COMBATING TERRORISM TECHNICAL SUPPORT OFFICE

TECHNOLOGY TRANSITION HANDBOOK

1.0 INTRODUCTION

Technology transition is the process of taking a technology from the developmental and prototype phase to production and employment by the end user community. Transition is achieved when research and development products (R&D) have (1) been passed to another organization for use or for further development; (2) evolved to the commercial market; (3) been placed on a Defense or General Services Catalogue; or (4) been inserted into government acquisition programs and can be easily and continuously obtained by the end users.

The path from a research and development contract to transition success can be challenging for small businesses, international vendors, and possibly mature businesses. CTTSO Program Managers will provide assistance in the process to overcome transition challenges and ensure success for the contractor and the government customers. For some products, the government must conduct its own testing and validation before the systems can be made available for sale and use.

Program Managers will be mindful of technology transition requirements at the beginning of the contract and will work with the vendor throughout the development phase to ensure that products can transition successfully. The Program Manager, sometimes in collaboration with the users, will assist the vendor in developing a Technology Transition Plan in accordance with the timeline specified in the Contract Requirements Data List (CDRL).

Technology transition is truly successful when the technologies developed fulfill a capability gap and can be easily obtained by the end user community and fails when such technologies are shelved or end users are unable to acquire the technology.

2.0 TECHNOLOGY TRANSITION PLAN

The transition plan should outline the process by which transition success will be achieved. The TTP is not written for any particular audience, thus the plan for transition should be clear to any reader of the TTP. The major sections of the TTP are:

Program Information	Provides the reader with an overview of the program, what capability gap it addresses, who the customers are, and the status of development.
Contract Information	Contains information related to Intellectual Property, Data Rights, and Contract Data Requirements List (CDRL).
System Information	Details the aspects of the system related to liability risk analysis, security, export control, third party transfer, and interoperability.
Transition Information	Addresses the strategy that will be applied to ensure transition success with subjects related to safety and validation tests, addressing number of prototypes to users, training users, providing the system to the end users for operational tests and evaluations, addressing fixes and enhancements, identify any potential barriers to production, commercialization and/or acquisition program, and describe how to mitigate any barriers..

The TTP template is located in Appendix A of this document.

3.0 TECHNOLOGY TRANSITION TOPICS

In order to effectively transition technologies out of the prototype phase to the production phase, there must be some thought put into transition before, during, and after the development effort. Critical analysis is required for:

Technology Requirements: Each CTTSO program is based on an end user requirement to address a capability gap. Understanding not just the technical aspects of the requirement but also the underlying need for the technology helps to envision what the market will bear for commercialization.

Customer Market: Most often the technology developed during the program is not unique to just one agency customer. Instead, it is often a technology that will fill a capability gap for multiple agencies. Program Managers should share who those customers are with the vendor and identify acquisition and procurement options and processes that users could use to obtain the system at the end of the prototype phase or the OT&E phase.

Intellectual Property (IP): Intellectual property is considered a top asset of any company and should be handled accordingly. IP rights include patents, technical data, software, trademarks, copyrights, and trade secrets. It would be beneficial to CTTSO and users to capture in the Transition Plan any IP including provisional patents, patent applications, patents, trademarks,

copyrights, and licenses associated with any element of a CTTSO program. See Appendix B for information related to IP and Technical Data.

Data Rights: Rights in technical data and software are determined by who funds the development of the technical data and/or software in question. Understanding and documenting the data rights of the contract into the Transition Plan will help clear up any potential issues related to government access in the future. See Appendix B for information related to Data Rights.

Test and Evaluation: In order for a technology to prove it will address a requirement, it needs to be tested. Developing technologies without testing puts the users and the developers at risk of failure. Some systems require an independent test and/or evaluation of the technology to validate that the system performs as described.

Regulatory Issues: If the technology has the potential to transition to end users who must use only 'certified' technology, then a plan should be developed for how those standards will be met and certification achieved. Commercial technologies should be certified by the relevant governing body (National Fire Protection Association, American National Standards Institute, National Institute for Occupational Safety and Health, etc.) to ensure they can be used by the customers.

Operational Test and Evaluation (OT&E): Beyond initial tests, evaluations, and validations, it is important to have operators use prototypes in an operational environment. During OT&E, operators can provide vendors and the Program Manager with feedback on necessary fixes, changes, and enhancements that will make the system operator friendly, sustainable, and durable. That assumes the contract was written to allow for training and follow on changes and improvements during and after OT&E.

Export Control: If there is intent to transition the technology to the global market, then export control needs to be addressed. Export control involves multiple government agencies, and companies must be in compliance with export regulations. See Appendix C for Export Control Procedures.

Production Strategy: In order to ensure that a technology is accessible to end users, a production strategy should be developed. If a company intends to manufacture the technology in-house, then internal coordination should begin before the end of the development phase. If a company intends to license a technology, then agreements with external vendors should be coordinated early in the process so there is no gap in delivery.

Affordability: In research and development programs, the prototyping of technologies can be costly. Thus a company must review designs to ensure that a production level system is affordable to the end user community. Designing for manufacturability helps reduce production costs and keeps the overall system price down.

The intent of the technology transition topics section is to highlight aspects of some barriers that companies may encounter while planning for transition. Program Managers will assist contractors in transferring technologies from the development and prototype phase to the commercial market and/or government acquisition system.

APPENDIX A: TECHNOLOGY TRANSITION PLAN TEMPLATE

The Technology Transition Plan (TTP) should address all of the elements required for transitioning the technology to the intended users, as well as secondary users and markets. In order to get an understanding of where the technology is headed, a solid plan for transition should be started in the early stages of technology development. This plan is intended to be a working document for collaboration between the developer and CTTSO throughout the technical development process. A first draft, with questions and comments should be submitted to the CTTSO Program Manager in accordance with timeline specified in the CDRL.

The transition plan shall consist of four major sections: Program Information, Contract Information, System Information, and Transition Information. While this template is intended to provide a structure for what information must be included in the TTP; vendor formatting of the TTP is acceptable. The TTP cover page must include: program title, vendor information, and contract number.

1.0 PROGRAM INFORMATION

1.1 Program Description: The description section should characterize the shortfall that the technology will address and give a short synopsis of how it will fulfill the capability gap. Include a brief overview of the technology and describe any unique features that will enhance an operator's ability to use the system.

1.2 Technology Description: Describe the anticipated physical characteristics of the technology (size, weight, etc.). Include a representative photo or diagram of the system.

2.0 CONTRACT INFORMATION

2.1 Statement of Intellectual Property (IP): Include any provisional patents, patent applications, patents, trademarks, copyrights and licenses associated with any element(s) of the project. Include any assertions in the contract of pre-existing IP. Include patent filing status and dates for all IP to be utilized in the project, Any licenses granted on patented IP, and third party licenses.

2.2 Data Rights: Unlimited rights means right to use, modify, perform, display, release or disclose technical data in whole or in part, in any manner and for any purpose whatsoever, and to have or authorize others to do so. If there are any exceptions to government unlimited rights to all technical data it needs to be detailed in this section.

2.3 Statement of Contract Deliverables: Include the list of Contract Data Requirements List (CDRL) included in the awarded contract (test plans, monthly status reports, manuals, etc.) as well as the hardware and/or software systems to be delivered as part of the contract.

3.0 SYSTEM INFORMATION

3.1 Regulatory Issues Description: Include environmental, safety, health, transportation, communications spectrum, or any other applicable regulatory restrictions involving the production, distribution, sales or use of products resulting from the technology.

3.2 Standards: Identify any applicable standards required to be met for use by Federal, state and local public safety personnel (e.g.: NFPA, ANSI, NIOSH) and what testing will be conducted to ensure the technology meets the required standards.

3.3 Liability Risk Analysis: Discuss any potential liability risk in the use of the technology by intended or unintended users. State intention to apply for Safety Act designation/certification.

3.4 Testing: Describe test plan provisions and timeframes for developmental and operational testing. Include what organizations (independent and/or operational) will be involved in the testing. Accreditation of software intended for Enterprise Systems should be addressed here. Safety Certification or characterization testing should be addressed here if the technology is being delivered to military forces.

3.5 Security: Describe any sensitivities or criteria regarding the technology, data, applications or users of the technology. Determine the appropriate Classification Guide Distribution Statement and if the product or information should be public, restricted or classified. Do not include any classified information in this document.

3.6 Export Control Restrictions: Cite the appropriate sections of International Traffic in Arms Regulations, United States Munitions List category or state that the technology or product does not fall under export control provisions.

3.7 Training: Discuss any training required to use the technology or product and what level of training will be provided as part of the contract. List any organizations that will be involved in the training.

3.8 Interoperability: Discuss any external equipment or systems that this technology must interface with and the operational environment in will need to operate in. Describe any tests that will need to be conducted to ensure the technology will work with associated external systems.

3.9 System Support: Describe the support approach including configuration management, repair, scheduled maintenance, support operations, software support, supply requirements and warranties associated with both the initial fielding and full operational deployment.

4.0 TRANSITION INFORMATION

4.1 Market Description: Include primary users, secondary users and spinoffs of the technology for military, federal, domestic state and local government, commercial/industry and international markets as applicable. Determine who the technology will be marketed to and

include what steps will be taken to publicize the product (e.g.: trade shows, website highlight, publications, etc.).

4.2 Commercialization Strategy: Describe the intention to produce, venture or license the technology with associated timelines for actions. This section should detail how the organization plans to evolve the technology from the prototype phase to production and commercialization of the system. Describe in what manner the product will be sold and detail any plans to place the technology on government marketplace lists (ie.g.: Responder Knowledge Base, DLA and GSA Schedules, etc.)

4.3 Technology Transition to Production: This section should detail the developer's plan to take the technology from the prototype phase to the production phase. If any barriers to the commercial market or production phase exist they should be clearly described in this section and a plan to mitigate those risks should be included. Provide an estimate of any additional costs to transition the prototype to initial low rate initial production (LRIP). If possible, provide an estimate of the number of initial units needed to be sold and price of units to cover transition costs.

5.0 ACTION ITEMS

5.1 Action Items: After the initial review of the TTP, the CTTSO Program Manager will respond with any follow-up actions needed to complete the draft TTP. All action items should be captured in this section.

6.0 CONTACT INFORMATION

Include all relevant contact information for the program:

Contracting Officer
(name, contact information)

Contracting Officer's Representative/Program Manager
(name, contact information)

Contractor Principal Investigator/Program Manager
(name, contact information)

CTTSO Program Manager:
(name, contact information)

7.0 ADDITIONAL INFORMATION

All Technology Transition Plans shall include the following distribution statement on the cover page:

DISTRIBUTION STATEMENT B: Distribution authorized to U.S. Government Agencies only, based on specific authority cited in the TSWG Classification Guide, May 2019. Other requests for this document shall be referred to the following address: CTTSO, Attn: [Enter CTTSO Program Manager's name here].

Any questions or requests for assistance during the planning or compilation of the Technology Transition Plan should be sent to the CTTSO Program Manager.

APPENDIX B: INTELLECTUAL PROPERTY AND DATA RIGHTS

What is Intellectual Property?

Intellectual Property (IP) refers to products of the human mind that can be legally protected, e.g.: a patent, trademark (including service marks), copyright or trade secret. Such a product could be an original or creative works, e.g.: an invention, a painting, a song, or simply the result of effort such as advertising and good quality services establishing good will in a trademark. A trade secret draws value merely from the fact that it is not known to everyone. These products of the mind may have great commercial value and are often the major assets of modern businesses.

IP encompasses rights which are legally protectable by, among other protections, patents, trademarks, technical data, software and copyrights.

Categories of Intellectual Property and Data Rights

IP is generally organized into two main categories:

1. IP Protections: There are four primary types of IP protections:
    a. Patent: a grant of a property right to the inventor by the U.S. Patent and Trademark Office which allows the inventor to exclude others from making, using, offering for sale, selling, or importing the invention.
    b. Copyright: a form of protection provided to the authors of "original works of authorship" fixed in any tangible media of expression, such as computer software or a song.
    c. Trade Secret: a formula, device or other information that is secret and provides commercial advantages over competitors who do not know it or use it. Examples: a recipe or formula for a product (Coca-Cola ©)
    d. Trademark: a word, name, or symbol that is used in commerce to indicate the source of the goods or services and to distinguish them from the goods or services of others. Example: company logo
2. Data Rights: refers to the various levels of licenses that the Government obtains to use, modify, reproduce, release, perform, display, or disclose data developed by the contractor. "Data Rights" as a concept is unique to dealings with the Government. The purchase, accomplished by contract, provides the Government with a license to use the data and to disclose the data according to the rights level specified in the contract.

What are Data Rights?

When technical data and computer software are delivered under a Government contract, a DoD contractor generally retains ownership of the data and the copyright to the data. The Government obtains a license to use, reproduce, modify, release, perform, display and disclose such data via the data rights provisions in the contract.

The contractor may mark its copyrightable material with copyright notices. However, the Government receives a license to use the copyrighted material that is equivalent to the data rights it obtained under the contract. The Government also receives rights to an existing trade secret that is brought into a contract effort, but data that is created using government funds cannot be protected as a trade secret.

Categories of Licenses (See: DFARS 252-227-7013 and -7014)

1. Unlimited Rights: permit the Government to use, modify, reproduce, perform, display, release or disclose technical data, in whole or in part, in any manner and for any purpose whatsoever, and to have or authorize others to do so. The Government can even release the data to companies that compete with a contractor who developed the technical data or software. Unlimited Rights do not expire.
2. Government Purpose Rights: generally apply to technical data that pertains to items components, or processes and computer software developed with a combination of Government and private funding (mixed funding). Government Purpose Rights means the right to use, modify, reproduce, perform, display, release or disclose the data or software within the Government without restriction and outside the Government as long as the recipient is subject to a nondisclosure agreement and uses the data or software for U.S. Government purposes. "Government purposes" means any activity in which the U.S. Government is a party, including use in Government procurement. They do not include the right to use, modify, reproduce, release, perform, display or disclose technical data for commercial purposes or the right to authorize others to do so. Government Purpose Rights expires five years from contract execution, unless another term is specified in the contract, after which the Government Purpose Rights become Unlimited Rights.
3. Limited Rights: means the rights to use, modify, reproduce, release, perform, display, or disclose technical data, in whole or in part, within the Government or by covered government support contractors working under a non-disclosure agreement. The Government may not, without the written permission of the party asserting limited rights, release or disclose the technical data to others, use the technical data for manufacture, or authorize the technical data to be used by another party.
4. Restricted Rights: applies only to noncommercial software that was developed exclusively with private funding. The Government has the rights to noncommercial software on a single computer unless specified otherwise in the contract. The Government may not, without the written permission of the party asserting restricted rights, release or disclose the noncommercial software outside the Government, or authorize the noncommercial software to be used by another party, with the exception of covered government support contractors working under a non-disclosure agreement.
5. Negotiated Rights: applies to rights mutually agreed upon by the Government and the contractor to satisfy, handle, deal with, or address particular needs, concerns, objectives, or circumstances. The negotiated rights are documented in a standalone license attached to the contract. The rights specifically negotiated must be fully identified in the contract, contract attachment and/or license agreement incorporated into the contract. Omitting theses 'specifics' increases the potential for misunderstandings down the road.

Figure 1 illustrates the data rights spectrum.

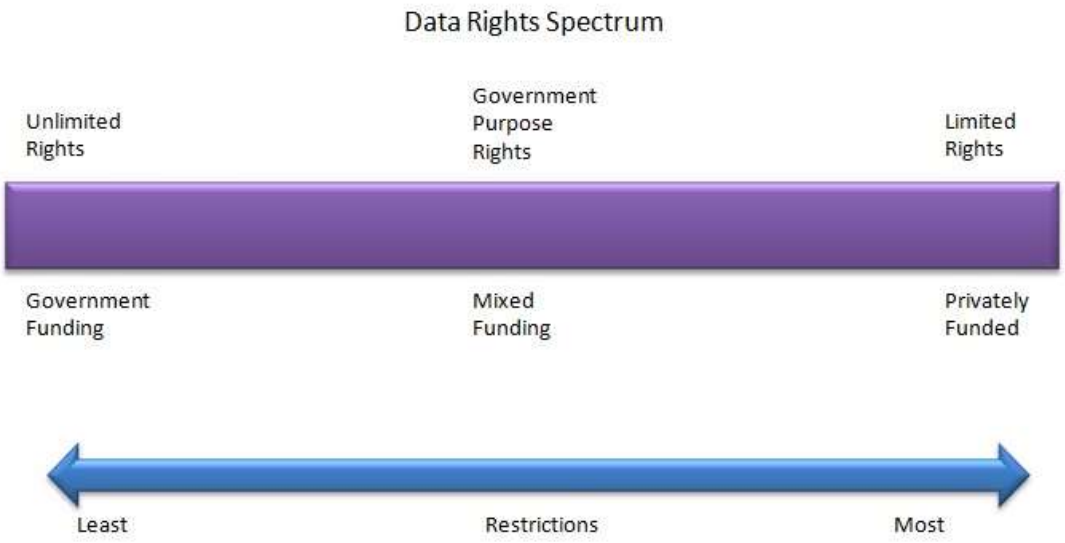

Figure 1. Data Rights Spectrum

Additional Information

It is important to have a good understanding of intellectual property and data rights to ensure that the IP assets of a company are recognized and protected and that the government receives the IP rights it needs for the future. Additional information on IP and Data Rights can be found at:

1. Defense Federal Acquisition Regulation Supplement (DFARS):
    a. DFARS Subpart 227.71, Rights in Technical Data
    b. DFARS Subpart 227.72, Rights in Computer Software and Computer Software Documentation
    c. FAR Part 27, Patents, Data, and Copyrights
2. Defense Acquisition University, Course CLE 068, Intellectual Property and Data Rights

APPENDIX C: EXPORT CONTROL

Within DoD, the focal point on export controls is the Defense Technology Security Administration (DTSA). The Department of State and the Department of Commerce are the lead agencies responsible for regulations governing the export of defense articles, commercial item and dual use items. Export authorization can be revoked, suspended, or amended by the Directorate of Defense Trade Controls (DDTC) for a variety of reasons. The export authorization identifies the export, the article/technical data, any intermediate consignee, and end-use. Export licenses are valid for 4 years; export agreements are typically valid for 10 years and records must be maintained for a period of 5 years after the expiration of the license or agreement

Primary Regulations

1. The International Traffic in Arms Regulations (ITAR), issued by the Department of State, controls the export of defense-related articles and services ensuring compliance with the Arms Export Control Act (22 USC Section 2778).
2. The Export Administration Regulations (EAR), issued by the Department of Commerce, controls the export of dual-use items (items that have both commercial and military or proliferation applications) and purely commercial items. These items include commodities, software, and technology. Many items subject to the EAR are set forth by Export Control Classification Numbers on the Commerce Control List (CCL, 15 CFR 774).

Commodity Jurisdiction (ITAR 22 CFR Part 120.4)

The commodity jurisdiction procedure is used with the U.S. Government if doubt exists as to whether an article is covered by the U.S. Munitions List (ITAR 22 CFR Part 121) or the Commerce Control List (CCL).

Common ITAR Export Application/License Forms (ITAR 22 CFR Part 120.28)

1. DSP-5, Permanent export unclassified articles or data
2. DSP-73, Temporary export of unclassified defense articles
3. DSP-83, Non-transfer and use certificate – for significant military equipment, exports of classified articles/data

Common ITAR Export Agreements (ITAR 22 CFR Parts 120.21 – 120.23)

1. Manufacturing License Agreement (MLA): an agreement or contract whereby a U.S. person grants a foreign person an authorization to manufacture defense articles abroad.
2. Technical Assistance Agreement (TAA): an agreement between a U.S. person and a foreign person for defense services or recurring disclosure of technical data as opposed to agreement granting a right or license to manufacture.
3. Distribution License Agreement (DLA): an agreement to establish a warehouse or distribution point abroad for defense articles exported from the U.S. for subsequent distribution to entities in an approved sales territory.

ITAR Licensing Exemptions

ITAR license exemptions can save considerable time and money. They are covered in multiple places in the ITAR: 22 CFR Parts 123 (Defense Articles), 124 (Agreements and Services), 125 (Technical Data), or 126 (General). Special license exemptions exist for Canada (Part 126.5), Australia (Parts 126.14 and 126.16) and the United Kingdom (Part 126.17).

Steps to Export Technologies

1. Find out if what you want to export (hardware, technical data, and/or defense services) is covered on the U.S. Munitions List (USML), found in 22 CFR Part 121 of the ITAR.
2. Not sure if your desired export is covered by the USML? File a Commodity Jurisdiction Request.
3. If what you want to export is on the USML, you must be registered with DDTC.
4. After you are registered, you must apply for an export license. D-Trade is the preferred way of licensing.
5. Ensure the CTTSO Program Manager is aware of all export activities.

Steps to Obtain a Department of Commerce Export License (see the Department of Commerce website for information):

1. Determine if what you intend to export has a specific Export Control Classification Number (ECCN) on the Commerce Control List (CCL). See: 15 CFR Parts 738, Supplement 1 to part 738 and 774. Determining the ECCN of the item will help identify why the item is controlled, which in turn will help determine the export-licensing requirement for the item or technology based on the destination country.
2. Determine how it will be exported:
    a. If a license is required then you must submit an application through the Simplified Network Application Process Redesign (SNAP-R).
    b. If a license is required for your transaction, a license exemption may be available. License Exceptions and the conditions on their use are set forth in 15 CFR Part 740. If your export is eligible for a license exemption, you would use the designation of that license exception (e.g.: LVS, GBS, TMP) on your export documents.
    c. No license is required when: the item to be shipped is not on the CCL; or the item is on the CCL but there is no "X" in the box on the Country Chart under the appropriate reason for control column on the row for the country of destination. See: 15 CFR 738 and Supplement 1 to Part 738. In each of these situations you would enter "NLR" on your export documents

When submitting export applications be sure to state "This technology was developed under the sponsorship of the DoD Combating Terrorism Technical Support Office (CTTSO). DoD coordination on export control should include CTTSO and may be obtained via e-mail to [enter CTTSO Program Manager's email here]."