

Electronics HW Design Process – Introduction

There are many things a hardware design engineer needs to consider when embarking on a new project. Based on my 25 years of design experience I am creating a series of articles outlining the steps necessary for a design project, beginning with an idea and ending with a complete product. On the way I will add considerations that may or may not be so obvious to all readers.

When I started out back in the mid 90's as an applications engineer, I did not have much design experience and I was lucky to be able to learn the ropes without the pressure of having to deliver a product at the end. I was designing hardware interface adapters and software applications to talk to cameras as well as FPGA code for CCD sensor timing to support customers. My next job, however, required me to up my game and design products that in the end sold in the thousands a year. Luckily, the company had its own manufacturing and with the help of manufacturing, purchasing, and more senior designers I was able to quickly learn what was required to create a successful design.

I noticed today many of us are spread so thin in their work that there is little time for mentoring and supporting the more junior staff. Start-up companies may not have the finances to afford more senior designers. Often, we leave the inexperienced on their own, letting them learn on the job. My hope is, this series of articles will give you a jump on your learning curve. Please note that I write this from the view of a hardware designer, though many of the points I will make are applicable to other specialties withing Engineering.

The series will include the following topics.

- Requirements
- Architecture
- Manufacturing Process and Supply Chain
- Design and Verification
- Production

While there is a certain order in the way I listed the topics, I would advise to read and understand all of them early on. If you for instance end up using a particular contract manufacturer or your design will be manufactured overseas, the manufacturer may have requirements you will need to learn and understand before you put too much effort into the project. The bigger the opportunity in terms of sales volume, the more input others will likely have on your design.

All articles are being made available on <https://www.haraldsiefken.com/resources>