DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

OFFICE OF THE ASSISTANT SECRETARY

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MEMORANDUM FOR THE ACQUISITION WORKFORCE

FROM: SAF/AQ
1060 AF Pentagon
Washington, DC 20330-1060

SUBJECT: Seven Steps for Incorporating Rapid Prototyping into Acquisition

It's been great working with so many of you these past six weeks, especially on innovative approaches to acquisition. Our new authorities provide so many tools to be creative; using them should routinely be our default "fast path".

Given this, I wanted to send out guidelines on how to break a traditional acquisition strategy into a multi-step rapid prototyping and rapid fielding strategy. Using these (and the summary sheet I sent out two weeks ago) should give you new options to aim higher and run faster. I know it takes a leap of faith to do something new, especially when speed and failure have historically been discouraged, but it's time to flip the script. When you have taken a smart risk, busted bureaucracy, or found a faster way to achieve results, email me directly with the subject line: "Celerity!". I want to cheer you on! Speed is a winning strategy: I hope these steps help you achieve it.

Step 1: **Have an aggressive goal:** It starts with having a goal that's over and above your minimum requirements. Or maybe you have a newly discovered opportunity with no requirements. Whether faster delivery, better performance, designing your system for reuse in other programs, or adding multi-domain capability, if something newer/better/riskier unlocks interesting possibilities, yours is a prime candidate for prototyping. Just fill in the statement: "If X goes right, then Y happens much better." X could be a new technology, manufacturing technique, open architecture, or anything that changes the game. In normal acquisition, X is typically too immature to pursue with a traditional strategy because discovery is required to understand it. Prototyping makes discovery your friend, allowing smart risk-taking and design exploration prior to subsequent procurement and fielding decisions. So it's okay to fail here—fully or partially—because subsequent steps provide a safety net. As long as the risk versus reward of pursuing Y makes sense, you're ready for the next step.

Step 2: **Bound your risks:** Does your proposed effort obey the following rule: "If both X1 and X2 go right, then Y happens much better."? If yes, stop—only one X-factor per customer! Though I'm sure there are exceptions, prototyping is at its best when introducing only one new hard thing and laser-focusing on it. (Some of the worst failures in acquisition result from too many concurrent high risks.) If your program contains a significant amount of software, you automatically have an X-factor in agile development. Agile is fundamentally different than "waterfall" development, so traditional estimation techniques (whether cost, fielding, or risk) simply do not apply. So don't sweat it: create an acquisition strategy based on prototyping that culminates in a separate fielding decision. This is covered in the next step.

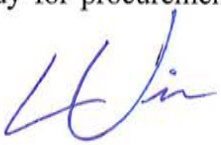
Step 3: **Be aggressive but not greedy:** Your plan should have both your traditional and rapid plans on one slide. You will have a traditional IOC (if X completely fails) and a rapid IOC (if X is completely achieved). Of course, perfection never happens, so the rapid IOC will start sliding to the right. Your job is to degrade gracefully because greed kills speed. To succeed at this, you need to know the components of your traditional plan that are unaffected by the outcomes of prototyping and those obviated by them. The unaffected are just long-leads that should be completed prior to impacting potential procurement and fielding decisions. (An example might be purchasing long-lead hardware for a potential radar procurement when you're also prototyping a new digital backend. The hardware isn't part of your prototype, but if your prototype succeeds, the lack of hardware immediately impacts your procurement schedule. The rule here is to proceed towards fielding assuming success as long as the assumption is reasonable.) Correspondingly, the obviated should be maximally delayed without impacting the schedule, and the obviators, maximally accelerated. This saves cost and starts the transition from the slow to the fast track.

Step 4: **Constrain time and budget, not the final performance:** You must understand mission requirements and metrics but avoid writing down minimum acceptable performance numbers for the prototype if possible. (You'll get no better than them if you do.) When asked "How far?" you reply "As far as possible given the budget and prototyping timeline". Religious devotion to schedule and budget constraints is a must; without it, one rarely make tough calls early enough to make it to the fast track. "Not one day more, not one dollar more" is your motto for finishing a complete partial fast track vice a partial complete fast track. (Read that sentence twice; the subtle difference matters!) It takes discipline to find knees in the curve because they are an optimization vice maximization. Finding them and going fast does not mean going sloppily. Far from it! It takes rigor to be fast: you should be a zealot for independent risk and cost assessments. You'll run out of money if you prioritize the wrong risks; you'll go broke if you underestimate costs. Tailor your acquisition documentation accordingly. Your prototype will end in a Milestone Decision Authority terminating, creating a subsequent prototype, or initiating rapid fielding, so there is no need to worry about the full 5000.2-series burden of proof upfront. The key is common-sense tailoring to the needs of your prototype and potential subsequent procurement, and what's more, you have to think broader than mere acquisition because you're not flying solo. You'll have to adopt radical collaboration to succeed in the next step.

Step 5: **It takes a team to go fast:** As you begin bending metal, the requirements, acquisition, finance, and test plans will be continually impacted. It takes good old-fashioned collaboration to avoid diffusion of purpose. Your "acquirements" come through continual dialog and input from operators, finance, contracts, legal, and test; it's what they need tempered by what you can build/field. Finding a mutually agreeable 80-90% solution is octane for speed. This is the knee in the curve!

Step 6: **Get a signature from me.**

Step 7: **GO FAST:** Keep me in the loop. Get ready for procurement/fielding. Steal time from the enemy.



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