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**Venture Studios to Scale Warfighting Concepts to Capabilities**

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# Venture Studios to Scale Warfighting Concepts to Capabilities

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## Abstract

Venture studios are rapidly emerging as efficient entities for creating companies, developing innovative business concepts, evaluating market traction, providing seed funding from associated venture capital (VC) firms, and accelerating growth through strategic partnerships. This paper explores how the venture studio model can uniquely support the scaling of emerging technologies into operational warfighting capabilities. By constructively analyzing various venture studio models and identifying best practices, this research aims to provide actionable insights for the broader National Security science and technology ecosystem. Using a case study methodology, the paper examines successful venture studio exemplars to extract lessons learned and strategies for effective technology transition across the broader government science and technology laboratory ecosystem.

## Problem Statement and Background

Transitioning emerging technologies out of laboratories and into the hands of users is a daunting challenge. Doing this in a military context proves that much more difficult. What are proven innovation methodologies that increase the transition probability of successful lab-based emerging technologies? In this report we analyze the role of venture studios in tech transition across the government, academic, and industrial science and engineering nexus.

Venture studios represent a significant evolution in the entrepreneurial ecosystem, shifting the paradigm from an entrepreneur-driven activity to a systematic, organization-level process of venture creation. Patel and Chan (2024) describe this as a move toward an "'assembly line' serialization of venturing in an organization" (p. 285). Also referred to as venture builders, startup factories, or company builders, venture studios are a novel form of startup-supportive organization that internally generates, validates, builds, and funds concurrently multiple new business ideas (Patel & Chan, 2024). Unlike traditional support models, the studio

itself is the central actor, leveraging in-house resources and a dedicated team to “create, develop, fund, and spin-off internal startups from scratch” (Patel & Chan, 2024, p. 286).

While often grouped with incubators and accelerators, the venture studio model is operationally distinct. Patel and Chan (2024) emphasize that compared to accelerators, which support cohorts of externally formed startups, venture studios take a “direct, hands-on approach” to building a venture within the boundaries of the studio itself (p. 284). A key differentiator is the studio’s deep involvement in the earliest stages of ideation and team formation. Furthermore, studios typically take a significantly larger equity stake (30%–80%) than accelerators (5%–10%), a reflection of their intensive, in-house process of de-risking the venture from its inception (Patel & Chan, 2024). This model institutionalizes the venturing process, providing a stark contrast to market-based support relationships.

From a theoretical perspective, the venture studio model can be understood through the lenses of transaction cost economics and the resource-based view of the firm. Patel and Chan (2024) argue that by internalizing the venture development process, studios significantly lower the transaction costs associated with coordinating between disparate actors like entrepreneurs, investors, and developers. This internalization allows for better alignment of incentives, improved monitoring, and more efficient resource allocation (Patel & Chan, 2024). From a resource-based view, studios build a unique, fungible bundle of resources—including expert human capital, repeatable processes, and established networks—that can be leveraged and shared across a portfolio of ventures. This creates economies of scope and provides a scalable, systematic framework for innovation that is difficult for individual entrepreneurs to replicate (Patel & Chan, 2024).

**Dual-Perspective Analysis of the Current Tech Transfer Model**

There is a strong potential for the venture studio model to be a novel pathway for transitioning intellectual property (IP) from Department of War (DoW) laboratories broadly, to include academically funded work and industry partnerships, to broader commercialization and markets. Hence, venture studios offer a potential solution to the persistent “valley of death” in defense innovation. However, the efficacy of this model must be evaluated from the dual perspectives of the two primary stakeholders: the technical inventor (the source of the IP) and the venture (the commercialization and related investment vehicle). This analysis examines the distinct advantages and disadvantages for each party, reconciling the theoretical benefits of the studio model with the practical realities of the DoW technology transfer ecosystem.

**The Inventor’s Perspective: A Non-Traditional Path to Impact**

For the technical inventor, engaging with a venture studio represents a non-traditional but potentially high-impact pathway for technology transition. The primary benefit is the opportunity to gain direct, real-world experience in the commercialization process as some sort of inventor or entrepreneur in residence. Inventors are potentially exposed to industry partners (e.g., as future customers or acquirers of the resulting tech transfer entity or product, market validation techniques, and the inherent risks of building a business) providing them with an invaluable perspective that is often absent in a laboratory environment. This engagement expands their professional network and provides a firsthand understanding of the challenges small companies face when attempting to build a business around government funded IP.

However, this pathway is not without its challenges for the inventor. A significant con is the potential for a loss of control, as the venture studio may pivot the technology in a direction the inventor had not originally intended but that could prove more fruitful in gaining broader market traction. Furthermore, structural and bureaucratic hurdles present significant friction. Lab funding is typically structured for specific research use, and there is often no formal mechanism or dedicated funding to support the inventor’s continued engagement with the venture beyond

the initial studio program. While entrepreneurial leave is an option, it often requires the inventor to forgo their government/academic salary, creating a significant personal financial risk that can deter participation. This highlights a critical gap between the desire for tech transfer and the practical means to support the human capital required to make it successful.

### The Venture's Perspective: Access and Obstacles

From the venture's standpoint, the studio model provides privileged access to a curated portfolio of government-funded IP and, crucially, direct access to the inventor during the program. This proximity to the subject matter expert is a significant de-risking factor. The association with a federally funded program also lends credibility and can be a valuable asset when engaging with early-stage stakeholders and potential investors. The model provides a clear pathway to formalize the relationship through established tech transfer mechanisms, such as CRADA or a licensing agreement, after the initial studio phase.

Despite these advantages, the venture faces considerable obstacles inherent to the government tech transfer process. The timeline for executing a CRADA can be relatively lengthy and often requires an "in-kind" contribution from the startup, a significant demand on a resource-constrained entity in its earlier stages. Hence, a more apt CRADA partner may be a venture studio or even a fund that is considering deep/defense technology in their horizon. A more fundamental challenge is the age and availability of the IP. By the time a patent is officially issued by the U.S. Patent and Trademark Office (PTO), the underlying technology may be 3–4 years old, risking obsolescence in a fast-moving market. Compounding this, the original inventor may have moved to a different project, left the organization, or become otherwise unavailable, creating a "cold start" problem for the venture. Finally, there is a frequent misalignment on IP rights. Most ventures seek an exclusive license to justify their investment, whereas government labs are often reluctant to provide exclusivity, preferring to grant a more limited "field of use" license. This fundamental conflict over exclusivity remains a major friction point in the DoW tech transfer landscape.

### Method

We used a structured interview protocol with top venture studios that intersect with the defense technology domain. The Army Human Research Protection Office (AHRPO) reviewed the interview protocol for this study.

## Results

### Best Practices and Lessons Learned from Share Ventures: A Case Study

An interview with Mr. Hamet Watt, founder of venture studio Share Ventures (www.share.vc), provides critical insights into the operational methodologies that drive successful deep tech commercialization (LA Times Studio Staff, 2025). The studio's approach is built on a foundation of data-driven sourcing, a focus on market creation, and a sophisticated understanding of talent and team dynamics. The following analysis synthesizes the key best practices and lessons learned from this engagement.

### Technology Sourcing and Evaluation: From Relationships to Data-Driven Discovery

A primary lesson from Share Ventures is the evolution of their technology sourcing strategy. While traditionally reliant on personal networks and relationships, the studio has increasingly adopted a technology-first approach. They employ a proprietary AI-powered system that continuously scans more than 35 different data sources, including the latest scientific papers, to identify emerging research in their focus areas, such as human performance. This is conceptually similar to the approach of Deep Science Ventures with their Elman tool as reviewed by Khooshabeh et al. (2025).

However, the evaluation of this technology goes beyond traditional metrics like Total Addressable Market (TAM). The studio's core evaluation criterion is the search for a technological "unlock"—a capability that can democratize a product or service, thereby creating a market far larger than what currently exists. As Mr. Watt explains, a myopic focus on the existing taxi industry's TAM would have missed the half-trillion-dollar opportunity unlocked by ride-sharing. This forward-looking, market-creation mindset is a critical departure from conventional market analysis.

Furthermore, the studio explicitly prices in the "degree of difficulty" for deep tech. If the technical complexity, cost, or development timeline is too high, the opportunity receives a lower score, even if scientifically promising. This demonstrates a disciplined, risk-adjusted approach to prioritizing ventures versus simply extending fundamental science that may be less likely to transition as a viable or scalable technological capability.

**Talent and Team Formation: The "Lightning Rod" Principle**

Share Ventures' strategy for recruiting technical experts and entrepreneurs is not based on broad outreach, but on a focused "lightning rod" principle. The key is to become exceptionally good at defining and articulating a specific, compelling problem.

Mr. Watt emphasizes that when a studio can clearly visualize and communicate a problem it is passionate about solving, it acts as a magnet for top-tier researchers and entrepreneurs who are already obsessed with that same problem. This shared passion creates an "instant bond" and a foundation of trust that is far more powerful than a simple transactional relationship. This approach also acknowledges a critical challenge in deep tech transition: the frequent disconnect between research expertise and product expertise. By starting with a clearly defined problem, the studio can more effectively build a team that combines the necessary scientific depth with the commercialization and product skills that a venture studio brings to the table and are required to build a viable business.

**Venture Management: The Codified Playbook and AI-Powered Execution**

For ventures with long development times and high technical risk, Share Ventures relies on a highly structured and codified "playbook." Every venture is broken down into granular workstreams—such as Product, Demand (marketing/sales), Team (talent/culture), and Operations (finance/legal)—all work that a very early startup might otherwise neglect but for which a venture studio provides fractional shared human resources to support early ventures. While seemingly mundane, these workstreams of Product (design etc.), Demand generation with (go-to) market/sales, Team formation with the appropriate talent that have the best cultural fit as well as legal/financial Operations prove crucial to whether a compelling deep/defense tech innovation from a lab may scale to broader capability.

A key venture studio management principle is to prioritize the "tall pole in the tent"—the hardest, most value-driving problem—first. This ensures that resources are focused on derisking the most critical aspect of the venture from the outset. This entire process is supported by a central system of approximately 150 AI models that assist in task breakdown, execution, and resource allocation. This demonstrates a systematic, repeatable, and data-driven approach to venture building, treating the studio not as a collection of ad-hoc projects, but as a true "startup factory."

**Ecosystem Development: Beyond Meetings to Shared Experiences**

The studio's approach to building partnerships with industry and academia moves beyond traditional networking. Two key strategies stand out:

Engage Acquirers Early: Mr. Watt highlights the importance of building relationships with the corporate development community at large technology companies (e.g., Google, Amazon) from the very beginning. These are the ultimate buyers of successful startups, and their insight into the problems they are trying to solve is invaluable market intelligence.

Create Shared Experiences: Instead of standard meetings, the Share Ventures studio focuses on creating unique, themed "experiences" like curated dinners or hackathons. These events are designed to move participants out of their "default" professional personas and reveal their true passions and capabilities. A hackathon, for example, allows the studio to see potential talent "in action," providing a much deeper assessment than a traditional interview. The Defense Hackathon Act of 2024 was passed by the U.S. Congress and could provide opportunities to synergize DoW authorities to spur tech transition with private capital partners. It requires each of the services to put on four hackathons every year and these technical venues could be viable windows for both venture capital and the government to perform technical due diligence on promising teams or capability developers.

**Key Lesson for DoW Tech Transfer: The Primacy of the Problem Statement**

When asked what one thing could be changed to better support deep tech transition from government labs, Mr. Watt's answer was unequivocal: a clearer, more accessible feed of the problems the Army is trying to solve and the related demand signal associated with solving those problems. He argued that innovators and entrepreneurs are drawn to solving hard problems. When the problem is ambiguous or difficult to find, talented people waste immense energy on defining a problem on their own rather than problem solving what Warfighters or other subject matter experts could more efficiently synthesize and articulate. A simple, well-articulated problem statement (e.g., "We need to solve back pain for soldiers, which costs the Army billions") acts as the most powerful "lightning rod" for attracting the nation's top talent and private capital.

**Best Practices and Lessons Learned from Red Cell Partners**

An interview with Red Cell Partners (www.redcellpartners.com), a venture fund with an associated venture studio, offers a distinct perspective on the venture studio framework, particularly as it applies to complex, regulated markets such as healthcare and national security (Knapp, 2023). Red Cell Partners' methodology is defined by its strategic focus on "hard" markets, its "platform" approach to venture building, and its flexible, multi-pronged strategy for company formation.

**Strategic Focus: Targeting "Bureaucratic Markets"**

Red Cell Partners deliberately targets highly regulated and bureaucratic markets; specifically healthcare, cybersecurity, and national security. Their venture studio's core thesis is that while these markets are difficult to penetrate due to red tape and the need for deep institutional knowledge, they also hold the greatest opportunity for disruption. This focus informs their entire model, which is designed to provide startups with the necessary network and operational support to navigate these complex ecosystems effectively.

**The "Platform" Model: A Shared Services Foundation**

A key differentiator for Red Cell Partners is its "platform" approach. The studio maintains a large core team of 70–80 professionals providing a comprehensive suite of shared services, including engineering, human resources, talent acquisition, accounting, finance, and marketing. When a new company is formed or brought into the venture studio, this platform acts as its "business foundation." The Red Cell Partners venture studio allocates team members to perform these essential functions for the startup. This model is designed to solve a critical early-stage problem: it allows the startup's core team to focus exclusively on high-value activities like

customer discovery, go-to-market strategy, and technology development, while the venture studio's platform handles the "annoying" but necessary operational overhead. This approach is intended to "hyperscale their growth" by removing common administrative and bureaucratic hurdles.

Red Cell Partners does not adhere to a single method for company formation. Instead, it employs a flexible, opportunistic strategy that includes three distinct pathways. First, they focus on company building from within. Their venture studio identifies a need and builds the solution entirely in-house with its own product and engineering teams. The company DEFCON AI, focused on leveraging AI for contested logistics, is a prime example of this model.

The second method for their company formation is to acquire/hire to accelerate solving a problem within the venture studio. Red Cell Partners identifies a very early-stage company (e.g., a two-person team with a prototype) and brings them in-house through an "acquihire." The venture studio then puts its full platform team behind the existing company to reshape the product and accelerate its growth.

A third approach to company formation is technology licensing. Their venture studio identifies a market need, scouts for relevant technology in universities and labs, and then builds a company around licensed IP. Their portfolio company DeployX was formed this way, licensing a novel, small form-factor antenna technology from the University of Toledo to address a need in the electromagnetic spectrum. The research behind the university IP has prior DoW funding, e.g., from the Office of Naval Research (ONR; Van Winkle, 2021). This multi-pronged approach to company formation allows Red Cell Partners the flexibility to be open to any and all opportunities, starting with the market need first and then determining the best path to build a company around it.

Red Cell Partners utilizes a structured, multi-phase process to de-risk its ventures through a phased incubation and "Slow Off-Boarding" process. In first phase, a team of analysts spends 3–4 months conducting deep-dive research into broad opportunity areas (e.g., electronic warfare, undersea capabilities) to identify specific, interesting problems. The team next spends another 3–4 months during a discovery phase once they've identified and selected a problem that requires solving by the venture studio. This "Discovery" sprint focuses heavily on customer discovery and results in a comprehensive 12-month plan for a potential company formation, including competitive analysis, a tech roadmap, and a go-to-market strategy. Next, following a "go" decision from the investment committee, Red Cell Partner puts forth its own $1 million–$2 million of funding to provide the newly conceived company approximately eight months of runway. After the startup executes on its plan and demonstrates progress, Red Cell Partners invests a second tranche of $2 million–$3 million. Lastly, at least during the new companies time within the venture studio, it seems to graduate via external validation. Hence, the goal is for the startup to reach a critical inflection point where it has enough traction, e.g., a Minimum Viable Product (MVP) or early proofs of concept, to raise a seed round from an external lead investor. This external validation is the key graduation trigger. The process is described not as a hard stop, but as a "slow off-boarding," where the company gradually hires its own team and reduces its reliance on the Red Cell Partners platform as it scales.

**Best Practices and Lessons Learned from Roadrunner Venture Studios: A Case Study**

An interview with Steve Weinstein—a former Naval Research Lab scientist, serial entrepreneur, and current Chairman of the Roadrunner Venture Studio—provides a candid and critical analysis of the challenges and opportunities in transitioning deep technology from government labs. The operational model of Roadrunner (www.roadrunnerventurestudios.com), a state-funded venture studio in New Mexico, is built on a set of principles that directly address the common failure points of traditional government technology transfer (Mathews, 2024).

A foundational lesson from the Roadrunner model is its deliberate rejection of an "IP-first" sourcing strategy that represents its core philosophy of first identifying challenging problems. Weinstein was unequivocal that simply browsing a laboratory's inventory of available patents "doesn't work well for us" (S. Weinstein, personal communication, March 6, 2026). He argues that this approach, exemplified by initiatives like the "patent holiday," is misaligned with how venture creation actually works, because "patents are not products and people invest in businesses, not patents." Even so, recent reporting suggests that in just the few months since the announcement of the patent holiday, there has been strong interest and negotiated licensing terms (Luckenbaugh, 2026).

Instead of pursuing IP first, Roadrunner employs a thesis-driven, problem-first approach. The studio begins by identifying a broad area of interest (e.g., geothermal energy) and then narrows its focus to a specific, high-potential problem. Only after the problem is clearly defined does their venture studio begin the process of finding the right people and technology to solve it. This methodology inverts the traditional government tech transfer model, which often pushes technology out of the lab in search of a problem.

Central to Roadrunner's strategy is its use of the Entrepreneur-in-Residence (EIR) model making it truly founder-centric. Rather than starting with a technology, the studio's first step is to "double down on finding a person who can become an entrepreneur in our studio" (S. Weinstein, personal communication, March 6, 2026). As part of their EIR development process, an individual with deep domain expertise and entrepreneurial drive is brought into the venture studio on a stipend for a period of approximately six months. This engagement is structured as a "cancelable purchase order," providing flexibility if the fit is not right. The EIR's primary task is to validate the venture studio's thesis about a previously broad area of interest and then "go shopping" for the right technology at universities or national labs. The selection criteria of an EIR are based on trust and coachability. Weinstein emphasizes the importance of finding someone who will "die on the hill with our money" and who is willing to take feedback. This founder-centric approach ensures that a passionate, dedicated leader is driving the venture from day one, a critical factor often missing when a technology is simply licensed out of a lab without the inventor necessarily coming with the IP license. Hence, a major critique of the government's approach is its focus on the patent as the primary unit of transfer. Weinstein argues that for a startup, a patent alone is insufficient and often unattractive. A successful transition requires a complete "package" that includes not just the IP, but also access to the scientists who created it and the specialized test equipment used to develop it. Without this holistic package, the Technology Readiness Level (TRL) is often too low and the friction too high for a startup to succeed.

The most significant structural barrier identified is the "clock speed" mismatch between startups and government labs. Weinstein notes that a startup operates on a timeline of months, while the process to license technology from a federal lab can take about a year or more (National Institute of Standards and Technology et al., 2023). For a startup, "a year is an infinite time" (S. Weinstein, personal communication, March 6, 2026). This lengthy and unpredictable transaction time may make it less attractive for an entrepreneur to build their critical path around government IP. As a result, startups will often choose to work independently versus licensing IP from government labs, even if it means working around existing government patents, because the risk of delay is greater than the risk of potential infringement.

While there are temporal risks associated with a nascent or yet to be started new company licensing IP from government labs, Weinstein indicates the significant value in the DoW's science and technology ecosystem. He argues that the most valuable signal for the venture community is not an issued patent, but the initial funding of a research project. By the time a patent is issued, VCs are "probably two years too late." The fact that agencies like ARO,

ONR, and AFOSR have used its internal experts to vet and fund academic talent is a powerful, early endorsement of the research's potential. A simple, searchable, and regularly updated newsletter or database highlighting these funded projects would be an invaluable resource for the VC community, providing a much earlier and more effective signal for identifying promising technologies than any list of available patents, i.e., a leading indicator of sorts.

## Discussion

The venture studio model, while gaining prominence, is not a monolith. An analysis of the operational strategies of three distinct studios—Share Ventures, Red Cell, and Roadrunner Venture Studios—reveals a spectrum of approaches to sourcing, building, and scaling deep technology ventures. While all three embody the core "startup factory" concept (Patel & Chan, 2024), their differing philosophies on opportunity identification, team formation, and operational support provide a rich tapestry of best practices. Contrasting these models offers a nuanced playbook for how the DoW science and technology ecosystem can better leverage this framework for technology transfer.

### Sourcing and Opportunity Identification: Problem vs. Market vs. Founder

The initial stage of venture creation highlights a key philosophical divergence between the studios. Share Ventures employs a problem-first "lightning rod" principle. The studio invests heavily in defining and articulating a compelling, often underserved, problem (e.g., using oral health as a predictor for systemic health). This clear problem statement then acts as a magnet to attract passionate experts and entrepreneurs. This process is increasingly augmented by a data-driven engine that scans more than 35 sources to identify emerging research trends that align with their problem focus.

In contrast, Red Cell adopts a market-first approach. The studio strategically targets "bureaucratic markets" like national security and healthcare, where high barriers to entry create opportunities for disruption. Their process begins with a top-down analysis of demand signals, such as tracking capital flows in congressional bills, to forecast where funding will be allocated. This market analysis dictates the specific problems they choose to solve.

Roadrunner Venture Studios presents a third, distinct model: a founder-first approach. As articulated by Chairman Steve Weinstein, the process begins not with a problem or a technology, but by "doubling down on finding a person who can become an entrepreneur in our studio" (S. Weinstein, personal communication, March 6, 2026). Roadrunner Venture Studios then applies their platform of foundational and shared startup formation platform to empower the EIR to validate a thesis and "go shopping" for the right technology to solve a problem within that thesis. This model inverts the traditional tech transfer process, prioritizing the human capital of the founder above all else.

### Venture Creation and Operational Support: The Platform Spectrum

Once a venture is initiated, the venture studios provide intensive support, but the nature of this support exists on a spectrum. Red Cell represents the most comprehensive platform model. With a large in-house team of 70–80 professionals, the studio provides a full suite of shared services, including engineering, finance, legal, and HR, that act as the startup's business foundation. This allows the startup's core team to focus exclusively on go-to-market strategy and customer discovery. The goal is to hyperscale growth by removing administrative friction, with the startup gradually off-boarding from the platform as it raises external capital and hires its own team.

Share Ventures employs a more process-oriented platform, utilizing a codified playbook and a suite of AI tools to manage workstreams and prioritize the tall pole in the tent which represents the venture's hardest problem. While still providing deep operational support, the

emphasis is on a repeatable, data-driven management system rather than a large, dedicated service organization. Roadrunner's model, being founder-centric, empowers the EIR with initial capital and strategic guidance, but appears less focused on providing a large, centralized service platform, instead prioritizing the EIR's autonomy in building their own team and processes.

### Lessons for the DoW S&T and Acquisition Ecosystems

Contrasting these three successful but different models provides several critical lessons for the broader DoW tech transfer community and acquisition professional communities. First is the primacy of the problem statement. The most powerful tool for attracting external talent and capital is a clearly articulated set of problems. The DoW's current method of publishing available IP is a promising start to spur tech transition but could provide more useful by aligning the inventors who could articulate the warfighting problems they were solving in their work that eventually led to the formation of the IP. To effectively engage with the venture ecosystem, the DoW must create a "clear feed" of its most pressing operational needs, acting as a "lightning rod" for innovation.

A second lesson learned is the Value of a platform of foundational services for navigating bureaucracy. This platform model offers a compelling solution to the immense bureaucratic hurdles that startups face when trying to work with the DoW and also scaling their companies. A government-sponsored or partnered entity that could provide centralized, shared services for contracting, security compliance, e.g., managing access to Controlled-Unclassified Information (CUI), etc., and legal review could dramatically accelerate the ability of small, innovative companies to transition their technology to the DoW.

A third lesson is that prioritizing the value of venture studios being able to license or access package of talent, government testing equipment, etc., over licensing just a patent. The government's focus on licensing individual patents is fundamentally misaligned with the needs of a startup. As Weinstein noted, access to government scientists and access to the test equipment may help better align with a startups clock speed. Where government licensing can take on average just under a year (National Institute of Standards and Technology et al., 2023) while a startup operates on a timeline of months, so this temporal mismatch could be a critical barrier. In addition to IP licensing, other partnership vehicles such as CRADAs could more quickly align with startups' clock speeds. This suggests that the DoW could explore founder-centric models, such as sponsoring its own EIRs, and radically streamline its tech transfer processes to operate at the speed of business, not bureaucracy.

In conclusion, while no single venture studio model is a panacea, a hybrid approach that combines a clear, problem-first sourcing strategy, a flexible set of venture creation tools, and a platform-based support system offers a powerful framework. By adopting these best practices, the DoW can more effectively bridge the "valley of death" and translate its scientific innovations into tangible capabilities for the Warfighter.

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