By the Numbers

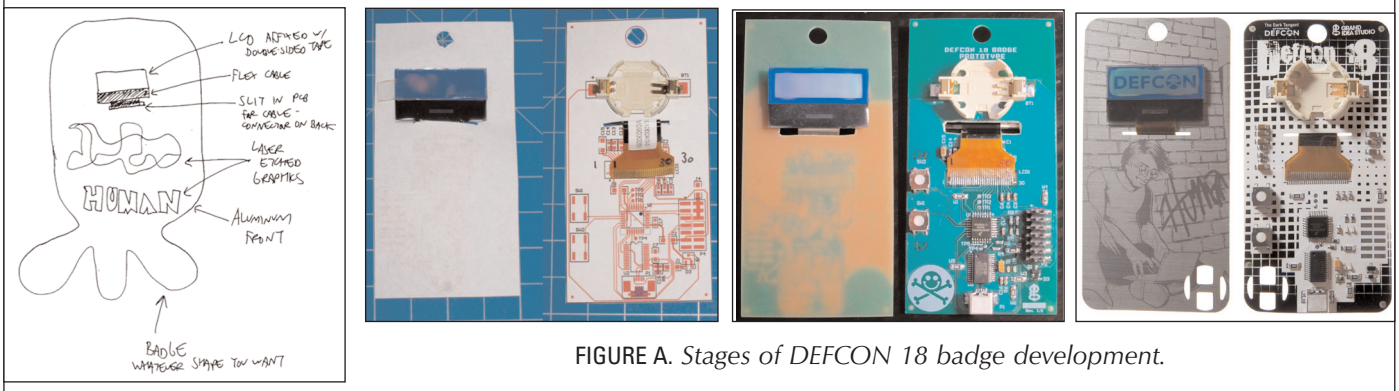

FIGURE A. *Stages of DEFCON 18 badge development.*

All told, the DEFCON 18 badge project took 150 hours spread over seven months.

Initial brainstorming for the project started at the end of 2009. Preliminary hardware design and component selection was completed in January 2010. In February, all low level firmware had been written and I verified that my electronics would function as desired. I ordered production quantities of components in March. By May, the final firmware was done. Badge fabrication, assembly, and test kicked off in June and production badges were shipped on time (for the first time in three years) to DEFCON in July. **Figure A** shows a pictorial of the hardware development process from the initial hand-drawn concept to paper mock-up to prototype to production.

Figure B shows the time dedicated to each aspect of the project. Hardware and firmware development time was split fairly evenly. A large portion of the hardware time was focused on aesthetics, such as evaluating laser engraving options, figuring out how to elegantly mount the LCD on the front side of the board, and hand-routing the board to ensure an efficient single-sided design. The largest portion of the firmware time was spent on the glyph selection/display functionality and implementing the variety of hidden data and features.

A total of 7,780 badges were manufactured:

- Human: 7,000
- Speaker: 200
- Goon: 200
- Press: 180
- Vendor: 100
- Contest: 70
- Uber: 30

The cost per badge was $14.12, making it the most expensive badge in the history of DEFCON, though I personally believe the end result was well worth it. The highest priced line items were the laser engraving ($3.84), LCD ($3.49), and PCB fabrication/assembly/test ($2.79).

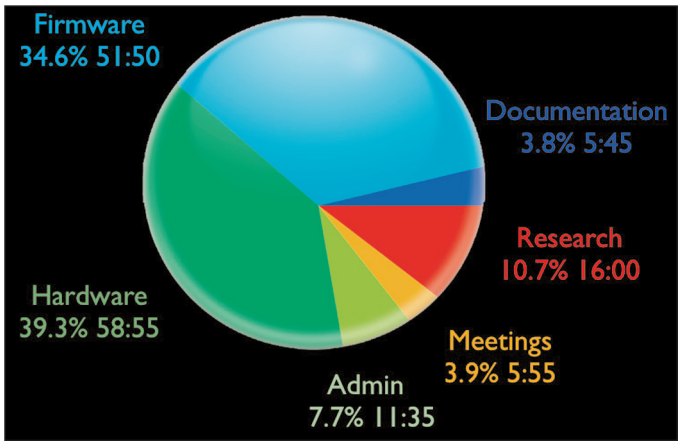

FIGURE B. *Time breakdown of DEFCON 18 badge development.*