**TECHNOLOGY TRANSITION PLAN (TTP)/**

**TECHNOLOGY TRANSITION AGREEMENT (TTA)**

for

**(Topic Number: Project Title)**

**a Navy Small Business Innovation Research (SBIR) Project**

*Updated Month Day, Year*

This Technology Transition Plan (TTP)/Technology Transition Agreement (TTA) succinctly documents the fiscal and transition commitments of participants in the transition stream to develop, deliver, and integrate a technology/product into an acquisition program. It is expected that this document be treated as a living document to be updated by the small business with assistance from the technical program officer as appropriate. At specific “gates” throughout the technology development process the document will be reviewed by the key partners to measure technical progress, reconfirm need and future direction, and determine if the effort should continue.

All elements may not be appropriate for every agreement. For assistance, contact your technical program officer.

**Firm Information:**

<Firm Name>

<Firm Address>

PI: <Name, Phone #, Email>

Corporate Official: <Name, Phone #, Email>

Have you entered into a Cost type contract with the Government? <Y/N>

If Y, did it include a DCAA Audit? <Y/N>

If Y, provide contact information:

**Project Information:**

Phase II Sponsor:

Phase II Contract #:

Phase II TPOC: <Name, Phone #, Email>

Phase II Acquisition Sponsor (if known):

# OVERVIEW

# Business Case *(one to two brief paragraphs)*

This section should document the technology to be transitioned and the benefits to the Navy. Briefly describe the Phase II project and objectives and the product or service expected to result from the Phase II effort. Include:

Description of proposed technology

Potential benefits of proposed technology

Summary of SBIR-funded work to-date (include Phase I work/results for TTPs)

Summary of proposed SBIR-funded work

Potential issues and risks (e.g., cost, schedule, technical, manufacturability)

# Operational Need *(one to two brief paragraphs)*

This section should document the problem to be addressed including how the high priority need was determined. Include:

Navy-defined needs being addressed and the quantified operation gaps

Approach currently used by the Navy to address this need

Description of the benefits your technology has over other approaches

*Example:*

Current shipboard operational systems prevent detection/reception of some UHF signals. Existing filtering technology degrades signals and/or otherwise affects the noise signature. The proposed technology provides superior filtering capability especially in signal ranges of interest in the global war on terrorism. The operational need was identified by PMW-180.

# Target Acquisition Program *(one to two brief paragraphs)*

This section should identify the planned transition program (e.g., Program of Record, Future Naval Capability – Enabling Capability (FNC EC)) and its key POCs, current phase, next milestone date, and insertion date. Include:

The Navy’s customer(s) for this project

Specific Navy/DoD platforms or programs (include points of contact if possible)?

What types of tests and demonstrations will be require before the technology will be approved for use on these platforms or programs

If the transition program is internal to ONR (i.e. FNC EC, INP) attach a copy of the current TTA (signatures may not be required if found on the attached TTA)

*Example:*

**PoR:** Name (e.g. Ship Signal Exploitation Equipment)

**Program Manager:** Name, email, phone

**PoR TPOC POC:** Name, email, phone

**Current Phase of Life Cycle from Defense Acquisition System:** (e.g., Tech Development Stage)

**Date of Next Milestone:** (e.g., Milestone B, scheduled Mar 2008)

**Insertion Date:**  (Date this STTR technology will be inserted into platform/fielded system)

# PROJECT INFORMATION

# Integration Strategy

In subsections below, summarize the current state of development of the subject technology, future development required for transition, and the integration process that will ensure successful transition.

1. ***Current Status of Proposed Technology Solution*** *(one sentence)*

Summarize the current state of development of the subject technology, including a Technology Readiness Level (TRL) estimate and justification for this estimate (see *Appendix B*).

1. ***Technology Integration Process and Funding*** *(several paragraphs plus completion of the table in Appendix A)*

In this section summarize the major tasks to be performed, the objective of each task, the total funds required for the task, the task start and end date, the exit criteria or other criteria used to verify task completion, and an indication if any future funding or other tasks is dependent on successful completion of the task. Describe the approach that you will take to obtain (non SBIR/STTR) funding to move your technology through subsequent (TRLs) and to achieve technology insertion. Potential items for discussion include:

* How much money will you need to bring the technology to market, and how will you raise that money?
* How much will the product/technology cost to manufacture?
* Do you have the capability to implement a plan that will not only complete the development and testing of the product, but also addresses the full scale manufacturing and distribution of the product?
* Will you manufacture the product or technology, license it, partner with another company or subcontract the work?
* If you partner with another company—who, how, and when will the partners participate in this effort? Indicate if you have had previous experience with these potential partners.

In the table in *Appendix A*, detail the upcoming key tasks for transitioning and integrating the technology/product into the acquisition program along with their TRL levels. Identify funding sources for the SBIR project (including match and complimentary project effort) and post-SBIR efforts related to transition.

1. ***Statement of Commitment/Intent* ONLY REQUIRED FOR TTA** *(one sentence)*

*Example:*

Commitment: “Upon successful demonstration of key performance requirements (exit criteria), PMW XXX (acquisition program office) will integrate XXX (product ONR will deliver) into XXX (acquisition program that will integrate ONR deliverable) commencing in FYXX (transition year).” This integration effort will be funded under PE XXXXXXX, Project XXXX (FYDP budget profile for this acquisition line should be included)

Intent: “Upon successful demonstration of key performance requirements (exit criteria), PMW XXX (acquisition program office) intends to integrate XXX (product ONR is delivering) into XXX (acquisition program that will integrate ONR deliverable) commencing in FYXX (transition year) under PE XXXXXXX Project XXXX (FYDP budget profile)

# Business Analysis/Marketing *(one to two brief paragraphs)*

Briefly describe marketing tasks to be performed or completed and milestones scheduled during the Phase II performance period. Include:

DoD Applications

* Key DoD components that have been and/or will be informed of progress in these efforts.
* What is the first product, platform or system that this technology will go into?
* What is your estimate of the market size?
* Does your company contain marketing expertise and, if not, how do you intend to bring that expertise into the company?
* Who are your competitors, and what is your price and/or quality advantage over your competitors?

Non-DoD Applications: Identifying potential sales to the private sector would help offset the initial research and development costs and required investment in plant and equipment, materials and other items necessary to produce the product. Without these additional production quantities, the volume required by the sponsor may not be large enough and/or the program long enough to allow the small business to manufacture it economically. Small quantities may have to be priced out of the reach of the government sponsor if there is no private sector market for the product.

# Risks *(one paragraph per subsection)*

In subsections below, briefly describe the assessment of project risk in four categories cited below. Describe efforts that were/will be conducted to mitigate these, e.g., a Risk Mitigation Plan.

1. ***Technical Risk is LOW/ MEDIUM /HIGH*** *(brief reason for ranking)*

Technical risk is an estimate of the potential that the proposed technology will not meet the necessary performance specifications (cite exit criteria), or is deficient in some other essential parameter (e.g., weight, volume, power consumption, reliability, maintainability).

1. ***Schedule Risk is LOW/ MEDIUM /HIGH*** *(brief reason for ranking)*

Schedule risk is an estimate of the potential for the effort proposed in this TTP, to not meet scheduled deadlines.

1. ***Cost Risk is LOW/ MEDIUM /HIGH*** *(brief reason for ranking)*

Cost risk is an estimate of the potential for the proposed effort to fail to meet target costs for development, acquisition, or operations and maintenance.

1. ***Business Risk is LOW/ MEDIUM /HIGH*** *(brief reason for ranking)*

Business risk is an estimate of the potential for the failure of the supplier of the proposed technology to either produce the product in a timely manner or in adequate quantity, or to be able to provide support for the product throughout the intended operational lifetime.

# Seminal Transition Event and Exit Criteria *(one paragraph plus exit criteria table below)*

Briefly describe the *Seminal Transition Event* (STE) that will constitute a definitive end point in this proposed technology transition initiative, providing a capability delivery date. (Note that in most cases the STE will be defined when the technology in question moves into acquisition.) Include a timeframe for the event (e.g., Q1 20XX). The STE may be planned beyond the Phase II option.

Cite the specific transition (exit) criteria that must be met prior to transition (e.g. TRL, certifications, size, weight) Provide:

* Definitive, complete, measurable parameters to be tracked, to include performance, physical attributes.
* Conditions under which technology/product will be tested/demonstrated prior to delivery to acquisition.
* Current performance of the technology/product.
* Minimum acceptable performance threshold.
* Desired final goal/objective.
* Estimate of the transition TRL, coordinated with the program office.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute/Parameter** | **Demo/Test** | **Current** | **Threshold** | **Objective** | **Expected TRL** |
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# Addendum

May include any other information that describes the transition process.

# Quad Chart

In an Appendix, provide a non-proprietary quad chart appropriate for public release. The Navy Tap website has a Quad Chart creation kit at [www.dawnbreaker.com/quad](http://www.dawnbreaker.com/quad).

# Attachments

Attach letters of endorsement from within the DoD or private sector which discuss the direct benefit of the technology to them and/or their intent of follow-on funding either during Phase II or under a Phase III award. Letters of endorsement are strongly encouraged and provide validation of interest by others. If any matching dollars will be applied to the Phase II effort, please provide information from those parties.

# SIGNATORIES (TTP or TTA)

**TTP:** A transmittal email or faxed letter accompanying the TTP will have signature lines for TTP parties, preceded by the sentence, “I have read and approved the content of this Technology Transition Plan.” Signatories should include managers at funding lines cited in Table 1-Excel Chart.

**TTA:** Signatures and dates. Technology transition agreements should be signed to commit participating organizations to the plan outlined in the agreement. Signatories should include managers at funding lines cited in the table in Appendix A. (Recommended signatories are listed below, but all may not be necessary. In addition, signatories may change depending on cost sharing conditions. For example, if the cost sharing comes from a Prime, the signatories will be the Prime and the Principal Investigator.)

Acquisition or FNC Program Manager/ Date

Cost Sharing Program Manager

*(Print full name/organization and sign)*

Resource/Requirements Sponsor Date

*(Print full name/organization and sign)*

SBIR Program Officer/Technical Point of Contact Date

*(Print full name/organization and sign)*

SBIR SYSCOM Program Manager Date

(Review)

*(Print full name/organization and sign)*

**Appendix A: Technology Integration Process and Funding (Example)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Technology Integration Process** | **Year 1** | | | | **Year 2** | | | | **Year 3** | | | | **Year 4** | | | | **Year 5** | | | |  |  |  |
| **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **TRL-In** | **TRL-Out** | **Total Cost** |
| **Transition Effort** |  | | | | | | | | | | | | | | | | | | | | | | |
| Harden Design |  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4 | 4 | 150k |
| Build Prototype |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4 | 5 | 600k |
| Environmental Testing |  |  |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  |  |  | 5 | 5 | 200k |
| System Test |  |  |  |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  |  | 5 | 6 | 250k |
| **Integration** |  | | | | | | | | | | | | | | | | | | | | | | |
| Field Test |  |  |  |  |  |  |  | | |  |  |  |  |  |  |  |  |  |  |  | 6 | 7 | 300k |
| Mfg Cost Reduction |  |  |  |  |  |  | | | | | | |  |  |  |  |  |  |  |  | 6 | 7 | 1.5M |
| Sea Trials |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 7 | 8 | 750k |
| **Production** |  | | | | | | | | | | | | | | | | | | | | | | |
| LRIP |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 8 | 9 | 10.0M |
| Full Rate |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 90.0M |
|  | | | | | | | | | | | | | | | | | | | | | | | |
| **Funding Profile** | **Year 1** | | | | **Year 2** | | | | **Year 3** | | | | **Year 4** | | | | **Year 5** | | | | **Total Amount** | |  |
| **SBIR Effort:** |  | | | | | | | | | | | | | | | | | | | | | |  |
| SBIR Program | 250k | | | |  | | | |  | | | |  | | | |  | | | | $250,000 | |  |
| Small Business (Self) | 100k | | | |  | | | |  | | | |  | | | |  | | | | $100,000 | |  |
| Prime/Sys Integrator |  | | | | 750k | | | |  | | | |  | | | |  | | | | $750,000 | |  |
| Gov't Non SBIR Source: PEO Ships PE: 0604xxx |  | | | |  | | | | 750k | | | |  | | | |  | | | | $750,000 | |  |
|  |
|  |
| In-Kind Source: Test Samples Item: NSWC CD | 150k | | | |  | | | |  | | | |  | | | |  | | | | $150,000 | |  |
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|  |
| **Post-SBIR Option:** |  | | | | | | | | | | | | | | | | | | | | | |  |
| Transition/Insertion Source: PMS501 PE: 0605xxx |  | | | |  | | | | 750k | | | |  | | | |  | | | | $750,000 | |  |
|  |
|  |
| Production Source: PE: |  | | | |  | | | | 3.0M | | | | 7.0M | | | | 90.0M | | | | $100,000,000 | |  |
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**Appendix B: Navy Technical Readiness Levels**

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| --- | --- |
| **Technology Readiness Level** | **Description** |
| 1. Basic principles observed and reported. | Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include paper studies of a technology’s basic properties. |
| 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. |
| 3. Analytical and experimental critical function and/or characteristic proof of concept. | Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative. |
| 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 to the eventual system. Examples include integration of “ad hoc” hardware in the laboratory. |
| 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 it can be tested in a simulated environment. Examples include “high fidelity” laboratory integration of components. |
| 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 simulated operational environment. |
| 7. System prototype demonstration in an operational environment. | Prototype near, or at, planned operational system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in an operational environment such as an aircraft, vehicle, or space. Examples include testing the prototype in a test bed aircraft. |
| 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 of the system in its intended weapon system to determine if it meets design specifications. |
| 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. Examples include using the system under operational mission conditions. |