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Thought Leadership

Here's How the U.S. Can Outcompete its Competitors: Part 2

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Special to The Digest

Editor's Note: CJ Evans and his teams of subject matter experts have helped more than 250 companies of all sizes prepare applications for federal grants and loan guarantees over the past 20 years. He has seen far too many projects fall by the wayside, not because they were flawed or not any good, but because they could not get additional grants and funding in a timely way and, thus, were unable to proceed. CJ discusses the impact this had had on U.S. innovation. He also offers a solution in Part 2 of this article that will greatly advance and accelerate U.S. innovation. ***Part 1 of the article is here.***

Supercharging U.S. Innovation – How to Bring Technologies to Market Faster

The U.S. has no shortage of entrepreneurs and innovators. Opportunities for new initiatives abound. Some may still be squiggles on a cocktail napkin. Others are taking shape in garages in American

towns. Still others are advancing through R&D on university campuses. And some are only one or two steps away from commercial lift off.

These initiatives need to be super charged so they can advance as quickly as possible so the U.S. can out-compete its competitors, out-maneuver its adversaries, and improve the well being of Americans.

There are two ways in which this can be done:

FIRST: the funding for Science, Technology, Engineering and Mathematics (STEM) programs, university research, and advancing innovations through each of the nine Technology Readiness Levels (TRLs) needs to be INCREASED! This is vital to U.S. competitiveness, national security, expanding domestic manufacturing, creating high paying jobs, and growing the economies of America's urban and rural communities.

SECOND, the U.S. needs to greatly expedite the way in which innovations can advance through each Technology Readiness Level (TRL) and enter the marketplace.It currently takes as much as 10 or 15 years for most innovations to advance through the various TRLs before they can be commercialized, and another 10 years or so for them to be widely deployed, adopted, and available in the marketplace.

Other countries, China in particular, are able to advance innovations and achieve a high degree of market penetration much more quickly. Here's how the U.S. government can fast track this process:

Two Obstacles Slow the Advancement of Innovations

1. Obtaining Development Capital

The major obstacle is the difficulty that innovators encounter in securing private sector ***development capital***. Development capital is hard to raise during the early stages of technology development and in the final stage prior to full commercialization. It is, in fact, some of the hardest money to raise, requiring, as many innovators have said, "kissing a lot of frogs before one finds a prince."

In the early stages, innovators typically reach out to friends and family to cobble a few dollars together to take their first few steps toward developing an innovation.

Then, when the money runs out (as it almost always does), they pause, and spend large amounts of time, energy, and attention reaching out to grant-making agencies and investors, cultivating relationships, sharing their vision, preparing pitch decks and financial models, and assembling applications – **rather than spending this time, energy, and attention perfecting their innovations.**

While the U.S. has a significant amount of venture capital and sources of private sector investment, these investments are heavily concentrated in the technology sectors like software, AI, biotech, fintech, and digital infrastructure or whatever may already be attracting capital due to media hype as the "hot new thing". Also, post-development, existing businesses with revenue that have sufficiently proven and derisked their technologies have no trouble finding capital for market expansion.

But it is much harder to secure private capital for initiatives that are new, different, never-tried-before, and outside the areas mentioned above.

Further, for capital-intensive industries like fuels and chemicals production (the focus of many AFCC member companies), private capital is non-existent for first-of-a-kind (FOAK) projects or FOAK projects that are still in the final most-expensive development stage prior to commercialization without being accompanied by government grants or loan guarantees. **This is where government funding is most needed.**

2. Delays Between Grant/Funding Rounds

The second obstacle is the amount of time it takes to move through the various stages of development – the nine Technology Readiness Levels (TRLs) – due to delays in obtaining additional funding. Government funding is currently structured such that one has to wait for a suitable funding opportunity to become available which may be issued only once every year or two.

Further, it takes time to prepare an application, wait to see if the application is successful, failing, and trying again, then again. Moreover, with the limited number of funding opportunities and a highly competitive atmosphere where 200 or 300 applicants are competing for four or five grant awards, a lot of worthwhile projects fall by the wayside.

This uncertainty as to whether an innovation can advance with government funding, adds risk and makes it harder to find the private capital investments that are necessary to continue moving forward.

Some projects that fail to secure grants and additional investments go dark, to never be heard from again. We'll never know the benefits that were lost because they could not advance.

How to Advance Innovations More Quickly and Make America Great Again

Instead of requiring that innovators apply for small amounts of federal funding at each TRL, it would significantly shorten the time it takes new initiatives to advance – and it would make it much easier for innovators to attract development capital from private sources – **if the funding for an innovation**

to advance through all the TRLs to reach market readiness was committed, on a conditional basis (conditional upon achieving all criteria at that TRL), as part of the first award that is received.

Applications for advancement through subsequent TRLs would be replaced with reports: quarterly progress reports while each TRL is underway, followed by a technical report at the end of each TRL on the milestones reached and the successes, the failures, the lessons learned from the failures, the fixes / proposed fixes to the failures, and a Statement of Project Objectives (SOPO), along with a budget, budget justification, and letters of commitment to meet the funding match for the next TRL.

This would allow subsequent grants to fit the needs and advance the initiative that is underway, rather than having to contort the initiative each step along the way to fit within the criteria of available funding opportunities. The funding that has traditionally been appropriated for new financial awards (that allow previously funded projects to apply for additional awards to continue advancing) would, instead, be used as follow-on awards for projects to move forward to the next TRL, conditioned on meeting the TRL milestones required to advance and, thus, would not require new funding applications and approvals.

This would require the U.S. Congress to commit funds in its annual appropriations to continue funding for funded projects for up to 10 years.

Each year's appropriation for financial awards could, for example, be split 50/50 with 50 percent of the funds dedicated to advancing projects that already are in the TRL advancement pipeline and 50 percent of the funds made available for new projects.

With assured funding for each TRL, the risk that an innovation will languish, waiting year after year to secure funding for the next TRL, will be eliminated, thus making it easier for innovators to secure private sector capital to meet matching fund requirements and advance their initiatives.

The U.S. government currently takes the risk, as do American taxpayers, that some innovations will not prove out and, thus, will not advance. Providing follow-on funding at the onset to advance projects through each TRL, as each TRL milestone is met, will reduce the number of projects that stumble because of delays and difficulties in raising development capital.

This proposal will increase successes and reduce losses, which will make better use of the grant money that is awarded.

As a second budget alteration to advance innovations more quickly, Congress could mandate that 5%, 10% or even 25% of the federal tax revenues earned by projects that have received federal funding and have been successfully deployed, would go into a fund for subsequent grants to other

new innovations. These are tax revenues that, had it not been for the federal funding that allowed these projects to advance, would not have been generated.

This newly created government grant program would make the advancement of innovations self-funding over time. It also would further ensure the acceleration of the deployment of innovations to create jobs, grow local economies, out-maneuver U.S. adversaries, and out-compete U.S. competitors.

This approach to making investments in American innovation would be a "no new money" means for Congress to appropriate funds to accelerate American ingenuity, speeding new initiatives to market, and increasing U.S. global competitiveness.

This, in a very significant way, would help Make America Great Again.