

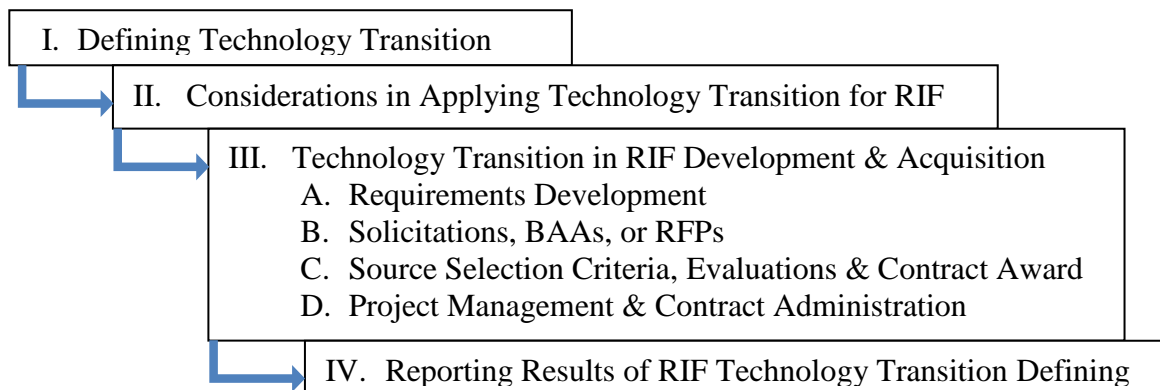
Rapid Innovation Fund (RIF) Program: Use of Technology Transition Best Practices ¹

EXECUTIVE SUMMARY:

This document provides key factors that enable or facilitate technology transition. As you use this please consider:

- There is no ‘how-to’ cookbook or recipe for technology transition that will guarantee technology will be used in a product or application. However, there are mechanisms and best practices the Department of Defense (DoD) components can use to improve the probability or likelihood of transition.
- Technology transition is a contact sport. Technology from industry or a government laboratory must have an advocate who technically understands the technology, and who also can explain and address the key issues associated with marketing a technology, including:
 - Matching your technology attributes to a user or customer need.
 - Getting a commitment from a customer that if specific performance characteristics are achieved during technology development, your customer will commit to a specific follow-on action (e.g., additional prototyping, additional testing and evaluation, a limited procurement, full-scale production, etc).
 - Determining if your technology is mature enough for your customer. Your customer must agree what technical performance criteria must be achieved in technology development to warrant further interest in product transition and use.
 - Developing a sound business case. Your customer must understand and agree to the potential return on investment and risks associated with using a technology. The more you can articulate and quantify the benefit of your technology use, the greater the likelihood of success.

OUTLINE / PREVIEW FOR THIS DOCUMENT:



¹ Responds to General Accountability Office (GAO) RIF review and recommendation to “Identify & apply factors that contribute to likelihood of technology transition success more consistently across the program.” See <http://www.gao.gov/products/GAO-15-421> (May 2015)

I. Defining Technology Transition

In the broadest sense, technological transition describes how technological innovations are incorporated into society, e.g., from sailing to steam ships or from horse-based transportation to the automobile. Transition occurs when new technologies are developed and co-exist with old technologies before supplanting them. Within the DoD, technology transition is defined as:

- The process of applying critical technology in military systems to provide an effective weapons or support system—in the quantity and quality needed by the operators to carry out assigned missions and at the “best value” as measured by the technology sponsor and customer. For example, transition can occur:
 - During the development of systems or even after a system has been in the field for a number of years (e.g., via technology refresh).
 - Between government organizations, such as when a government laboratory transitions a technology to a government research and development (R&D) organization for use in a specific system.
 - Between industry and the DoD, when a DoD program applies technology developed outside the DoD.
- The process by which technology deemed to be of significant use to the operational military community is transitioned from the science and technology environment to a military operational field unit for evaluation and then:
 - Incorporated into an existing acquisition program or
 - Identified as the subject matter for a new acquisition program.

II. Considerations in Applying Technology Transition for RIF

Because of the DoD’s desire to save costs and remain technologically superior to other nations’ militaries, all S&T, acquisition, and logistics managers should be aware of near term transition opportunities and in particular, must facilitate successful and cost effective transition of technology to needed systems/subsystems. For a RIF project transition, it is also necessary to be able to know when and how to “market” a technology that is ready for insertion. Some best practices or criteria for the successful transition of a RIF project:

- Establish and maintain frequent communication between the technology developer(s) and the operational and acquisition customers.
- The key stakeholders, including operators, acquisition customer, and RIF performer work together as a part of an Integrated Product/Process Team (IPT).
- All stakeholders / customers understand and agree to the end product / deliverable at project inception.
- Put in place a written agreement to transition (Memorandum of Agreements (MOA) / Memorandum of Understanding (MOU), Technology Transition Agreement / Plan (TTA/TTP), or Project Execution Plan (PEP) in order to demonstrate a commitment by all parties to implement the RIF technology results-
 - Review semi-annually or annually and update as needed.
- Ensure transition is a key agenda topic for IPT discussion at the beginning of the RIF

project and during project in-process reviews (IPRs).

- Understand the operator, acquisition customer, and other transition partner requirements.
- Put a funding strategy in place to effect transition.

One of the most important aspects in transitioning the results of a RIF program is to prepare a written agreement (e.g., MOA, MOU, TTA, TTP, PEP) or commitment between the RIF program manager and the acquisition customer to implement the technology results of a RIF project.

Elements of a good transition agreement include:

- Technology development outline
- Expected outcomes of RIF project
- RIF funding strategy
- Schedule/milestones/when RIF technology is ready to be handed over
- Identification of acquisition or transition customer
- Acquisition strategy/integration plan
- RIF issues/risks – technical, manufacturing/production or logistics
- Signed customer and RIF manager commitment
- Acquisition customer or user funding strategy to implement technology
- Describe how the project supports a formal requirement or stated military need and ties in with the defense acquisition program's technology refresh roadmap

Overall, the elements of a successful RIF transition include early identification of customer needs, formal program office support (e.g., with an MOA/MOU or transition agreement/plan), and development of transition metrics against which to track progress.

III. Technology Transition in RIF Development & Acquisition

A. RIF Requirements Development

- Ensure requirements or topics in the Broad Agency Announcements (BAAs) or other solicitations are supported by:
 - The acquisition PEO, PM, logistics center, warfare center, depot or arsenal that has procurement or logistics funds to support insertion of the RIF technology into their program.
 - A late-stage R&D or prototyping program that has funds to support at least limited procurement or additional testing and evaluation and preferably, at least limited production quantities.
- Every RIF requirement must be connected to a customer with follow-on procurement, prototyping, experimentation, test and evaluation, or logistics support funds from acquisition program sponsor, a late-stage prototype program, or a test activity.
 - Unless approved by the senior Agency RIF owner, avoid submitting immature or underdeveloped technology topics that are still in applied research or early development.
 - Requirements should clearly articulate who the final customer is, what their needs are, and how vendors responding to the BAA could potentially address those needs.

- To assist acquisition managers in reconciling requirements or potentially tailoring the scope of their requirements to broader agency goals, OSD, Military Service and Defense Agency Headquarters staffs should provide a prioritized list of capability gaps or agency-wide priorities that have potential for small business development, e.g.:
 - Ensure topics are written to focus on programmatic needs and garner input from Service or Defense Agency internal research councils on agency-wide technology needs.
 - Solicit or coordinate requirements with DoD component SBIR/STTR teams for late-stage, phase II or high impact, mature phase I small business requirements that have an acquisition program sponsor or strong DoD stakeholder interest.

B. RIF Solicitation, BAAs, or Request for Proposal (RFP)

- Increase emphasis on transition as a source selection criteria, and clarify transition expectations, e.g.:
 - Ensure offerors identify or at least nominate potential transition customers in their white papers and where they possess the expertise, estimate the costs the government partner(s) will incur during the 24 month RIF project (e.g., equipment, facilities, personnel) and through transition (e.g., testing, integration).
 - For non-traditional businesses, or for companies lacking expertise, assist in developing or acquainting the transition customer with promising technology innovation by sponsoring a dialogue or discussion with cognizant engineering staffs or other potential DoD customers.
 - Increase the level of fidelity and details needed for transition in request for proposals, e.g., breakout of integration, procurement costs, follow-on estimates for unit production items.
- Continue to use Technology Readiness Levels (TRLs) as mechanism for discussion of the maturity index between industry offerors and DoD customers.
- Educate offerors on RIF contractual and administrative transition mechanisms, e.g.:
 - Use of technology transition plans or agreements, which include integration and deployment milestones.
 - Inclusion of options for additional prototyping or procurement in anticipating the RIF project success.
 - How the RIF technology will be measured and evaluated against TRL, performance, manufacturing, or other readiness goals.
- Educate potential offerors about the categories of tests, certifications, or other mechanisms that are required prior to deploying a component-level technology on an operational military platform.

C. RIF Source Selection Criteria, Evaluations & Contract Award

- Evaluate transition as part of the offeror's technical approach.

- Ensure the PEO/PM acquisition representatives or other potential users of the RIF technology participate on the source selection evaluation teams to assess offeror proposals.
 - Select proposals that offer a product or capability that addresses an acquisition program priority need, and is already in or is projected to be in the acquisition sponsor's future year budget.
 - The schedule or milestones for RIF project transition meets the insertion target for the acquisition program or user timeline.
- Ensure evaluators assess the claimed project inception TRL(s), e.g.:
 - RIF proposals or projects should have TRL 6 or 7 at project inception to reach a final test event within two years. A TRL 5 is generally too low and should only be accepted for proposals that respond to high-risk, new technology capabilities as deemed appropriate for RIF investment by the senior Defense Agency RIF lead.
 - Where proposed or stated TRLs are in question, request support from external technical subject matter experts (SMEs); e.g., the S&T Communities of Interest, research and development advisory panels, Federally Funded Research & Development Centers (FFRDCs), the Information Analysis Centers (IACs), etc.
- Acquisition PMs and RIF technology users participate in contract negotiation process to ensure contract deliverables (e.g. CDRLs) result in needed technology commensurate with an offeror's proposed deliverables.
- Use existing procurement and SBIR authorities to expedite further development, production, and fielding of successful RIF projects.
 - In accordance with DFAR 217.2, use options in RIF contracts for further research, testing, low rate initial production, or production for funding by acquisition programs of record or other technology customers. These options can be executed beyond the 24-month RIF performance period.

D. RIF Project Management and Contract Administration

- All technical stakeholders (e.g., industry participants, the PM/PEO, RIF technology managers) for each project should agree on the assessed TRL at project inception.
 - Routinely measure and discuss in contract or In-Process Reviews (IPRs). Include key component or task-level TRLs, as needed, to better understand the risk of integration if RIF technology is targeted for use on a weapon systems platform.
- Assess available transition mechanisms for inclusion in project – address during the contract award / negotiations and review during project and performance reviews with the RIF contractors, e.g.:
 - Technology Transition Agreement / Plan – If not developed and executed prior to contract award, then address soon after contract award. The plan should detail the timing, pass/fail criteria, and decision authority for a test event that occurs within two years. Consider use of independent transition SMEs to provide input to the plan. For sample agreement, see http://www.navybir.com/sbir_tta_template_091201-v1.doc

- Relationship Managers – Individuals identified to assist in technology transition by facilitating a direct and constant dialogue between the RIF technology developer and the RIF customer, or acquisition program manager.
 - These individuals typically possess operational and technology transition subject matter expertise, e.g., the Technology Transfer Office of Research and Technology Applications (ORTAs) located in each DoD laboratory.
 - They confirm resource sponsor and user buy-in, provide quality assurance for TTAs and TTPs, and support cohesion and accountability.
 - They help avoid successfully demonstrating a technology only to find that neither the acquisition nor user communities are prepared to accept it (a common pitfall in the Science & Technology arena).
- Metrics – Identify and track technical project measures of performance, e.g.:
 - Nonrecurring development cost targets.
 - Scheduled delivery period checkpoints for RIF technology and insertion point for the receiving program of record or other technology user.
 - Recurring manufacturing or early low-rate production cost targets.
 - Performance characteristics (size, weight, power, reliability).

These measures should be agreed by the government and contracting team, with potential reporting as a contract deliverable and discussed at project technical reviews.

- Identify project timeframe for additional transition activities (i.e., procurement, deployment) after the RIF two- year project; for example: 2 years for development completion, 4 years for procurement by acquisition, 5 years for deployment.
- For RIF projects that lose an acquisition customer (e.g., due to changing requirements, reduced budgets, technology evolution, etc.), extend the period of performance via “no-cost extensions” when such action will support finding an alternate transition path.
 - Utilize internal Defense commercialization, transition, and SBIR offices to socialize or potentially market the capability to external customers or markets.
- Consider use of external consulting mechanism to assist companies, especially small businesses that have received an award and need to scale-up for manufacturing, design review, sustainability, transition and commercialization of technology. Examples of DoD-sponsored activities that can assist include:
 - Resources for small businesses in working with the DoD community. See <http://www.acq.osd.mil/osbp/sb/index.shtml>.
 - Leveraging small business government resources and expertise across the federal agencies. See <http://www.sba.gov>
 - Accessing expertise from DoD’s partnership intermediaries, including Techlink (<http://techlinkcenter.org>) and MilTech (<http://www.miltechcenter.org>).
- Qualify RIF technology for type classification, assignment of National Stock Number (NSN), and make available for purchase on the GSA schedule / other DoD bidder's lists.

- Consider use of prime contract incentive clauses to facilitate RIF transition to weapon system integrators, e.g., DFAR 216.4 or value engineering change, FAR 52.248-1.

IV. Reporting Results of RIF Technology Transition

- As provided in the RIF statute and annual implementation guidelines, a key RIF objective is to stimulate innovative technologies and insert technology products in support of defense acquisition programs that meet critical national security needs.
- To assess overall program results, each component that receives RIF funds will report results at project completion using the below template.
 - The DoD program advocates for RIF will request inputs at least annually based on ongoing discussion and meetings with the defense components.

RIF Completed Projects Transition Results: Template

Project Title	Year Funded	Participants	Description	Transition Activity / Action

RIF Completed Projects Transition Results: Actual Inputs / Examples

Project Title	Year Funded	Participants	Description	Transition Activity / Action
Encapsulated Body Armor Ceramics	2011	Dayton Armor & SOCOM	Develop thinner plate with 20 percent weight reduction with multiple hit capability	<ul style="list-style-type: none"> • PEO-SW funded follow-on First Article Test • Targeted for transition into Tactical Assault Light Operator Suit (TALOS)
Shooter2DIB	2011	Modus Operandi, Inc & SOCOM	Accelerates exploitation of intelligence by publishing SIGINT data to the Distributed Common Ground System (DCGS) Integration Backbone	<ul style="list-style-type: none"> • Transitioned capability to DCGS Management Office • Integrated into intelligence community operations (classified details available)
Checkpoint Explosive Detection System		Alakai Defense System, Inc & DTRA	Stand-off explosives detection system with improved performance, reduced size, weight and power requirements	<ul style="list-style-type: none"> • Army procuring 3 systems • PACOM assessing during Thailand demo (Summer 2014) • ECBC assessing for chem / bio detection capabilities
Fast Running Models for Assessing Internal Detonations	2011	Weidlinger Associates & DTRA	Developed models that evaluates blast damage of reinforced concrete based on detonation of cased munitions use in terrorist activities	<ul style="list-style-type: none"> • Software integrated into DTRA internal decision support tools used by the CCMDs (J3/J8)
Smart Mobile Identity for DoD	2011	Aoptic Technology & SOCOM	Develop handheld biometric data collection system using iPhone and IOS platform for iris, face and fingerprint data	<ul style="list-style-type: none"> • Unsuccessful: Did not meet technical performance goals