Introduction to the Invent Apply Transition (I-A-T) Framework

This document introduces the Invent-Apply-Transition (I-A-T) framework and outlines the iterative steps and scaling activities that are involved to successfully bring educational innovations to market.

The purpose of the Invent-Apply-Transition (I-A-T) framework is to provide researchers with a systematic approach to sustainably scale educational innovations. SRI hypothesizes that certain activities and key decisions at different stages of innovation could increase the probability of sustainable scaling. SRI started with traditional startup methodologies from its own Entrepreneur-in-Residence program and then added key tasks and considerations that are unique to education.

The I-A-T framework is founded in the concept of optimizing successful user-defined basic research, as described by Pasteur's Quadrant.[1] At a high level, the three-pronged business model of Invent, Apply, Transition allows SRI to fluidly facilitate collaboration, research, and implementation throughout any stage of a project, ultimately working to bring big ideas to fruition. This is an iterative model to link knowledge generation with productization.

- **Invent** is the process of ideation and spending time understanding the use-case and the need. The goal is to invent a solution concept that is likely to address an unmet need.

- **Apply** sets out to prove the solution and show potential applications. This is where advancements are made to address the problem at hand. A key element of Apply is to get to product-user fit, in which one demonstrates that the technology satisfies the need of its principal direct users. This is often done through a proof of concept.

- **Transition** is all about the route to market and getting to product-market fit, in which one demonstrates that the technology satisfies the needs of all stakeholders, and thereby those of a large or strategic segment of the market. This is a relatively well-understood methodology often used for large corporations and startups.

---

[1] Stokes, D. (1997). Pasteur's Quadrant: Science and Technological Innovation. Brookings Institution.

The types of support a research and development team may need from consultants will change as the innovation progresses through the development cycle. For instance:

- **In the early stages** researchers may need help thinking through their Product-Market fit strategy (the degree to which a product satisfies a strong market demand) and how to differentiate their solution from others in the field.

- **As an innovation progresses**, researchers may need help with (1) developing a product roadmap that outlines the vision, direction, priorities, and progress of a product over time and (2) clarifying the requirements that are necessary to enter the market.

- **As an innovation matures**, researchers may need intensive support on how to generate demand for the innovation and build up a sales and marketing strategy.

At each stage of the research, consultants would work alongside the research and development team, augmenting scaling up efforts. The framework provides guidance to researchers on tasks that are essential to scaling at all stages of the research process, from discovery to effectiveness testing.

Depending on team composition, there will be variability in how teams approach these activities. The framework is intended to guide teams through scale-up activities that may be performed by researchers, partners, or jointly.

An important note is that the stages outlined below are iterative. Going back to previous steps and repeating key activities is to be expected. The iterative process of innovation drives the repetition of tasks in subsequent stages as research and development teams learn about the needs of their users and the market.

I-A-T Activities by Solution Readiness Levels

The I-A-T framework activities have been organized by Solution Readiness Levels (SRLs) as shown in the table below. This is a set of high-level iterative steps that education researchers can work through together to create an innovation and bring it to market. These tasks are designed to help innovations maximize their transition readiness and to address common points of failure that researchers face when trying to scale their innovations. Modifications to the innovation will need to be made through out the process based on customer feedback and a deeper understanding of the market requirements.

I-A-T Framework Scaling Activities by Solution Readiness Levels and IES Research Phases

Solution Readiness Level (SRL)	I-A-T Scaling Activities	IES Research Phases
SRL 1 Invent	Needs hypothesis Key performance indicators hypothesis Solution hypothesis (minimum viable product) Basic protype performed Performance, Reliability, Convenience, Cost (PRCC) analysis	Exploration Innovation and Development
SRL 2 Apply	Product-user fit hypothesis Champion(s) identified Stakeholder mapping Initial market and differentiation analysis Product-market fit hypothesis	Innovation and Development Efficacy and Replication Studies Effectiveness Studies
SRL 3 Transition	Product-user fit hypothesis Champion(s) identified Stakeholder mapping Initial market and differentiation analysis Product-market fit hypothesis	Effectiveness Studies

Learn more about the I-A-T scaling activities and access resources here.