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SBIR & STTR
APPLICATION GUIDE

DEPARTMENT OF DEFENSE

MODULE 2

https://wisconsinctc.org/

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OR

If you see **yellow text**

Click it to open the link

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PRODUCT DEVELOPMENT STRATEGY

Learn how your product fits into the needs of your potential client.
This guide will walk you through defense need with the use of helpful resources and tips.

Defense Need

In order to receive funding from DoD, they have to have a need for your product. Follow guides to search for a potential defense need.

Concept and Significance of Problem/Opportunity

Use resources to find and collect evidence of a defense need that supports your product.

DoD Commands

Learn about the various DoD Commands to determine where your product fits and who might sign a letter of support.

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DOD TRL

Estimate your Technology Readiness Level according to the Department of Defense guidelines.

- Use the table on the following pages to estimate your DoD TRL. Click on the graphic for a helpful visualization with examples.
- Your TRL level will establish the types of funding your product is eligible to receive.
- DoD is usually interested in TRL 2 and up. More likely there interest is in

TRL Graphic

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Determine your DoD specific Technology Readiness Level

TRL	Definition	Description	Supporting Information
1	Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development (R&D). Examples might include paper studies of a technology's basic properties.	Published research that identifies the principles that underlie this technology. References to who, where, when.
2	Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.	Publications or other references that outline the application being considered and that provide analysis to support the concept.
3	Analytical and experimental critical function and/or characteristic proof of concept	Active R&D is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.	Results of laboratory tests performed to measure parameters of interest and comparison to analytical predictions for critical subsystems. References to who, where, and when these tests and comparisons were performed.
4	Component and/or breadboard validation in laboratory environment	Basic technological components are integrated to establish that they will work together. This is relatively “low fidelity” compared with the eventual system. Examples include integration of “ad hoc” hardware in the laboratory.	System concepts that have been considered and results from testing laboratory-scale breadboard(s). Reference to who did this work and when. Provide an estimate of how breadboard hardware and test results differ from the expected system goals.
5	Component and/or breadboard validation in relevant environment	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment. Examples include “high-fidelity” laboratory integration of components.	Results from testing laboratory breadboard system are integrated with other supporting elements in a simulated operational environment. How does the “relevant environment” differ from the expected operational environment? How do the test results compare with expectations? What problems, if any, were encountered? Was the breadboard system refined to more nearly match the expected system goals?

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Determine your DoD specific Technology Readiness Level

TRL	Definition	Description	Supporting Information
6	System/subsystem model or prototype demonstration in a relevant environment	Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in a simulated operational environment.	Results from a laboratory testing of a prototype system that is near the desired configuration in terms of performance, weight, and volume. How did the test environment differ from the operational environment? Who performed the tests? How did the test compare with expectations? What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before moving to the next level?
7	System prototype demonstration in an operational environment	Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment (e.g., in an aircraft, in a vehicle, or in space).	Results from testing a prototype system in an operational environment. Who performed the tests? How did the test compare with expectations? What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before moving to the next level?
8	Actual system completed and qualified through test and demonstration	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation (DT&E) of the system in its intended weapon system to determine if it meets design specification.	Results of testing the system in its final configuration under the expected range of environmental conditions in which it will be expected to operate. Assessment of whether it will meet its operational requirements. What problems, if any, were encountered? What are/were the plans, options, or actions to resolve problems before finalizing the design?
9	Actual system proven through successful mission operations	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation (OT&E). Examples include using the system under operational mission conditions.	OT&E reports.

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HOMEWORK

WHAT IS YOUR DOD TRL LEVEL?

WRITE YOUR ESTIMATED LEVEL HERE:

PROVIDE MEASURABLE AND DETAILED REASONING FOR THIS LEVEL BASED ON THE GUIDANCE:

Continue to begin learning the basics of defense need

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HOMEWORK

CONVINCE AIRMEN REVIEWING YOUR PROPOSAL THAT YOU CAN DELIVER A VIABLE PRODUCT 18-24 MONTHS.

USE YOUR TRL TO HELP DEFINE STEP BY STEP PRODUCT DEVELOPMENT PATH WITH INFUSION OF $1.2M IN SBIR/STTR.

Continue to begin learning the basics of defense need

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DEFENSE NEED

You are responsible for finding a defense need for your product, DoD will not find it for you.

- Although your technology is important, now is the time to focus on your client. Put on your sleuthing cap and get to know the DoD through their media and official documentation. Find ways to talk to your client and have discussions about their challenges if you can.

- It's vital to convey, not only that you are an expert on your technology, but that you understand your client and end user as well as their challenges and the positive measurable effects that your product will have for them.

- Show that the challenge the military is having, is a problem you're also concerned about.

The following slides will help you gather evidence of your product's alignment with the DoD's needs.

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HOMEWORK

START WITH COMMUNICATING WHAT YOU KNOW ABOUT YOUR PRODUCT.

		PROVIDE EVIDENCE
WHY DOES SOMEONE CURENTLY USE YOUR PRODUCT?		
DESCRIBE YOUR NON-MILITARY VALUE PROPOSITION.		
DESCRIBE YOUR INITIAL IDEA FOR A COMBAT USE-CASE.		

This is important for the DoD's dual use requirement.

POSITIVE IMPACT ON DOD VERTICALS

Your product must align with DoD strategic capabilities, operational imperatives, and command initiatives. Potentially, you could even have written support from a command or a unit.

Familiarize yourself with the goals of your DoD end user and the organizational-level need for your solution. You must be able to demonstrate knowledge of prospective DoD end-user(s)/customer(s) and their most reasonable use-case for your solution.

Researching various branches operational imperatives is a great place to start. Military regulations and guidelines for DoD aims are released annually in August. Below are the most recent operational imperatives.

Operational Imperatives

Click below to read about each branch's operational imperatives.

Air Force

Army

Nav

PREVIOUS FUNDING & CURRENT REQUESTS

Open topic focus areas will give you a start to know where your solution could fit. Search previous DoD funding and requests for a potential solution or underlying technology.

- AFWERX Challenges
- Naval IX
- Defense Innovation Marketplace
- S&T Strategy
- Army xTech
- DSIP Past Topics
- Sbir.gov Past Topics

Don't see previous or current DoD aims that your product align with? Check out the next page.

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NEED EVIDENCE?

Search these military news sources to help determine who your DoD client is, what they're concerned about and potential use cases and combat adaptations for your product.

- National Defense Magazine
- Air Force Times, Army Times, Navy Times
- Air Force Magazine, Army Magazine, Navy Magazine
- DoD News, Air Force News, Army News, Navy News
- Other DoD news sources

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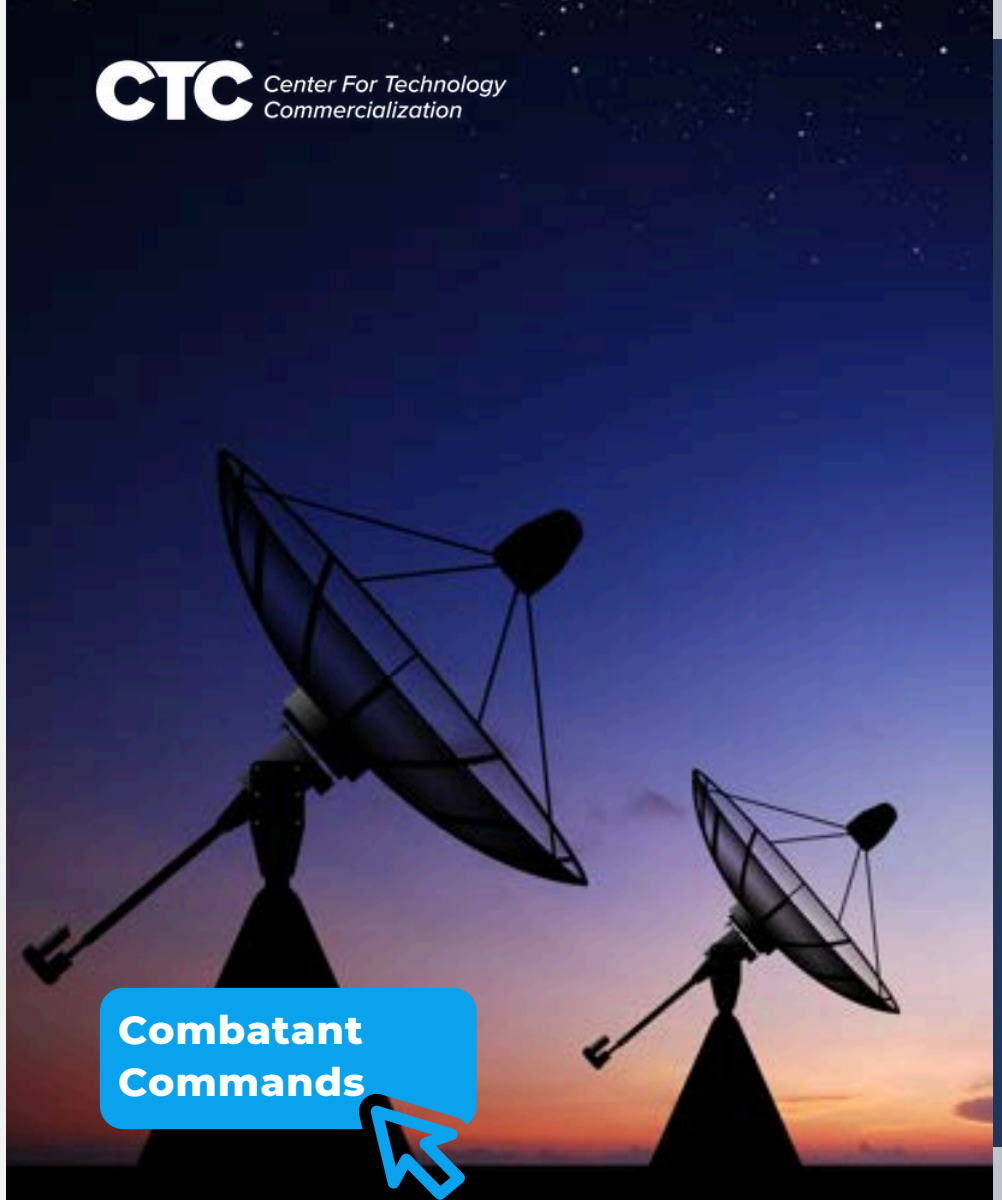
HOMEWORK

CORROBORATE DEFENSE NEED OF YOUR PRODUCT BY PROVIDING SOURCES AND LINKS AS EVIDENCE.

Move on to find a DoD command that aligns.



COMMAND ALIGNMENT

Determine a unit or command to potentially support your product based on their areas of focus.

There are currently 11 unified combatant commands within the DOD, four are functional. If your product is dependent on geographical area click on the link on the left. If they fall under the categories below, click the link to learn more about their specific needs.

U.S. Cyber Command (USCYBERCOM)
U.S. Special Operations Command (USSOCOM)
U.S. Strategic Command (USSTRATCOM)
U.S. Transportation Command (USTRANSCOM)

Each branch as their own commands detailed on the following pages, use these similarly to narrow your scope.

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AIR FORCE MAJCOMS

Currently, the USAF is organized into nine MAJCOMS

Air Combat Command (ACC)

- To support the global implementation of national security strategy, ACC operates fighter, reconnaissance, battle-management, and electronic-combat aircraft.

Air Education and Training Command (AETC)

- Recruits, trains, and educates airmen.

Air Force Global Strike Command (AFGSC)

- Develop and provide combat-ready forces for nuclear deterrence and global strike operations.

Air Force Materiel Command (AFMC)

- Conducts research, development, testing and evaluation, and provides the acquisition management services and logistics support necessary to keep Air Force weapon systems ready for war.

Air Force Special Operations Command (AFSOC)

- Provide Air Force component units for United States Special Operations Command. See their areas of interest here.

Air Mobility Command (AMC)

- Provide global air mobility through airlift and aerial refueling for all of the United States Armed Forces. Air Force component of United States Transportation Command

Other MAJCOMs

- Air Force Reserve Command (AFRC)
- Pacific Air Forces (PACAF)
- United States Air Forces in Europe – Air Forces Africa (USAFE-AFAFRICA)

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ARMY MAJCOMS

4 MAJCOMS

United States Army Forces Command (FORSCOM)

- Provides expeditionary, regionally engaged, campaign-capable land forces to combatant commanders.

United States Army Futures Command (AFC)

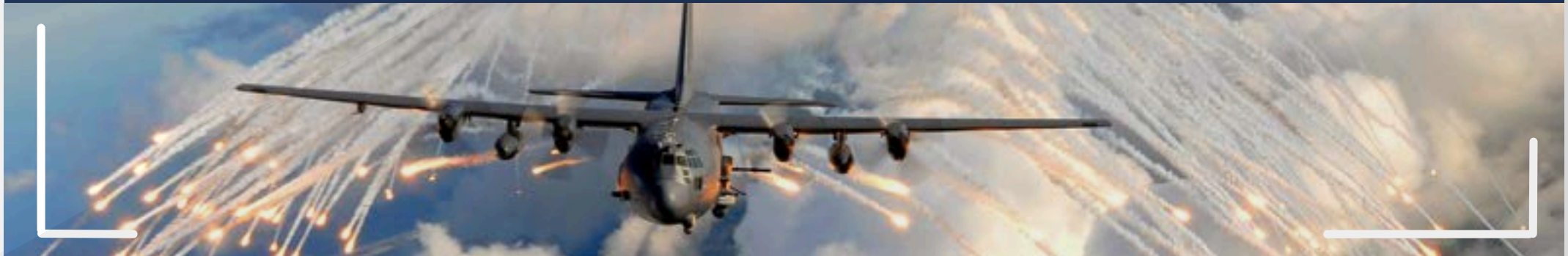
- Designed as a public-private initiative, that runs modernization projects for the Army.

United States Army Materiel Command (AMC)

- Primary provider of materiel to the United States Army. The Command's mission includes the management of installations, as well as maintenance and parts distribution.

United States Army Training and Doctrine Command (TRADOC)

- Charged with overseeing training of Army forces and the development of operational doctrine. TRADOC operates 37 schools and centers at 27 different locations.



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US NAVY FLEET FORCES COMMAND

System Commands

There are five system commands and they oversee the technical requirements of the Navy.

- Naval Sea Systems
- Naval Information Warfare Systems
- Naval Supply Systems
- Naval Air Systems
- Naval Facilities Engineering

Shore Commands

On-shore installations and facilities that support the fleets' operating forces (ships, subs, etc.) with repairs, fuel, ammunition, training and medical help, among other things.

- Office of the Chief of Naval Operations
- Navy Personnel
- Bureau of Medicine and Surgery
- Strategic Systems Programs
- United States Naval Academy
- Naval Education and Training
- Naval Meteorology and Oceanography
- Office of Naval Intelligence
- Naval Aviation Warfighting Development Center
- Commander Operational Test and Evaluation Force
- United States Naval Observatory
- Naval Safety Center
- Navy Information Operations
- Naval Legal Service
- Navy Installations

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HOMEWORK

PROVIDE EVIDENCE OF DOD COMMAND ALIGNMENT

DOD COMMAND	EVIDENCE OF INTEREST AND ALIGNMENT

Move on to draft a letter of support from supporting command or unit.

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Letter of Support

In addition to providing articles and statements to support your defense need, ideally your product would also have a written statement from a supporting unit or multiple units. Use the form to the right and the prompts below to draft your letter in a separate document.

This letter of support would include:

1. A statement that the unit or command either supports your product or that they have the challenge your product addresses.
2. An explanation of the unit's tasks and needs that are addressed.
3. A brief explanation of your product.
4. A brief explanation of the positive outcome your product would bring.
5. How the unit intents to support your product if applicable.
6. Contact information of representative signing the letter.

Phase II and D2P2 require Customer Memorandum (CM).

Letters of Support are helpful for any branch at any phase.

If you're interested in pursuing Air Force needs, AFVentures holds weekly meetings. You can attend these meetings to ask about potentially intersted signers.

Register to attend

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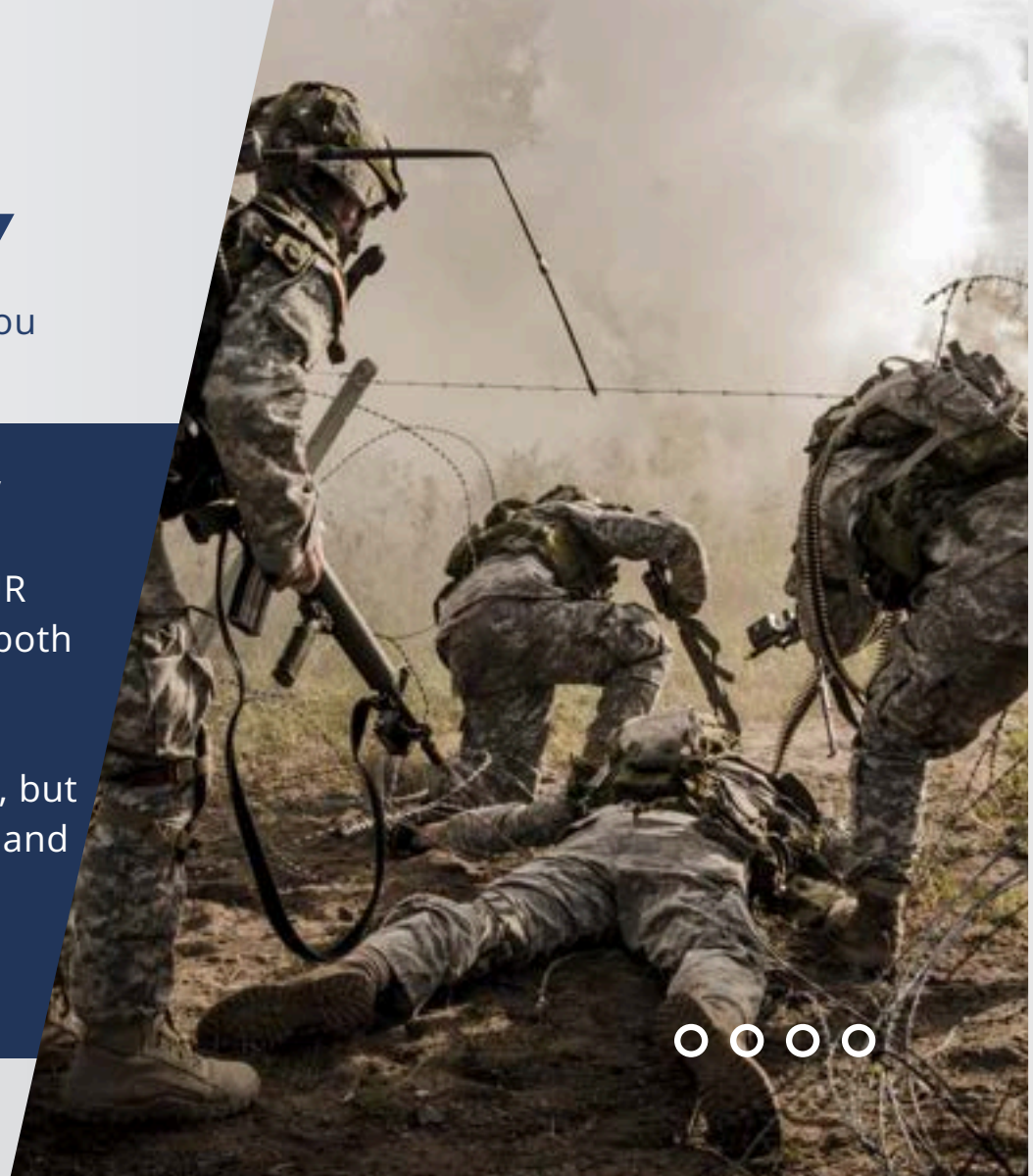
SIGNIFICANCE OF PROBLEM/OPPORTUNITY

"You do not really understand something until you can explain it to your grandmother."

- Define the specific technical problem or opportunity addressed and its importance. Include a brief description of the proposed solution AND HOW YOUR SOLUTION IS SUPERIOR TO CURRENT as applied to both defense and non-defense customers.
- This is not the time to show off your technical depth, but rather to explain your technology/value proposition and why people should care.



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CONCEPT AND SIGNIFICANCE OF PROBLEM/OPPORTUNITY

Provide evidence and reasoning in the spaces provided.

Goals	Milestone	Tasks/Activities
• What is the DOD need that you think you can achieve and what does that success look like? • Show your capacity to meet DOD needs.	• What tasks or activities are you able to perform that meet the DOD goal? • Show that the military is trying to improve what your product addresses.	• Show that the military has the problem that your product improves • What are the barriers why hasn't this been done yet?

This table will be used in your final submission

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PUT IT ALL TOGETHER

Now that you've researched the DoD and familiarized yourself with your potential client, the next few slides will help you refine your evidence in a clear and competitive way with specific details that you've gathered.

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HOMEWORK

SUMMARIZE YOUR DEFENSE NEED RESEARCH

LIST POTENTIAL DEFENSE NEEDS THAT YOUR PRODUCT ADDRESSES.	
LIST SPECIFIC DOD END USERS: JOB TITLE/TASK, UNIT/COMMAND.	
LIST THE TECHNOLOGY INVOLVED AND THE TECHNOLOGY GAPS OR BARRIERS.	

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HOMEWORK

TELL THE MILITARY YOU HAVE BROAD APPEAL AND VALUE BY SHOWING OTHERS ARE INTERESTED AS WELL.

DEFINE THREE DUAL-USE PRODUCTS THAT YOUR TECHNOLOGY OR BUSINESS OFFERS CAPABILITIES.

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HOMEWORK

SHOW THAT YOUR PRODUCT IS SUPERIOR TO THE COMPETITION BY PROVIDING DETAILED EXAMPLES.

EXISTING SOLUTIONS	CURRENT COMPETION	MEASURABLE WAYS YOUR PRODUCT IS SUPERIOR

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CHECKLIST

At the end of session one you should have to following checklist completed. Dont move on to session three until this checklist is complete.

- **Potential defense needs determined.**
- **News articles and evidence of the defense need that your product addresses.**
- **DoD Commands that your product falls into.**
- **Drafted letter of support and leads to signees**

HAVE QUESTIONS?

Reach out to the CTC with questions or concerns here.

FINISHED WITH SESSION TWO?

It's time to reach out and check in with your CTC consultant to discuss how your product fulfills defense need.

Todd Strother

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