figure 6 shows the test results.” You should say, for example, “Figure 6 shows that the tensile strength was doubled by incorporating nanoparticles.” The same holds for figure captions. Ideally, all figure captions should include a verb, as in “The test results show that...” or “The viability of our approach is illustrated by the above results...”



Figure 5. *The proposed project has the potential to increase the efficiency of solar cells by 15%.*

[While pretty, this figure is not communicating anything substantive and not only wastes space, but gives the impression that the PI doesn't have serious ideas to convey.]

6. The low-resolution figure.

It is surprising how many proposals written by PIs who are highly qualified scientist and engineers include blurry, low-quality figures. Poor-quality figures create an unfavorable impression of the PI's competence and rigor. One cause for these poor-quality figures is that in older versions of PowerPoint, you could save a slide as a graphics file (.png, .jpg, etc.) with acceptable resolution. However, for reasons known only to Microsoft, more recent versions of PowerPoint result in low resolution figures when you save a slide as a graphic file. To change the export resolution for PowerPoint, you have to go into the registry. You can find instructions [here](#). If you're not comfortable going into the registry (which can go horribly wrong if you do it incorrectly), enlist your IT support or a computer-savvy colleague to help you with this. Once it's done, you won't have to do it again unless you change your software. You might also look for a student (perhaps one of your graduate students or even an undergraduate worker) who is skilled with Photoshop or other graphics programs. Many high schools now have courses in computer graphics, so you may find that the students coming into your programs are more skilled in computer graphics than you are and can help you generate nice looking graphics for your proposal figures.

Figures can be extremely valuable additions to your proposal. Avoid these mistakes to maximize their effectiveness.