ASK THE EXPERTS

Writing Suggestions for Engineers

Engineers are notoriously fearful of writing. We get regular requests from first-time authors for help getting their ideas into a usable form. We also get occasional inquiries from companies, looking for suggestions to encourage their engineering staff to write. Here are our comments and suggestions on this subject:

Why Write?

In academia, we know that "publish or perish" is the rule, but how does "getting published" fit into an engineer's work? There are two main reasons for writing an article or paper: 1) It can enhance your career by establishing you as an expert in your area of specialization and 2) it can enhance the credibility of your employer by showing off the knowledge of engineers on the company's staff. Many employers encourage writing with bonus payments, even awards banquets.

Be sure you understand your company's policies about publishing! You will not be allowed to disclose proprietary information, and in some cases, you may not even be able to discuss active projects. These restrictions may prevent you from contributing to a peer-reviewed journal, but you may be permitted to publish technical tutorials or technology overviews in magazines and online journals.

Where Should You Submit Your Writing?

The intended audience will determine how you write a particular piece, so we'll cover these options next. The major places that accept engineering papers and articles are:

Peer-reviewed journals—Journals of the IEEE and other engineering organizations are major contributors to the exchange of state-of-the-art knowledge. Contributions to these journals is dominated by professors and PhD candidates who are doing research that is intended to be new and original. However, there are plenty of industry contributors to these journals, from companies that have decided it is important to show their research capabilities.

Technical conference papers—This is probably the most common place for publication (and oral presentation) by engineers. The standards for technical depth vary quite a bit. Most technical program committees understand that you may not be able to divulge proprietary information, but they will want a paper with substance—more than a broad overview and summary of results.

Professional magazine articles—Our editors, and our publishing colleagues, are interested in many different types of articles. In general, we all want material that relates to current engineering activity. Some magazines are news oriented and want to present the business ramifications of your work, while others may have a main focus on leading-edge technology or product-related information. *High Frequency Electronics* has a practical focus that includes research, practical design and product information, at all technical levels from basic tutorial to advanced theory.

Online publications are generally similar to print magazines in their preferences for technical content.

Other publications—Other opportunities will be mainly within your company. White papers, application notes, sales support materials and data sheets are part of the publishing process, too. The ability to contribute in these areas may be the best way that writing can enhance your career.

How to Write

Spelling and grammar are beyond the scope of these notes, but here are a few key suggestions:

Start with the abstract—In one or two paragraphs, explain the entire scope of your paper. The process of distilling everything you want to say into this concise summary is an essential part of technical writing. It explains your intentions to others and it helps you adapt your focus from engineering to writing.

Make an outline—Before you try to compose your prose, put all the pertinent information into a list. Organizing the data in outline form makes writing easier by breaking up the job into smaller sections.

Write the introduction—A good introduction will convince others to read your paper. Expand the abstract with notes on why the work was done and why you think it will be useful to them.

Don't try to be a "writer"—You're not writing a spy novel, just a factual presentation of engineering data and techniques. Style is secondary to substance.

Have no fear—Remember, you already write! Your engineering notebook, e-mails, progress reports, data summaries and other routine notes are part of the writing process. Also, it is our experience that even the least experienced writers are pretty good at explaining the core technical content. Writing is much easier when you know the subject well.

Know where to get help—An experienced author in your group and the company marketing department are the most common resources for assistance. A willing friend may fill this role, too. Find your writing help early in the process—simply knowing that there is help available will eliminate much of your anxiety!