

## First Article – First Time

The PCB-assembly industry is constantly changing. Smaller footprints, new types of components and larger and more complex designs are accompanied by constant competitive pressures. As a result, electronics manufacturers need to continuously adapt their processes and make sure they exploit every opportunity for efficiency gains. This is the only way to improve quality and time to market and to increase profitability.

Electronic product life cycles become shorter and shorter. The time between product changes and updates is decreasing. The implication for electronics manufacturers and assembly lines is that their customers demand quicker response time and shorter learning curves in terms of quality and cost. Being able to set up a new or updated product for production quickly and with no errors and associated costs – First time right – is a highly desirable goal.

Most companies today run 2-3 NPI loops or more (depending on PCB complexity). Each loop involves creating and inspecting First Articles prior to the actual SMT process. These loops cost in materials, machine (and human) time and valuable TTM. Manufacturers report \$100-150\$ cost for each loop coming from ~30min of wasted machine time. These costs grow with the amount and frequency of changes and can reach thousands of dollars per month for mid-sized operations in machine time alone, not accounting for materials waste, labor and TTM. Our experience shows that the number of NPI loops can be reduced to one.

**All** of QPlan customers reached a single First Article in all but extreme exceptions. Within a month of deployment our customers are able to report an error rate of close to zero.

Most failures, detected in NPI loops, can be detected and solved during the SMT Setup preparation. QPlan merges all needed information (ECAD, BOM, and SMT Machine Components Library) and uses the data to run a simulation of the SMT placement. It uses geometrical algorithms to automatically identify and correct errors such as deviations, wrong angles etc producing an error free setup for First Articles - reaching First Time Right.

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