



## THE BEACON ENGINEERING CONSORTIUM

A beacon is a device that serves as a goodwill gesture to assist with navigation and to provide a warning sign of impending danger. In a similar way, "the beacon engineering consortium" serves to assist those who are adrift amid a sea of career choices. The consortium provides tangible examples of engineering challenges, opportunities, entrepreneurship, projects and practices to illuminate a pathway of safe passage for students and educators, and for existing and aspiring business owners. The consortium also serves as a warning sign to provide awareness of impending danger of substandard engineering practices and for identifying inappropriate career preparation.

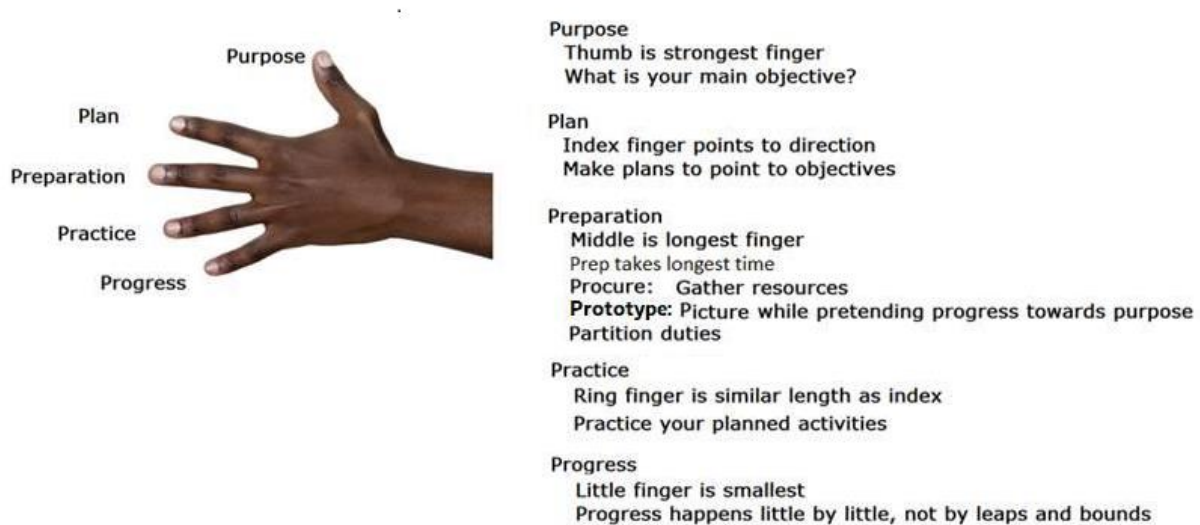
Real-time robot control started as a master's degree project in 1989 and as [computer training class at a tutorial center in Redlands CA in 1995](#). I took this job because I was laid off from [my aerospace job](#) and I needed the extra money. The section on "Robomotion" in the previous link moves a virtual robot with keyboard keystrokes. This evolved to computer mouse control of a virtual robot, then to laser distance meter control of a virtual robot.

In 1989, as part of a master's degree project, I developed [software to control a four-legged robot while walking on level ground](#). I thought of ways to make it walk on uneven ground. Using the laser distance meter for "hand-eye coordination" was the solution. I integrated the laser guided idea for general robot control along with the computer mouse control as part of a patent in 2012. Now, [the concept is being considered at NSF as an alternative to exo-skeleton robot control](#) that now dominates the medical robotics industry.

The exoskeleton is similar to a teacher with a laser pointer in his/her hand. The laser positioner system is like a transit construction tool pointing to the same location.

## Engineering Progress Steps

### Five P's of Progress in Engineering



Five adages are evident from image above:

1. Necessity is the mother of invention (Purpose)
2. If you fail to plan, you plan to fail (Plan)
3. Measure twice, cut once (preparation + opportunity=success)
4. Practice makes progress (as opposed to perfect)
5. Progress happens little by little (See fifth phase below in graphic)

Jerry