BTI INSTITUTE TRANSITION STRATEGY

As per OUP, "Transition is defined as the process and eventual transfer of ownership and operation/maintenance of a product or system: Transfer of responsibility for a product or system from a research and development organization to a receiving activity, with subsequent integration of the product or system into the receiving activity's operations. For purposes of this definition, the term "operations" can include any phase of an acquisition program, capability development, or equivalent."

The BTI Institute will employ a transition model sensitive to the unique needs of key stakeholders and the environment within which BTI Institute operates. Specifically, BTI Institute will be using the ideas and concepts of the Mission Model Canvas pioneered by Alexander Osterwalder and Steve Blank (https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations/). This model provides a mission oriented framework that measures success through benefits achieved, cost management, deployment, and stakeholder support. This is a transition away from a revenue based business model. The mission oriented model aligns with the BTI Institute mission, purpose, and strategy.

The transition strategy employed by BTI Institute consists of a customer-centric process driven by the Project Principal Investigator and assisted by the BTI Institute team, leveraging the resources of the University of Houston, and directly engaging with end-users in the DHS community to deliver pragmatic solutions for the near-term, the mid-term, and the long-term needs of the DHS. In general, there are five phases to transition:

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Pre-Award	Performance Period	Post Award	Transition Plan Dev./Approval	Implementation
Set core requirements	Gain customer Support	Evaluation	Launch Preparation	Deployment
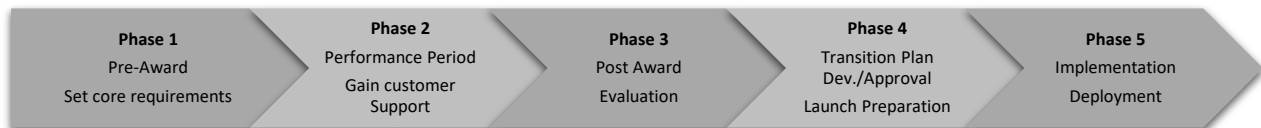
Phase 1 – Pre-Award: During the pre-award phase and development of the work plan, he transition team assists the PPI to develop a notional transition plan – as an integral part of the project workplan to address core components of the project and align with a mission outcome.

Phase 2 – Performance period: During the performance period, the customer is identified and included in the briefings related to the project. Customer suggestions are incorporated into the plan to maximize optimal transition outcomes. A viable transition plan for the Customer(s) is developed and approved within the first year.

Phase 3 – Post Award: Upon completion of the project, an evaluation of the deliverables is performed to decide if transition is desired by the Customer.

Phase 4 - Transition Plan Development/Approval: A detailed transition plan for research deliverables is developed and approved by the Customer.

Phase 5 - Implementation: Transition is undertaken by an entity decided by the customer.

The BTI Institute leadership, working in conjunction with the PPI and Champion, will conduct an assessment of the needed mix of interdisciplinary skill sets, unique capabilities, expertise, credentials and partners needed to achieve the research objectives. It will reach out to partner institutions to provide representatives and subject matter experts to the team to address any perceived gaps.

TRANSITION TEAM

BTI Institute employs a customer-centric structure to the transition strategy thereby ensuring the continued advancement, timely adoption, and effective migration from research to use by the DHS community. At a minimum, each project will include representatives from the Project's Principal Investigator (PPI) Organization, the BTI Institute, and DHS, as follows:

- PPI's Organization
  - The principal investigator
  - Representative from the Technology Transfer Office of the PPI's organization
  - Representative from the Communications Office of the PPI's organization
- BTI Institute
  - BTI Institute's Transition POC
  - The BTI Institute's Executive Director for Strategic Partnerships
  - Member of the BTI Institute's Research Committee assigned oversight of the project
  - The BTI Institute's Emerging Technologies Architect (TBN)
  - Representative from the Technology Transfer Office of the University of Houston
- DHS
  - Project Champion
  - Project Advocates
  - Customer's Transition POC (beginning in Phase 4)

The Transition Team is not limited to the agencies, organizations, and positions listed above. The BTI Institute may add partners and personnel to the Transition Team as necessary to ensure a successful transition of research to its customers. The transition team, partners, and personnel contribute to development of the value proposition through the refinement of products and services and how these effectively produce benefits and address problems.

PHASE 1 – PRE-AWARD

During the pre-award phase, the BTI Institute forms a Transition Team to assist the PPI in an analysis of deliverables and the development of the work plan, of which the notional transition plan is an integral part. This phase sets the foundation for identifying key beneficiaries, determining effective financial stewardship, program implementation, and strengthening stakeholder relationships through program transition.

Phase 1 Process

Use-cases/need

The transition team will assist the PPI in identification of specific use cases/needs for the project outputs (deliverables/products). Through this customer-centric needs assessment, more information about the use-cases and needs are assessed. Further, additional research is

conducted to identify concerns that may be masked, hidden, or compensated for by policy, doctrine, or practices. To facilitate the identification of the use-cases/needs, provide accurate metric-verifiable codification, and share across the transition team, the codified details of the use-cases/needs are seminal to the generation of the transition plan. In addition, using existing use-cases (through CGAP or Acquisition Documents like a CONOPS, or planning CONOPS) will be explored.

It should be recognized that, in this phase of transition plan development, the initial use-cases/needs may be eclipsed or integrated into an identified/discovered broader scope and scale of applicability. In turn, that may drive or shape the near-term, mid-term, and long-term transition plans and actual project development. Although all cases and needs are important, the dogmatic pursuit of a single use-case/need solution, within the context of a greater potential application, will only be advocated as a near-term foundational/proof of concept prolegomena to a broader application of the solution.

Deliverables Analysis
The types of deliverables (tools, technology, software, knowledge product) are listed in Table 1.

Table 4. Types of Deliverables

Deliverable Type	Description
A: Algorithm	A computational science algorithm to perform a specified task
B: Brief	A brief report about a research problem including analysis and recommendations
Co: CONOPS	A document outlining a Concept of Operations
C: Course	The materials associated with an education or training offering
D: Dataset	A dataset to be used for the development, validation, and testing of an algorithm
H: Hardware Prototype	A hardware prototype designed to perform a specified action.
P: Publication (Conference or Journal)	A peer-reviewed publication in a scientific journal
Pr: Protocol	A protocol of operations
R: Report	A report about a research problem including a detailed analysis
So: Software	Executable and source code
Su: Survey	A validated Instrument to conduct a survey for particular questions
V: Video	A video explaining to a lay person the problem being addressed, the solution and the impact of the solution.

Key questions are addressed by the PPI during the pre-award, while the work plan development is in process, and during the continuation of work plan development processes which define the product and/or service:

- What is the nature of the deliverables?
- To what degree is the technology of the deliverables end-user/customer specific?
- Is the academic, industrial, or commercial environment of the technical context of the solution so volatile that a solution may be eclipsed or overtaken by evolutions in the specific or a parallel arena of development?
- What are the functional and/or operational requirements for the proposed deliverables, as identified?
    - Are the functional/operational requirements unique to a specific end-user/customer or a spectrum of users?
    - Are there capability gaps, critical vulnerabilities that the end user may have articulated, but not yet refined into requirements
    - How does the work relate to initial requirements (these are pre-refined Operational Requirements that are basic agent statements with an initial level of analysis at a planning workshop; Not yet to be considered as Operational Requirements)?
- Are there any technical, procedural, policy, or doctrinal dependencies that exist and would need to be modified, or would be required for the end-user to adopt/acquire to use the developed solution?
- Are there alternative technologies/processes/methods/protocols/knowledge products that could address the requirements for solving the problem?
    - What methodology was employed to survey alternatives?
    - If they exist, what are their limitations/advantages?
    - What is the comparative rate of development in the alternative technology, and is there potential for the proposed solution to be eclipsed or overtaken by the alternative technology?
- What are the means and methods used by the PPI to engage with the PPI's organization's technology transfer office and communications office to leverage the capabilities and assets they represent, including:
    - Frequency and level of communication
    - Leveraging of existing contacts from the identified/discovered potential end-user(s)/customer(s) within the DHS community and allied communities
    - Partner COE, academic, industrial, and commercial contacts

Phase 1 Outcomes
The PPI updates the work plan with detailed descriptions answering the questions from the deliverables analysis and the notional transition plan. It should be emphasized that the notional transition plan is a dynamic document subject to modification as dictated by changes in physical, geographic, and regulatory environments of the end-user(s)/customer(s) and new manifestations of use-cases/needs. The Project Principal Investigator, assisted by the BTI Transition Team, may amend/update the written notional transition plan over time. The workplan approved by the Project Champion and OUP and contract is signed.

PHASE 2 – PERFORMANCE PERIOD
During this phase, the transition team assists the PPI to identify a customer for the project.

Phase 2 Process
All team members offer leads to the PPI and facilitate introductions. The DHS components function/operate across a broad spectrum of physical, geographic, and regulatory environments. Use-cases/needs identified for a specific user have a high probability of being applicable to components in the original form or with minimal modification. To ensure the greatest return on

investment from DHS funds, resources, staffing, and time, the broadest possible user community must be identified, and should be included.

Customer Discovery: Toward a comprehensive and accurate understanding of the potential customers for a project and the proposed deliverable, the user community including the DHS S&T program advocates, DHS agency advocates, DHC agency contact(s) for project acquisition, allied agency/community advocates/subject matter experts (external to the DHS, University of Houston, or BTI Institute's communities), project champion(s), and potential end-user(s)/customer(s) should be surveyed with, at a minimum, the following questions:

- Who is/are the potential and most likely end-user(s)/customer(s) of proposed deliverables?
    - How, potentially, will the end-user(s)/customer(s) change in scale and scope across the near-term, mid-term, and long-term research, development, testing, and deployment of the project?
    - Are the deliverables scalable?
- What are the functional and/or operational requirements for the proposed deliverables as identified?
    - Are the functional/operational requirements specific to a specific end-user/customer or a spectrum of users?
    - If there are significant conflicts between the optimal deliverable across a spectrum of potential end-users/customers, how will they be resolved?
    - How is the optimal solution as prescribed by cost/time/resources defined?
- Are there any technical, procedural, policy, or doctrinal dependencies that exist and would need to be modified, or would be required for the end-user to adopt/acquire to use the developed solution?
- Are there alternative technologies/processes/methods/protocols/knowledge products that could address the requirements for solving the problem?
    - What methodology was employed to survey alternatives?
    - If they exist, what are their limitations/advantages?
    - What is the comparative rate of development in the alternative technology, and is there a potential for the proposed solution to be eclipsed or overtaken by the alternative technology?

Phase 2 Outcomes
The PPI writes a memorandum of record for each potential customer documenting the interaction and its outcomes, and identifies one or multiple customers for the specific project. Each potential customer offers a written commitment to participate in the development of an evaluation plan of the deliverables.

PHASE 3 – POST AWARD
During this phase, the BTI Institute develops and implements an evaluation plan for the deliverables based on the customer use cases. The Customer is encouraged to identify the: 1) Requirements Manager; 2) Program Manager; 3) Operational Sponsor.

Phase 3 Process
The BTI Institute's team interviews the customer(s) to write the requirements for the specific need. The BTI Institute invites the Customer to designate a Customer Transition POC. The BTI Institute and the Project Champion performs an evaluation of the deliverables against the requirements and provides a report to the customer. Focus is placed on ensuring gaps, requirements and use cases are used to ensure and explain the product can be evaluated against the initial problem.

Phase 3 Outcomes
The BTI Institute provides a written evaluation of deliverables to the Customer. The Customer(s) designate(s) a Transition POC(s) to assist in the development of the specific Transition Plan. The Customer's Transition POC will have the responsibility/authority to approve the specific Transition Plan.

PHASE 4 - PLAN DEVELOPMENT/APPROVAL
During this phase, the PPI develops a specific Transition Plan.

Phase 4 Process
The transition plan will include:
- A clear and concise explanation for the concrete real-world use of the research and subsequent deliverables
- The deliverables as defined by the analysis, including: the specific granularity of the deliverables as developed for a committed end-user(s)/customer(s) within the DHS community, the applicability across a larger scale and scope, and any limitations or technical, procedural, policy, or doctrinal dependencies.
- A clear and concise explanation for the transitional pathway to deploy the deliverables to end-user(s)/customer(s) within the DHS community, including the issues of:
  o The rights of intellectual property
  o Manufacturing considerations
  o As appropriate, identified sources for software, hardware, fabrication, and/or manufacturing
  o The operational and maintenance considerations, including: cost, end-user(s)/customer(s) required knowledge base
  o Test, training, and evaluation (with metrics for testing) for end-user(s)/customer(s)
  o The means and methods of engagement with and deployment to end-user(s)/customer(s)
  o Documentation of best practices and methods, and provisions of accessibility to end-user(s)/customer(s)
  o The specific initial end-user(s)/customer(s) recipients (by agency, role, and name where possible) of the deliverables and the protocol for sharing by the initial recipients to other users within the DHS and allied communities
  o The means of deployment for deliverables to specific initial end-user(s)/customer(s) recipients
  o Potential plans for publication of metrics, narratives, source code, presentations, websites, workshops, teleconferences, emails, and face-to-face meetings and "how-to" instructions to the DHS.

Phase 4 Outcomes
Specific Transition Plan has been developed and approved by the Customer POC.

PHASE 5 – IMPLEMENTATION
During this phase, the Phase-5 assigned entity performs the transition.

Assessment of the Transition Process
Beyond the satisfactory meeting and/or delivery of the stated task, milestones, deliverables, and performance metrics, the assessment of the transition process will be a measure of:
- The effective deployment of the deliverables to end-user(s)/customer(s)
- The level of engagement by end-user(s)/customer(s) in the use of the deliverables

- The closing of a knowledge, and/or operational capability gap/deficiency of significant importance to the Homeland Security Enterprise, and/or a change in the technology, software, database, CONOPS, visualizations, process, method, or protocol of end-user(s)/customer(s) with no major outstanding/remaining business issues
- The establishment of a "transition agreement" and protocol with the end-user(s)/customer(s) for the sustainment and maintenance of the deliverable deployment
- As appropriate, the effective and wide-spread circulation of metrics, narratives, source code, presentations, web sites, workshops, teleconferences, emails, and face-to-face meetings and "how-to" instructions to the DHS stakeholders

Throughout the five phases of the transition process, the goal is to identify and maximize the value offered to all stakeholders. In this process facilitated by BTI Institute, internal and external customers engage through projects and needs discovery to align the problem under consideration with the "gain creators" and "pain relievers," (Osterwalder & Blank, 2017). BTI Institute seeks mission oriented solutions; it is this focus that drives the relationships, process, criteria, and outcomes. The transition strategy is key to the value creation process. Phases 1-5 fit within a theoretical mission-oriented structure identified by (Osterwalder & Blank, 2017).
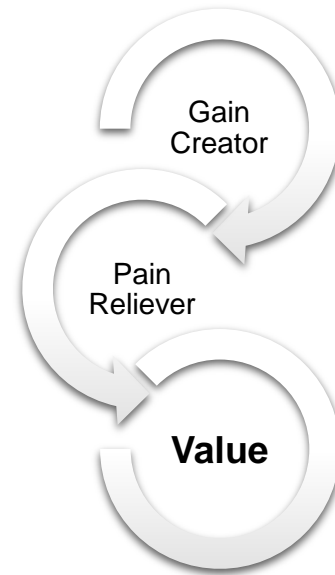

Figure 1: Value chain components for a mission based transition plan (Osterwalder & Blank, 2017)