

The following technical paper abstract information was recently submitted in connection with session DOD112,Software

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Paper Title: Statistically driven Maintenance Analysis and Reporting Technology S.M.A.R.T

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Abstract: Problem Statement: Lack of experience, poor troubleshooting skills, and inaccurate test equipment recommendations cause DOD technicians to order parts in multiple iterations attempting to correct discrepancies. Parts that have nothing to do with correcting the actual discrepancy are often removed and replaced, due to inaccuracy of methods and technology. Confounding the problem, current system analysis tools treat all parts ordered, whether needed or not, as equally responsible for correcting the deficiency. In fiscal year 2010 alone within just the Naval Aviation Enterprise, \$374 million dollars was spent internally on zero discrepancy repairable items, e.g. no fault detected parts. This figure accounts for less than half of the total items processed and excludes all consumable items (they are simply disposed of and not verified or retested). Due to this inaccuracy, the Navy's first pass yield (i.e. getting it right the first time) for intermediate maintenance is consistently less than 50% resulting in degraded readiness, excessive supply demand, manpower waste, and substantial financial expense. At an Enterprise level, the military cannot afford to continue to operate under these business practices.

System Description: A cloud based application which automatically gleans corrective action recommendations from all existing supply and maintenance databases. The key to this system is the utilization of a failure analysis metric which was developed specifically for this application (The Weighted Degradator). Weighted Degradator Analysis is able to determine probability of repair success regardless of accuracy of troubleshooting. Additionally, the algorithm is self-correcting; ordering the wrong part will degrade the weighted average of that particular part in turn lower it's ranking among other parts in the system. This interface would be available via CAC enabled website, which would be optimized for desktop or mobile application in an industrial environment. It will be designed to scale across the entire DOD with minimal modification.

Presentation: I would demonstrate a potential Augmented Reality (AR) interface using a tablet and circuit card. The details of how the algorithm is unique from all other failure methods will be showcased as well. This was a deck plate developed idea, taken from concept through maturity by a junior Sailor; this story will be showcased as well.