Frontlines of Defense - 3D Drones and Strategic Logistics

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Executive Summary:

This briefing document summarizes the key themes and insights from a podcast episode discussing the integration of advanced defense technologies, particularly 3D-printed drones, into strategic logistics, with a specific focus on the Indo-Pacific Command (INDOPACOM) region. The conversation highlights the critical logistical challenges in this vast and complex theater, critiques traditional "World War II" thinking in defense planning, and explores how innovative startups like Firestorm Labs are addressing these issues through agile, localized manufacturing and open architectures. The discussion also delves into the difficulties defense tech startups face in navigating the acquisition process and the importance of adapting to the evolving nature of warfare, including the increasing role of autonomous systems and the potential for distributed, localized production.

Main Themes and Important Ideas/Facts:

1. The Logistical Challenges of the Indo-Pacific Command (INDOPACOM):

INDOPACOM is a vital but challenging region due to its immense size, geographical complexity (including numerous island nations), and strategic importance in the context of great power competition.

The region encompasses "about half of the Earth's surface," "38 Nations," "more than 50% of the Earth's population," and several of the world's largest militaries and economies.

Traditional logistical approaches, often modeled after World War II scenarios of large-scale force projection from the US mainland, are likely insufficient and vulnerable in a future conflict in the Indo-Pacific. "When we talk about Logistics in the Indo Pacific that's what everybody's thinking they're automatically loading a set of assumptions that aren't necessarily real." - Jeff Wright

2. Critique of the "Monomyth" of Warfare and its Impact on Defense Planning:

Current US defense thinking is heavily influenced by the linear, good-versus-evil narrative of World War II, which may not accurately reflect the nature of future conflicts, particularly in the Indo-Pacific.

This "monomyth" leads to an overemphasis on large-scale force-on-force engagements and traditional power projection, potentially overlooking the importance of proxy wars, asymmetric threats, and the need for localized and adaptable solutions. "We've spent you know six decades or more now laring as our grandparents getting ready for World War I hell we had a name for a war before it even happened and remember that World War II came after the world war..." - Jeff Wright

The assumption that future wars will primarily involve direct engagement of uniformed US service members against uniformed adversaries with similar capabilities is being challenged by the reality of proxy wars and the rise of non-state actors.

3. Firestorm Labs' Approach to Disrupting Traditional Defense Logistics:

Firestorm Labs utilizes 3D printing technology to enable rapid and localized manufacturing of unmanned aerial systems (UAS or drones) at the "edge" – closer to the operational environment.

Their containerized manufacturing system, "Excel," allows for a small logistical footprint and the potential for drone production even in austere or contested environments. "With a very small footprint we can create a manufacturing workflow." - Chad McCoy

This approach aims to address the challenges of contested logistics in regions like the Indo-Pacific, where traditional supply chains may be disrupted. "The assumption is that Supply chains are going to be cut off and so if you have XL container containerized protection on Island and the lights go out well I guess we're still producing drones at the edge right..." - Chad McCoy

Firestorm's drones are designed to be multi-mission capable (ISR, EW decoy/attack) and their open architecture allows for flexibility and adaptation based on evolving operational needs. "Our drones are multi Mission and so they can start as an ISR asset they can convert to an ew decoy or you know offensive ew source and then you can rally repurpose that as a one-way attack." - Chad McCoy

4. The Difficulties of Defense Tech Integration and Acquisition:

Defense tech startups face significant hurdles in navigating the complex and bureaucratic defense acquisition process. "This is a hard problem especially when you have to connect dots for the government and um I wasn't used to this and one if you don't know the network it's a lost cause." - Chad McCoy

There is often a disconnect between the needs identified by operators in the field (e.g., INDOPACOM) and the acquisition processes managed by service branches and program offices in the US. "As the defense Tech folks are thinking how do I make money in the indopacific you got to realize that when you talk to the guys who are solving problems like me my job out here has been for the past couple of years uh to look at Robotics and autonomy and to figure out how those things can be applied against Indopacom challenges uh I don't have a checkbook." - Jeff Wright

The concept of "dual use" technology can be both appealing and a trap for startups, as the specific requirements and acquisition pathways for defense applications differ significantly from commercial markets.

Building relationships with "inside champions" within the military and understanding the intricacies of funding and procurement are crucial for success in the defense tech sector.

5. The Importance of Adaptability and Open Architectures:

The ability to rapidly adapt technology and tactics at the "edge" is critical in modern warfare. Firestorm's rapid design iteration demonstrated in Rome highlights this agility. "We basically changed the entire design of our aircraft in less than one day had the part printed sent to REM New York attached the aircraft and flew it and that blew their minds..." - Chad McCoy

Open architectures are essential for fostering innovation, enabling collaboration, and ensuring long-term resilience in defense technology. Proprietary solutions can hinder the integration of new technologies and limit the ability to adapt to evolving threats. "If we have vendor lock proprietary solution then we can't contribute in like a you know gitlab kind of environment to these Solutions then one thing that's learned in one area doesn't proliferate around everybody else." - Jeff Wright

Localized production using commercially off-the-shelf (COTS) components can reduce reliance on long and vulnerable supply chains and potentially leverage existing manufacturing capabilities within strategic regions. "I'm not making stuff in in Detroit and then having to ship it 14 time zones across the world you know I'm making stuff inside the area where we're using it out of components that are sourced from raw materials inside this area." - Jeff Wright

6. The Evolving Role of Autonomous Systems:

The increasing sophistication and potential of autonomous drones will significantly impact the future of warfare.

Policy and regulations regarding autonomous weapons systems are expected to evolve, potentially leading to a greater deployment of fully autonomous capabilities. "I believe strongly that in the next you know three to five years policy will change and these systems will be fully autonomous and they'll be making hopefully good decisions with inputs from humans." - Chad McCoy

The ability to generate uncertainty and complicate adversary planning through the distributed deployment of rapidly producible drones is a significant deterrent factor. "Create a network of uh XL and xl- like things where how many drones are there today you don't know hell we don't know because we don't know what our guys at the platoon and the company level are doing necessarily they could have printed out an extra hundred they could have not and that uncertainty to change a constant into a variable I can't tell you how much that messes with the adversaries strategic calculation." - Jeff Wright

7. The Need for Cultural Change within the Department of Defense:

There is a need for a cultural shift within the DoD to embrace rapid innovation, risk-taking in testing, and the integration of emerging technologies.

Resistance to testing systems in realistic, challenging environments (e.g., with electronic warfare) can hinder the identification and mitigation of vulnerabilities. "What I was told by a retired 06 who's in charge of the exercise is that well if we put electronic warfare into this then all of our stuff will fail and if it fails we don't learn anything..." - Jeff Wright

Leveraging the creativity and problem-solving skills of personnel at all levels, and fostering a more fluid relationship between the military and the private sector, are crucial for maintaining a technological advantage.

Quotes of Significance:

"Tech integration at the edge... it's a problem area that we see a number of Defense Focus startups run into especially if we're looking at regions that are super tricky to access um and are pivotal like uh indopacom or indopacific command." - Tim Winkler

"You have to focus on what actually works in the real world what wins Wars because what's the point of making money if the nation loses..." - Jeff Wright

"This is not the free market this is not the way where a person who has an idea has a credit card that they can swipe and buy a thing that they need uh we have this convoluted like we've almost modeled it after our adversaries in the non-free world where we've put layers of bureaucrats and processes between the problem owner... and all the Hoops I have to jump through to get the dollars and the physical things to go do it." - Jeff Wright

"Everything is dual use unless it's a jasm right a jasm is not dual use and but if it's a uas use your creativity man like does it need to be dual use and if we're talking defense why do we care if it's dual use..." - Chad McCoy

"We are thinking we have to do the same War the same way where we start behind our you know our 20 and our in our in our our part of the territory in our football field and we get our forces ready and we tip FID which is you know getting all the forces flowing together and then we start pushing West..." - Jeff Wright

"What the dod has never had is they've never had control of the product and so my goal as a former operator is to give them the keys to the castle and say I don't want to dictate your tactics guys here's the tool you create your tactics and the tool supports you and and the price Point's cheaper than everything else..." - Chad McCoy

"American made is a byword for overpriced and non-performing in Ukraine in most contexts not when we talk about javelins and stingers but for the lower tech stuff..." - Jeff Wright

"This company can change Warfare and that's why I'm excited to come to work every day right it's like I get to be a part of this something that's really special I'm doing more now in Industry than I did in uniform." - Chad McCoy

"When you come into a new situation you need to Men In Black pen flash everything you think you know look at the thing tabula Roz and design something for the era the people and the mission you have right then and there." - Jeff Wright

Conclusion:

The podcast episode provides valuable insights into the evolving challenges of defense logistics, particularly in the complex Indo-Pacific theater. The discussion highlights the limitations of outdated strategic thinking and the potential of disruptive technologies like 3D-printed drones to offer more agile, localized, and resilient solutions. However, the conversation also underscores the significant hurdles that defense tech startups face in navigating the acquisition landscape and the critical need for cultural change within the DoD to embrace innovation and adaptability. The perspectives of both a technology innovator and a former special operator provide a nuanced understanding of the opportunities and obstacles in integrating cutting-edge technologies into the future frontlines of defense.