In Pursuit of an Iterative Path Toward Small Business Technology Transfer Commercialization

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About Us

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- Area of Interest: Workforce Development & Leadership

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- Global School Developer
- Originator
- Ph.D. Candidate @ University of North Texas Department of Learning Technology
- Area of Interest: AI in Education

Presentation Purpose

Presentation objectives are to provide:

1. Overview of **Small Business Technology Transfer program (STTR)**
2. Identification of a STTR soft system current problem and creation of rich picture of the issue
3. Present a conceptual model for addressing the issue and comparing it with the “real world” and current STTR environment
4. Suggest an implementation and evaluation plan

Commercialization

Commercialization. *The process of developing products, processes, technologies, or services and the production and delivery (whether by the originating party or others) of the products, processes, technologies, or services for sale to or use by the Federal Government or commercial markets (U.S. Small Business Administration Office of Investment and Innovation, 2019)*

Problem Situation

Inconsistencies and inaccuracies in the **Small Business Administration's (SBA) Commercialization database** is making it hard to determine if American taxpayers are receiving returns on the millions the U.S. government invests while subsidizing small business innovation R&B projects.

Problem Situation Expressed

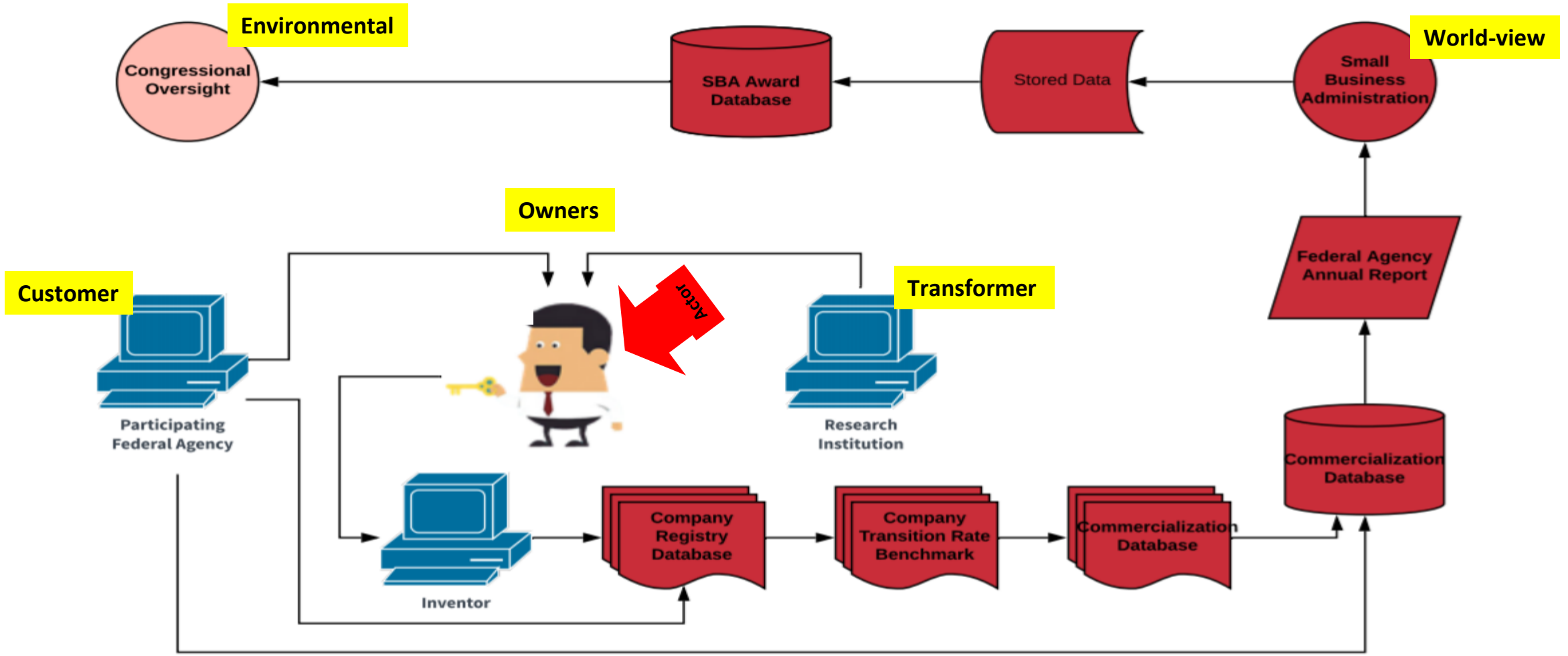
- **$166 million** was invested in **Small Business Technology Transfer (STTR)** grants made awarded to 205 Inventories in FY2018 alone.
- The **Government Accounting Office** (GAO) audited SBA's STTR and SBIR programs **between April 2017 and January 2018**.
- The audit **revealed inaccuracies, inconsistencies, and incompleteness** in **Transition Rate and Commercialization benchmark** reporting.
- GAO concluded it is **unreasonable to assume STTR** awardee **eligibility and performance** using the unreliability data.
- GAO **recommended corrective actions** to **increase the trustworthiness and dependability** of the STTR/SBIR reporting.

Real World Root Definitions "Rich Picture"

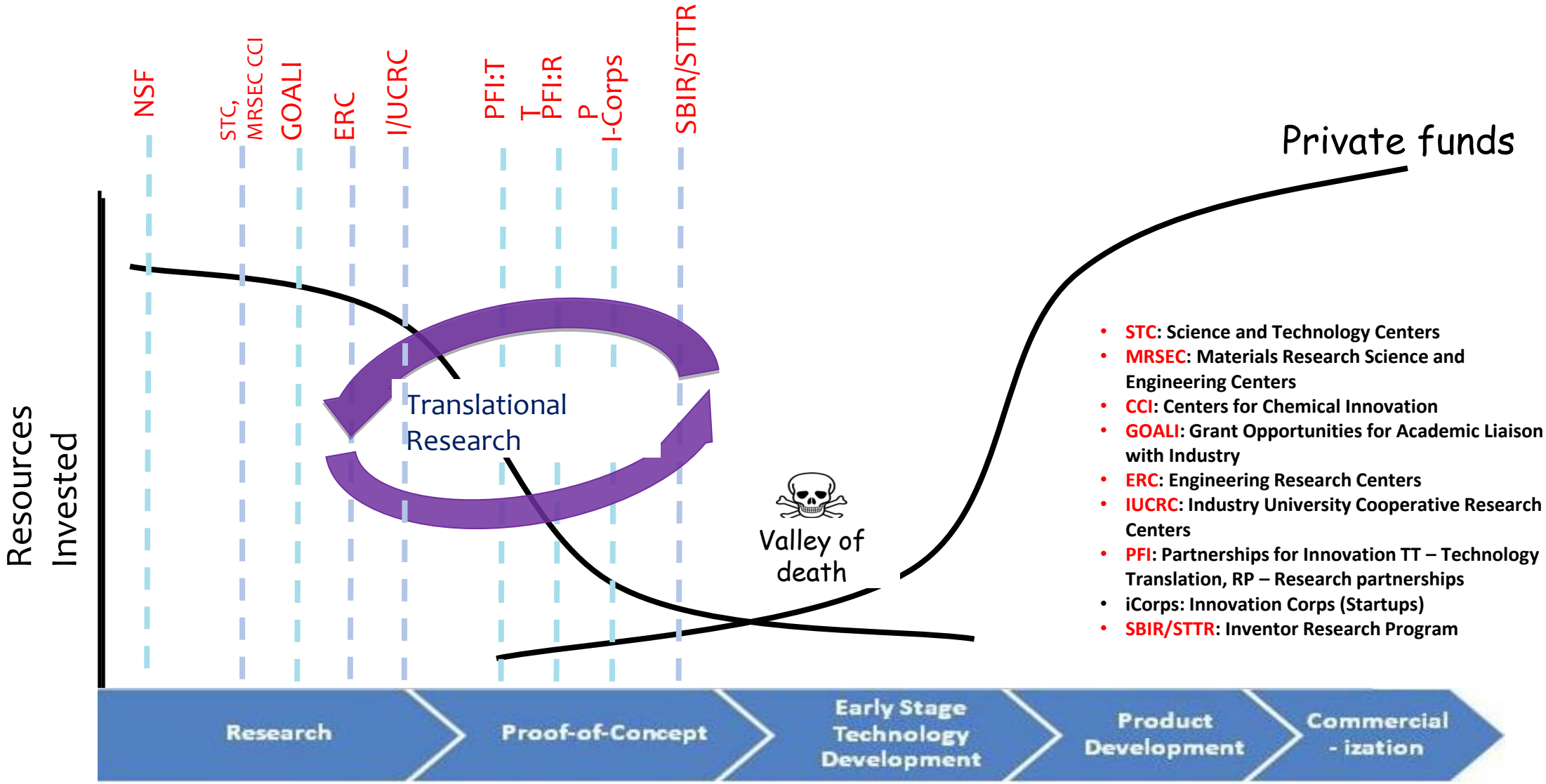
Phase I
Idea Generation
($250,000 1 Year)

Phase II
Prototype Development
($2,000,000 2 Years)

Phase III
Commercialization
(Private Investments)



Contextual and Political Considerations



- **STC**: Science and Technology Centers
- **MRSEC**: Materials Research Science and Engineering Centers
- **CCI**: Centers for Chemical Innovation
- **GOALI**: Grant Opportunities for Academic Liaison with Industry
- **ERC**: Engineering Research Centers
- **IUCRC**: Industry University Cooperative Research Centers
- **PFI**: Partnerships for Innovation TT – Technology Translation, RP – Research partnerships
- iCorps: Innovation Corps (Startups)
- **SBIR/STTR**: Inventor Research Program

Source: National Science Foundation Division of Industrial Innovation and Partnerships, Fall 2017 Review Pre-Panel Orientation, 2017

Conceptual Model Proposition

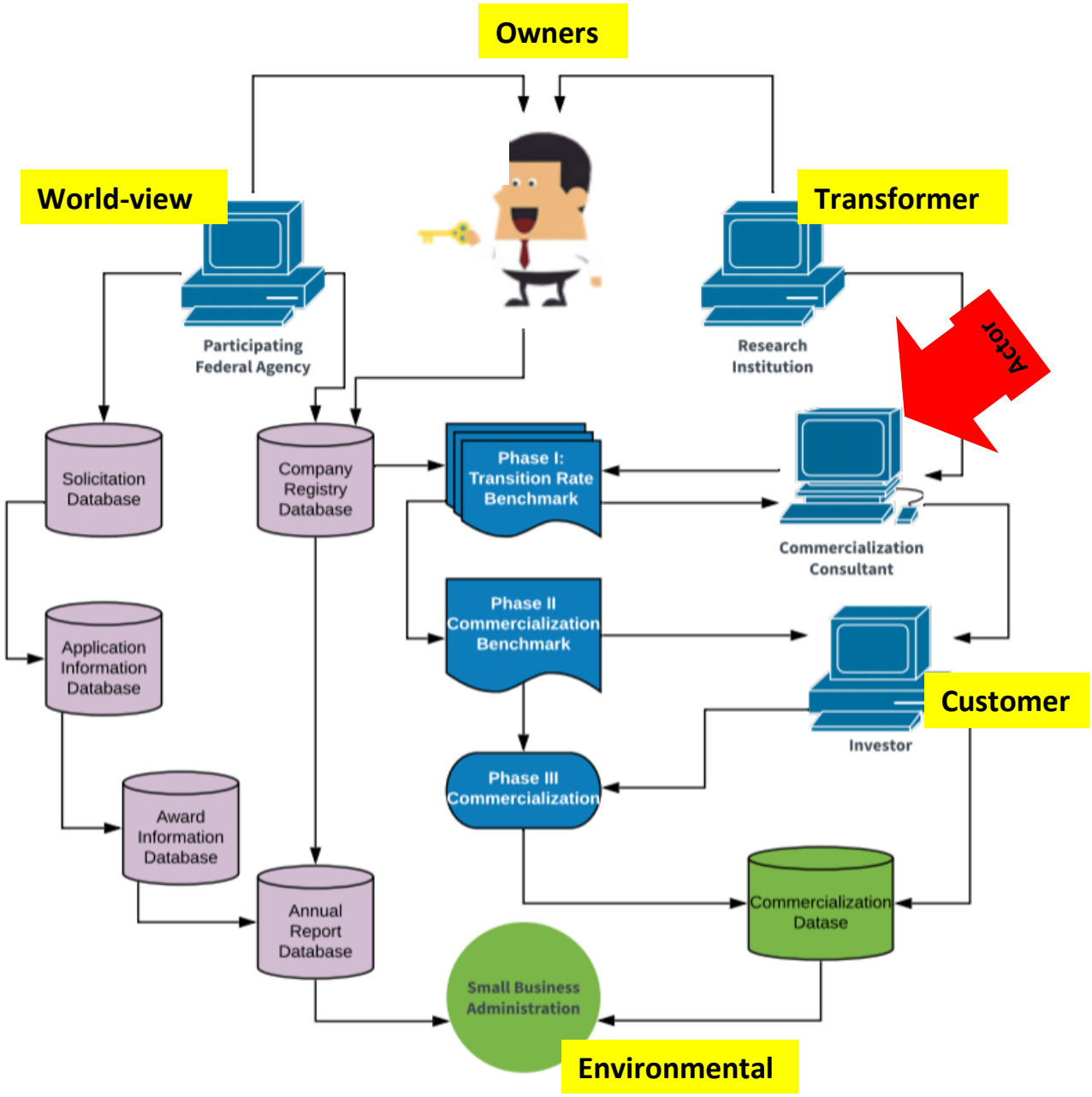
Convergent Iterative STTR
Hermeneutic Ecosystem
With integrated
Innovation Ecosystem

Phase III: Commercialization
(Non-STTR Convergence Funding)

Phase I: Ideation Convergence
($125,000 for 13 months)

Phase II: Prototype Development
($750,000 for 24 months)

Conceptual Human Activity System

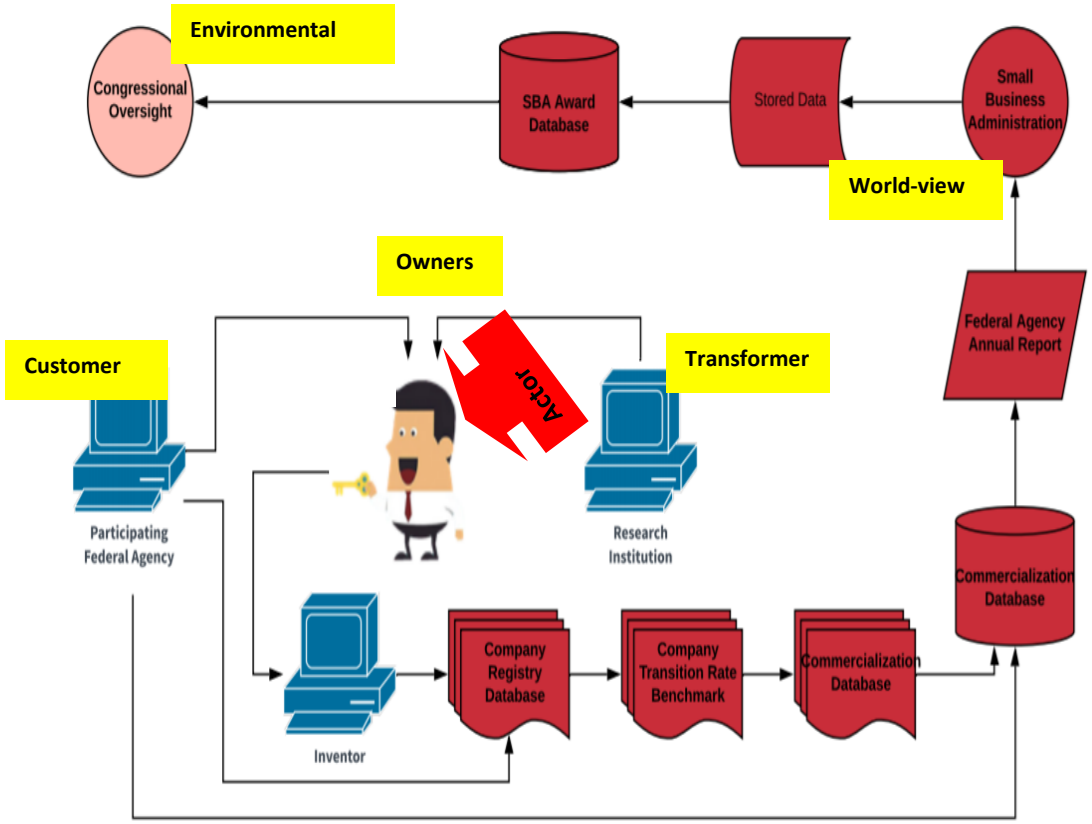


Hermeneutic Human Activity System Conceptual Locus of Control Shift

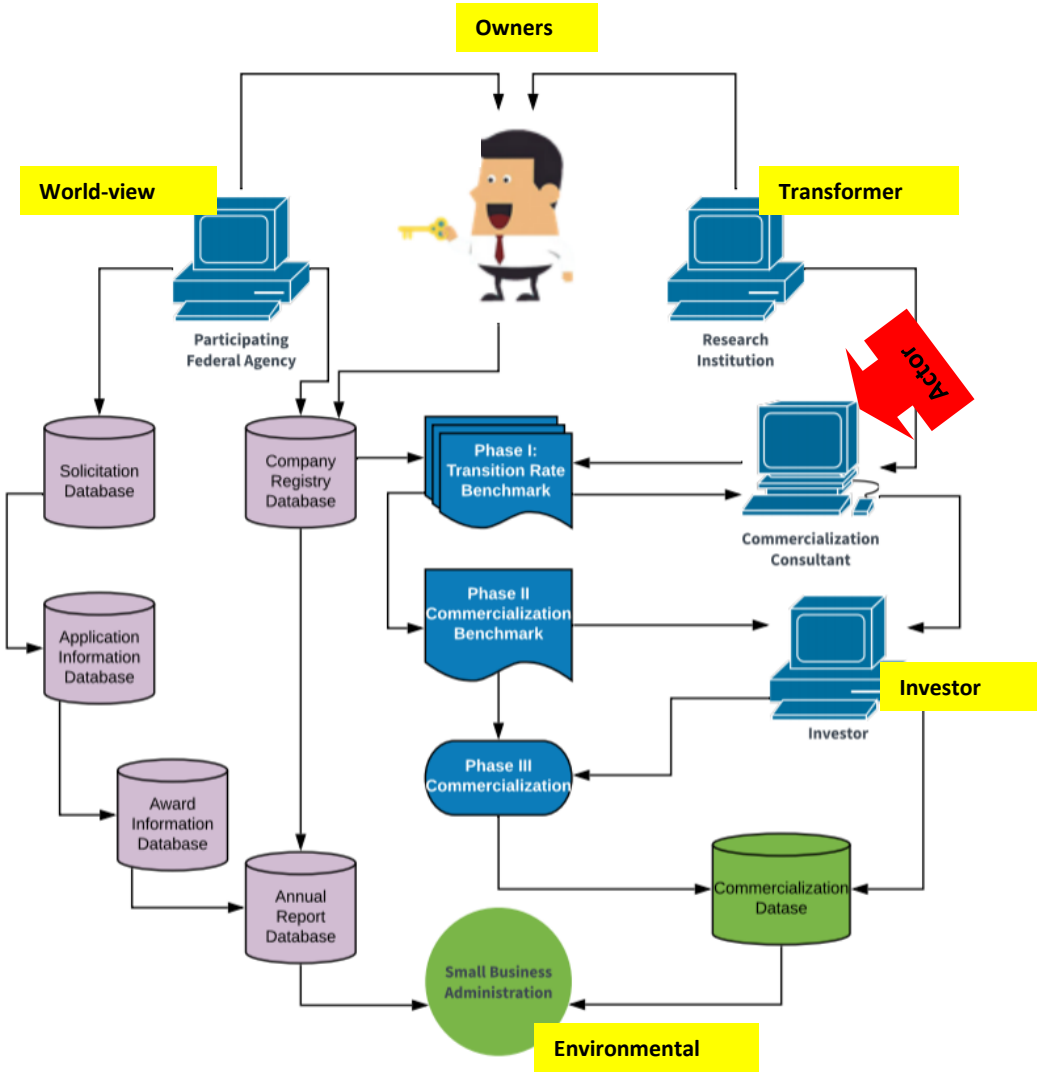
- **Business Ecosystem**
  - Iterative investor "**Voice of Commercialization**" inputs
- **Knowledge Ecosystem**
  - Inventor at the "**Center of Control**"
  - **Increased accountability** for research institution
- **Innovation Ecosystem**
  - **Third-party innovation consultant as coordinator of** people, skills, materials, costs, and communication protocols

STTR Soft Systems Model Comparisons

Current Linear System Soft Systems



Conceptual Hermeneutic Human Activity Soft System



STTR Soft Systems Model Comparisons

Current Linear System Soft Systems

- **Linear system**
- **Minimum** checks and balances
- **Little oversight** and monitoring
- **Vaguely-defined** commercialization input
- **Incomplete, inaccurate, inconsistent** commercialization reporting

Conceptual Human Activity Soft System

- Iterative **hermeneutic Cycle**
- Galbraith' (2016) **"Star Model"** focus of control framework
- **Increased supports** for Small Business Concern during all three phases
- **Third-party** performance and data monitoring.

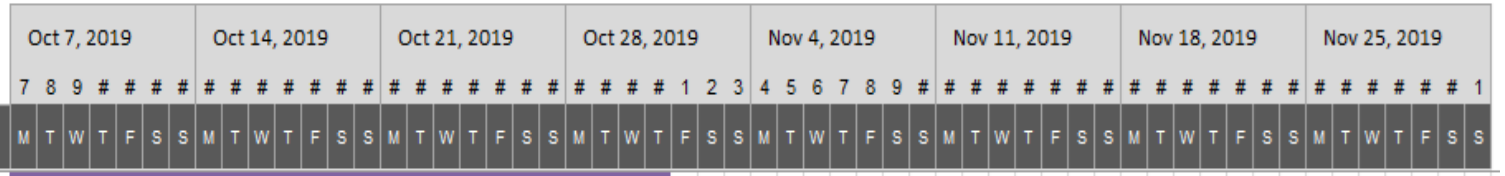
Inventor Technology Transfer Human Activity System Implementation

Small Business Technology Transfer Program Quality Improvement Plan

Soft System Methodology Program Implementation

Project Start: Mon, 10/7/2019

Display Week: 1

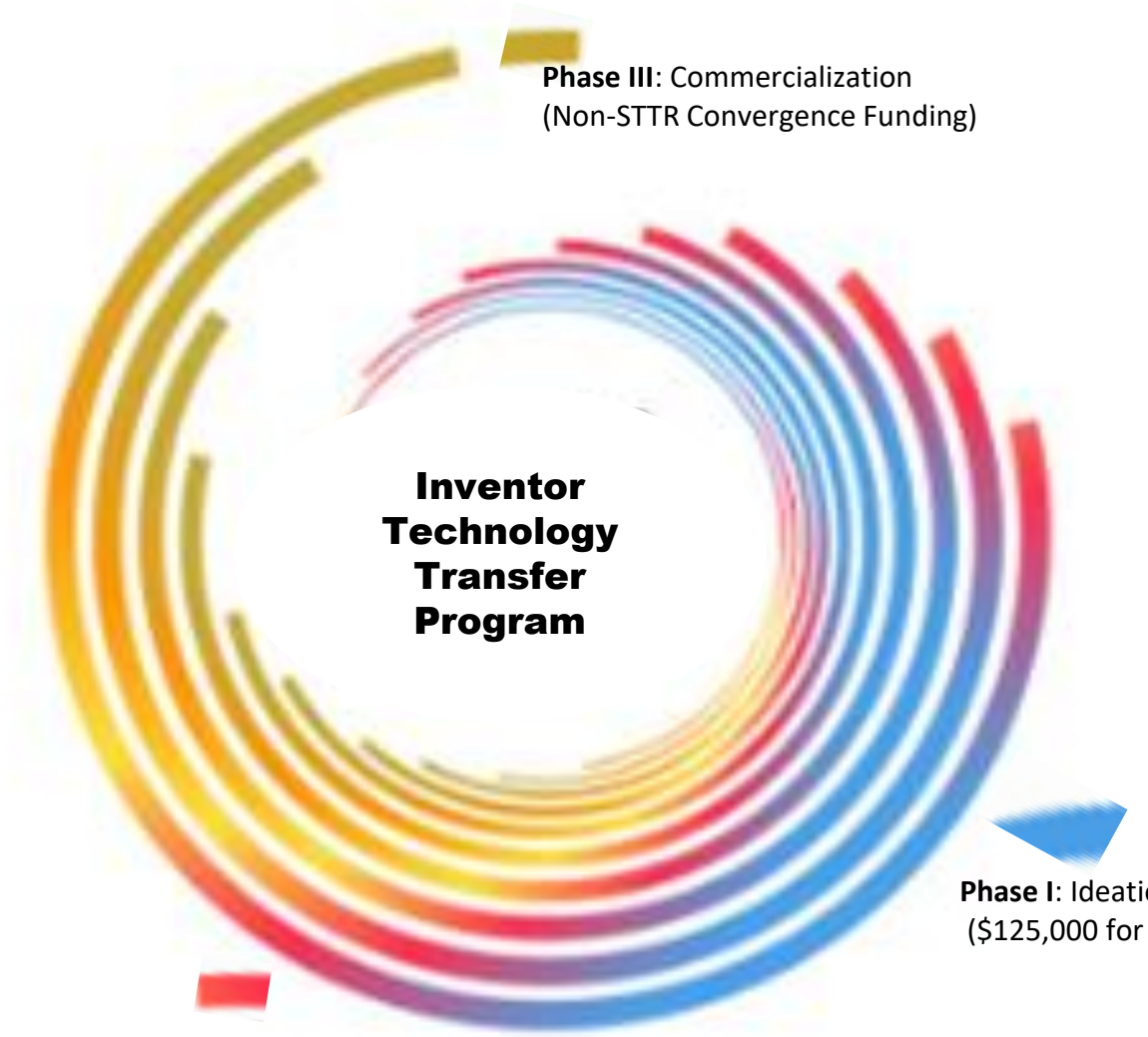


Learning Outcomes	PROGRESS	START	END
Phase 1: Problem confirmation	0%	10/7/19	10/31/19
1.0 Beta test conceptual model	0%	11/1/19	3/31/20
2.0 Make necessary modifications	0%	4/1/20	4/30/20
3.0 Retest model	0%	5/1/20	5/31/20
4.0 Implement pilot	0%	9/1/20	1/31/20
5.0 Make necessary adjustments	0%	2/1/20	2/28/20
6.0 Go live	0%	3/1/20	6/30/20
7.0 Begin monitoring and reporting	0%	3/1/20	7/31/20
8.0 Year 1 Close-out Report	0%	8/1/20	8/31/20

Inferences and Recommendations

- **Inferences:**
  - Iterative STTR ecosystem could improve accuracy of data collection and reporting.
- **Recommendations:**
  1. Adopt iterative STTR innovation ecosystem model
  2. Integrated innovation ecosystem gatekeeper
  3. Shared Transition Rate Benchmark and Phase II Commercialization Benchmark performance accountability
  4. Increased milestone performance monitoring
  5. Future research to exam beta test outcomes

Questions?



Phase III: Commercialization
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