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Opinion: Rethinking Innovation

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Innovation is back in vogue at the [Pentagon](#). In his last major address as Defense secretary, Chuck Hagel announced the Defense Innovation Initiative, challenging the defense enterprise to “pursue innovative ways to sustain and advance our military superiority for the 21st century and improve business operations throughout the department.” Deputy Secretary Robert Work is championing a so-called third offset strategy, which calls for combining advanced technologies with new operating concepts to “maintain and perhaps advance the competitive advantage of America and its military allies” against future military competitors. And Undersecretary Frank Kendall, the Pentagon’s chief acquisition executive, told Congress last month that his signature initiative, the 3.0 iteration of Better Buying Power, marks a “shift in emphasis toward achieving dominant capabilities through innovation and technical excellence.”

Accordingly, the time is right to consider the propensity of the aerospace and defense industry to innovate and the aimpoints on which industry’s response to the Pentagon’s call should be targeted.

On this theme, as in so many others, the editors of *Aviation Week & Space Technology* got ahead of the curve. In 2010, they commissioned from Charles River Associates, where I was director of aerospace and defense consulting, a white paper on innovation in A&D that informed a special issue published that fall. The paper assessed the editors’ concern that aerospace innovation was in decline while the imperatives for it, like those that are today’s impetus for Pentagon leaders’ attention, were growing. The findings and recommendations of this paper remain relevant and are worth reciting.

Our key finding was that the state of innovation in A&D is not in crisis; instead, it is undergoing a transformation that requires detachment from the iconic style of aerospace’s 20th century achievements and reformation around a collection of practices better suited to the 21st century reality of customers, commerce and capital.

We dubbed these practices a “new game of innovation” played by a set of rules that deviate from proud traditions of the industry’s achievements:

- An obsession with exquisite performance outputs—the drive to build systems to a higher-faster-farther paradigm—must make room for better-quicker-cheaper solutions that achieve breakthrough outcomes by a clever combination of incremental technical advances and business-process changes so inexpensive and compelling that they suppress customary constraints and requirements.
- The challenge of modern large-complex programs demands a new generation of system engineering tools that can tame software-infused complexity and displace reflexive risk-aversion with authentic risk-awareness.
- Inducing private capital to finance 21st century aerospace innovations requires customers to enhance transparency and reward breakthroughs more richly, companies to embrace the intrinsic value in long-run discounted cash flows over short-run accounting profit, and investors to recognize the technological dynamism that underlies this putative “industrial” sector.
- Finally, misconceptions about the hothouse character of legendary design and development labs must yield to modern models of how enterprises deliberately organize to sustain the momentum of innovative progress through openness and collaboration infused by a younger, more diverse workforce.

Rest assured, many of our industry’s leaders plainly get this. For example, in a recent speech to the Air Force Association, Chris Chadwick, head of [Boeing](#) Defense, Space & Security, cautioned that we cannot “invent our way to the future,” but instead must reformulate technology into “things that customers can use in unique ways to create better and sustainable value—providing innovation

beyond just the technology itself.” While honoring the industry’s legacy of innovative achievement, Chadwick commended Apple and Uber as companies now modeling a style of innovation from which A&D should take a lesson.

Ironically, then, the contemporary problem of innovating in A&D is not primarily technical but what Harvard University’s Ron Heifetz calls an adaptive challenge, which involves organizational learning and individual change more than authoritative expertise. To be sure, inspired science and engineering will be needed to achieve 21st century innovations. Moreover, we can welcome the increased government spending on innovation-targeted R&D that was unveiled this week in the president’s budget request for fiscal 2016. Money and engineers certainly count, but what will differentiate companies confronting this adaptive challenge will be the quality of leadership to engage talent that excels at new rules of the A&D innovation game.

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