The **Fast** Follower

Coming Up Behind Development Leaders

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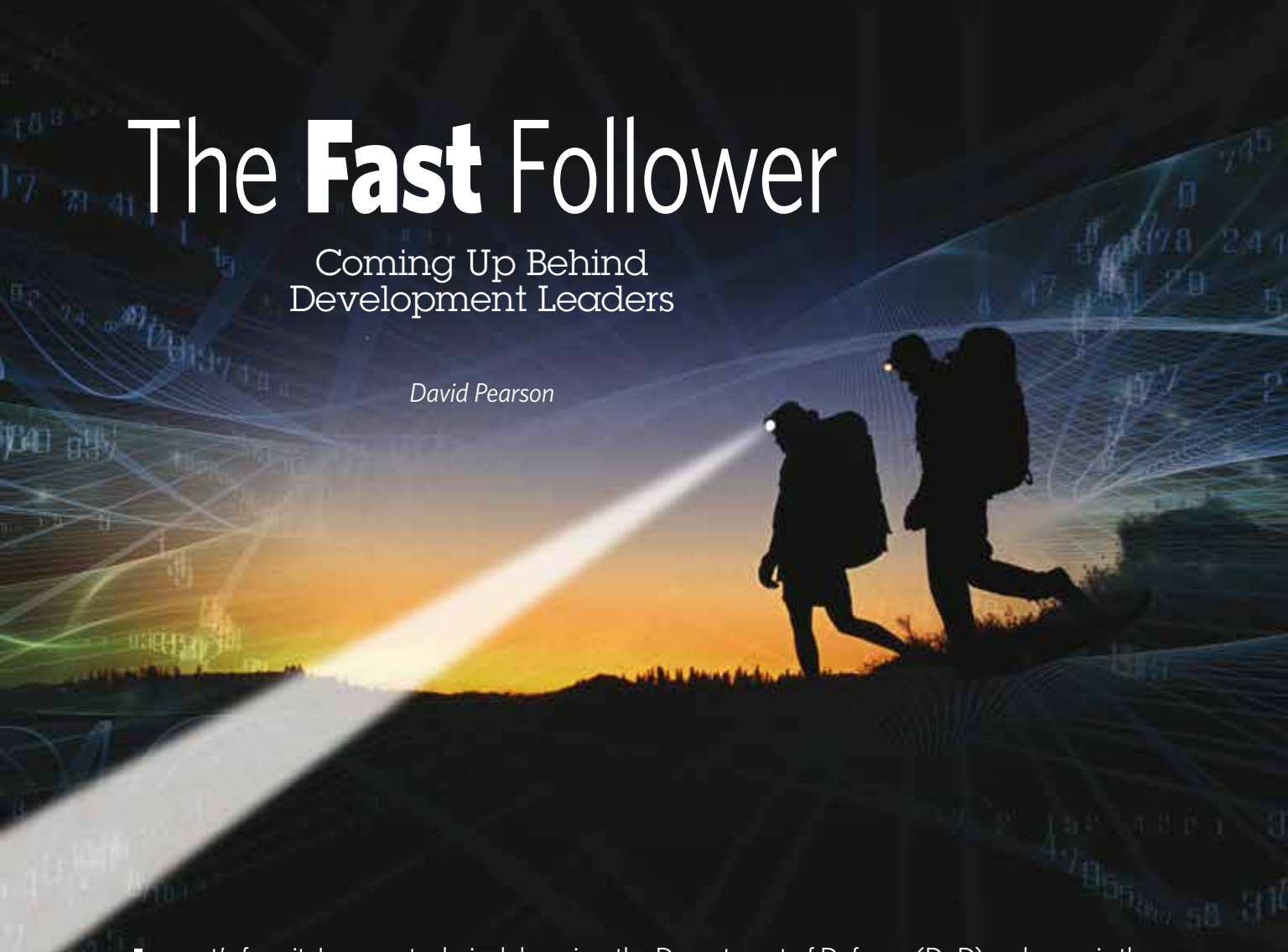

Let's face it: In many technical domains, the Department of Defense (DoD) no longer is the world's leader.

DoD often finds itself on the outside looking in at many of the latest technical advances after losing its place as the dominant tech customer. DoD faces a shrinking defense industrial base and a more global tech marketplace and competes with the rise of consumer electronics that have short product life cycles.

Since the end of World War II, the United States has relied greatly upon technical solutions to fight and win across the battle space. In view of our current shrinking defense budgets, the rise of competitors that possess keen technical proficiency and the globalization of the world's tech base, how does the DoD maintain its historic technical competitive advantage?

For some technical domains, it may be time to consider alternative strategies in researching, developing and fielding the latest technical capabilities. One approach is to adopt the fast-follower strategy.

The Perils of Being First

Consider the first pioneers and explorers. After years seeking government or royal patronage, the trailblazers mounted expensive expeditions of men, ships, wagons, etc., and set off on an uncharted course in search of a vaguely defined goal. After enduring great risk, expense and hardship they regularly fell far short of their objective—face down with arrows in their backs or adrift in a sea of ice, gnawing on their leather belts.

In exploring for new technical solutions, researchers spend a great deal of time seeking sponsorship, building specialized infrastructure and, after years (or decades) of repeated failure and risk, may or may not have developed

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a technology that will add capability to our warfighters. They also frequently are challenged to calculate and justify the return on their sponsor's investment.

In the commercial technical marketplace, this tale also is common. Alta Vista, not Google, was credited with creating the first search engine; yet few people conduct online searches today with Alta Vista. Finally, research shows that "first movers" have a 47 percent failure rate, while the fast followers fail only 8 percent of the time.

What Is a Fast Follower?

Traditional DoD research and development (R&D) works its way through a well-defined process. It starts with basic research, works its way through applied research and then advanced technical development before, hopefully, spinning out usable technical capability—sometimes decades later.

In contrast, our fast follower has its own version of R&D, replacing research and development with "replicate and duplicate." The fast follower leaves all the experimentation, risk and failure to others and positions itself to rapidly exploit the newly discovered technical knowledge by quickly applying that knowledge to the unique needs of its customers. The fast follower allows the pioneer to make the big investments, endure countless failures, navigate the uncertainties and assume much of the technical risk. Rather than discover and mature science and technology, the fast follower leverages the work of others and gains competitive advantage by finding unique innovative applications of these leading-edge technologies to solve problems for its customers. Like the stock-car racer, the fast follower drafts behind the first mover, allowing the lead car to absorb all the resistance while conserving its own resources. Then, when the conditions are right, all that potential energy is released and the fast follower is able to break through and slingshot ahead of the lead.

With DoD's technical leadership eroded in many domains and pressure on R&D budgets, we have to consider fast-follower strategies to position ourselves to quickly innovate around the technical developments of others.

Fast-Follower Attributes

The fast follower is aggressively vigilant in its technical awareness, organized for speed in innovation and has an intimate knowledge of its customer. From its vantage point on the first mover's rear bumper, the fast follower can see where the technology is going. The fast follower is able to see how the leader navigates the course and can assess the risks and project the probability of success.

The fast follower must swivel and use peripheral vision to judge the progress of competing technical alternatives. Extending the metaphor beyond the race track, our fast follower is immersed in the latest research through partnerships with academia, industry and high-tech start-ups, participation in refereeing technical journals and active leadership in professional societies and technical conferences. Our fast follower needs to stand on the leading edge of technology but does not have to be the one that built it.

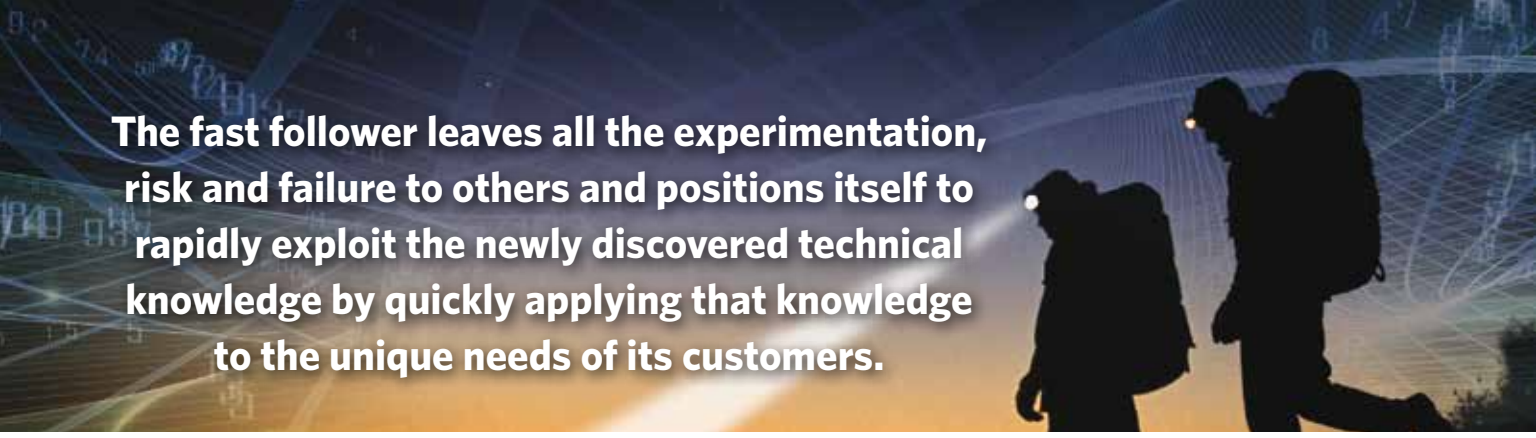
Second, the fast follower must organize and develop processes that allow it to win the innovation race. A risk of relying upon technology developed by others is that this technology is available to many potential adversaries. You are competing not only against the developer of the technology but also with other fast followers. Consequently, the fast follower's competitive advantage derives not from having the latest technology but being able to rapidly innovate and quickly apply that technology to the battlefield—giving the warfighter the advantage needed to prevail. The advantage goes to the organization whose product development processes can best and most quickly fit the technology to the needs of the warfighter. With reliance upon others for leading edge technology, our defense acquisition system's innovation cycle must be faster than that of our competitors. The fast follower is not competing on technology but on speed of innovation.

Third, fast followers need to view themselves as technology stewards for the warfighters. The fast follower must have an intimate knowledge of the warfighter's environment, challenges, concepts of operations and projected threats to rapidly steer emerging technology to counter the pain points of the warfighter or to exploit opportunities. A unique cadre of innovators is needed with sufficient understanding of the technology available and a deep commitment to knowing the technology requirements of the warfighters. The fast mover must out-innovate its adversary by rapidly deploying leading-edge technology, assuring sustained technical competitive advantage to the warfighter.

Strategy for Technical Risk Management

A benefit of the fast-follower strategy is that much of the technical risk involved in technical discovery is borne by the first mover. Our fast follower watches closely the commitments of money, human capital, time and infrastructure that the technical pioneer gambles on the pursuit. However, the fast follower must be equally adept at managing technical risk, particularly those risks associated with technologies deeper in the technology diffusion cycle. Deciding which technologies to follow and when to engage are critical and must be informed by adroit technical risk management.

A fast follower's technical risk management toolbox should include various technological forecasting methods. Through reliable technical forecasting, the fast follower can dissipate the fog of uncertainty and make better decisions on what technology to follow and when to engage. Technical forecasting techniques vary in rigor and quantitative analysis and include Delphi methods, Growth Curve Forecasting, Analytical Hierarchy Process and trend analysis. The availability/validity of data, the number of variables associated with a technology's development, availability of funding and the similarity between proposed and existing technologies



should be considered in selecting from the variety of forecasting tools available.

It is important that these forecasting techniques can be used to turn risk management into opportunity management. With reliable data based technical forecasts, the fast follower can pick the optimal time to engage and balance the risk and opportunities offered by emerging technologies.

Finally, as a technology innovator rather than a technology discoverer, the fast follower can concentrate on maturing its innovation processes. With a mature and shorter innovation cycle, the fast follower can lower its technical risk even further because it can afford the luxury of allowing the technology to mature a bit longer before making a commitment to that technology. The speed of an effective innovation cycle should make up for any time lost waiting for the technology to mature to an acceptable level of risk.

You Make the Call …

Consider a simplified example that stitches these ideas together: the alternate fuel vehicle. Driven by high fuel prices and sensitivities to climate change, the global commercial automobile industry is running hard to develop the next power source for automobiles. Tesla Motors is laying down huge bets on all electric vehicles, recently making a commitment to build a $5 billion "gigafactory." This plant would be the world's largest and most advanced battery factory with a goal of producing enough batteries for 500,000 electric cars by 2020. Toyota is pursuing an alternate technology with the Fuel Cell Electric Vehicle, relying upon stored hydrogen and oxygen to electromechanically react to generate electricity for a car. Toyota introduced its fuel-cell-powered Mirai in California in November 2014. And, to facilitate a broader diffusion of these technologies, both Tesla and Toyota are making their patents and other intellectual property available free of charge. Other automobile manufacturers are minimizing their risk by rolling out hybrids and adopting a wait-and-see approach.

Meanwhile, the DoD continues to rely upon the diesel engine as its power source for most land vehicles. The DoD has long recognized the vast amount it pays for fuel, and over the past decade has come to more fully appreciate the operational imperative of reducing reliance on traditional sources of fuel. The DoD has even developed its own acronym for this—FBCE, or the Fully Burdened Cost of Energy. Finally, while all this plays out, recent declines in oil prices may crush a key assumption and perhaps remove a key incentive for these alternatively powered vehicles, at least for the near term

With this background, what should the DoD's approach be to powering the next generation of land vehicles?

Should we stick with what we know and concentrate on improving the efficiency of current technologies?

Should we launch (at great expense and risk) our own R&D program to research, identify, develop, mature and field new alternate fuel technologies for land vehicles?

Should the DoD adopt a fast-follower strategy, leveraging what the commercial sector already has learned and avoid the risk and expense? Much of the intellectual property is there free for the asking.

If we did commit to the fast-follower strategy, how would we monitor technical developments, assess our risks and evaluate opportunities?

Which technology would we commit to and how would we know when to commit to it?

And do we have the organization and innovation processes in place that can rapidly deliver this technology and provide our warfighters a technical advantage on the battlefield?

In December 2014, the Joint Light Tactical Vehicle Joint Program Office issued a request for proposal to begin low-rate production on a new class of 50,000 vehicles for the Army and Marine Corps. The vehicles will be powered by diesel engines.

Summary

In many domains, the DoD no longer is the technology trailblazer, nor can it afford to be. DoD acquisition organizations should consider a fast-follower strategy based upon aggressive technical awareness, technology forecasting techniques, adroit technical risk management and rapid innovation. The fast follower's competitive advantage comes not from having the latest technology but from the ability to rapidly innovate and quickly apply that technology to the battlefield and give the warfighter the advantage needed to prevail.

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