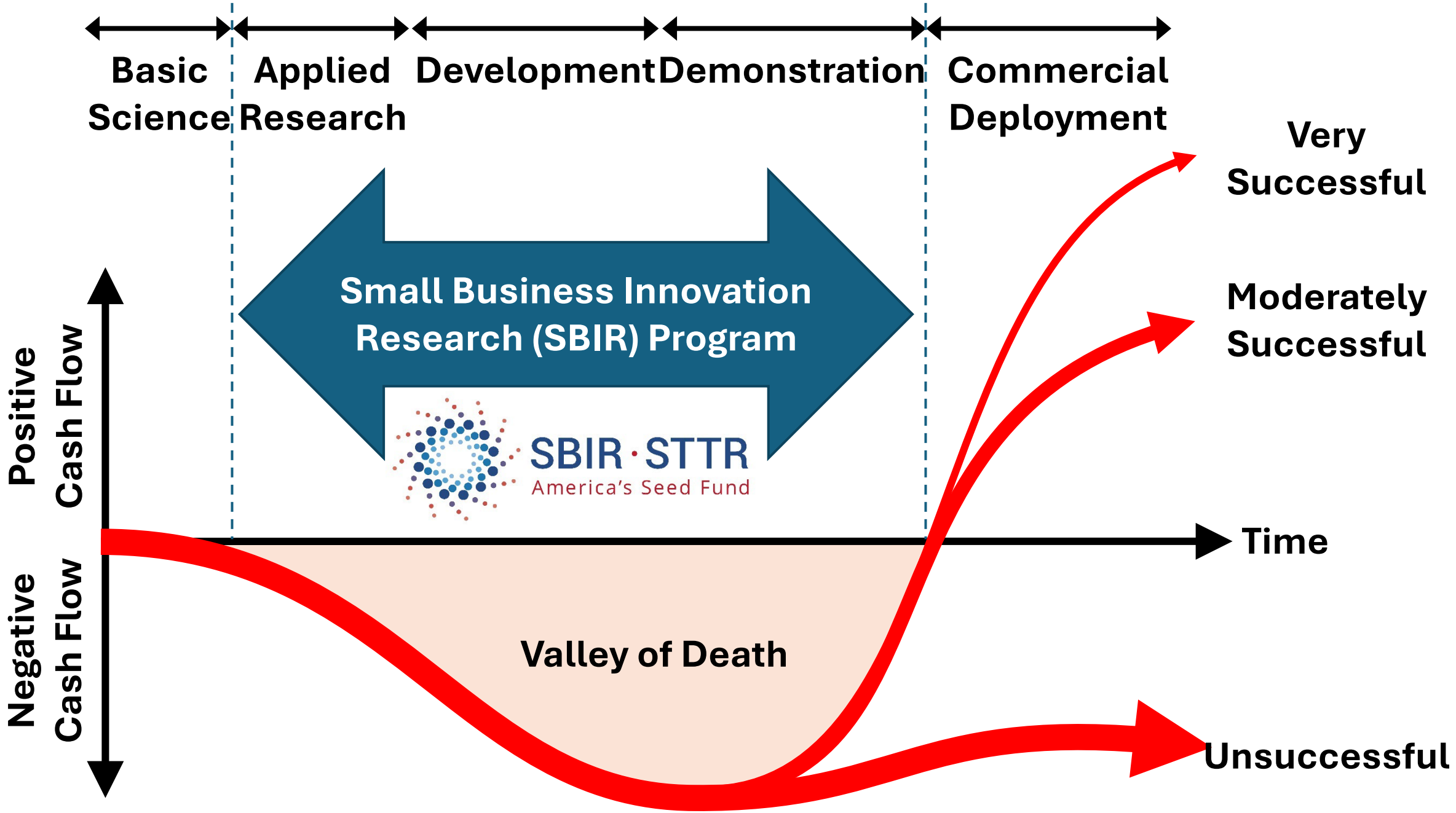

Cell Podium
Superfund Research Program
Progress in Research
The Entrepreneurship Component
May 17, 2024
NJIT
New Jersey Institute
of Technology

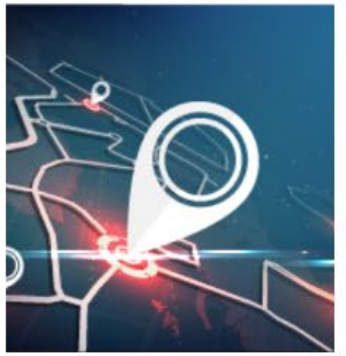
Talk Agenda

	Part 1	Part 2	Part 3
Goal: improve effectiveness of…	Technology development ecosystems	HAZMAT field exercises (e.g., 40 hour HAZWOPER)	Online 8 hour HAZMAT refresher training
Audience	Program Administrators	HAZMAT Instructors	HAZMAT Instructors
Outcomes	Relevant products, business models	Broader range of rehearsed HAZMAT worker/responder skills	Realistic online multi-learner exercises; broader range of rehearsed skills
Technologies	n/a	SensorSim: Low-cost augmented reality simulation of chemical and radiological exposure	VirtEx: Web-based team-based virtual tabletop exercises


Basic Science
Applied Research
Development
Demonstration
Commercial Deployment
Small Business Innovation Research (SBIR) Program
SBIR · STTR
America's Seed Fund
Positive Cash Flow
Negative Cash Flow
Time
Valley of Death
Very Successful
Moderately Successful
Unsuccessful

SUCCESS STORIES

Academic innovators and small businesses supported by NIH to develop innovative technologies that improve health and save lives.

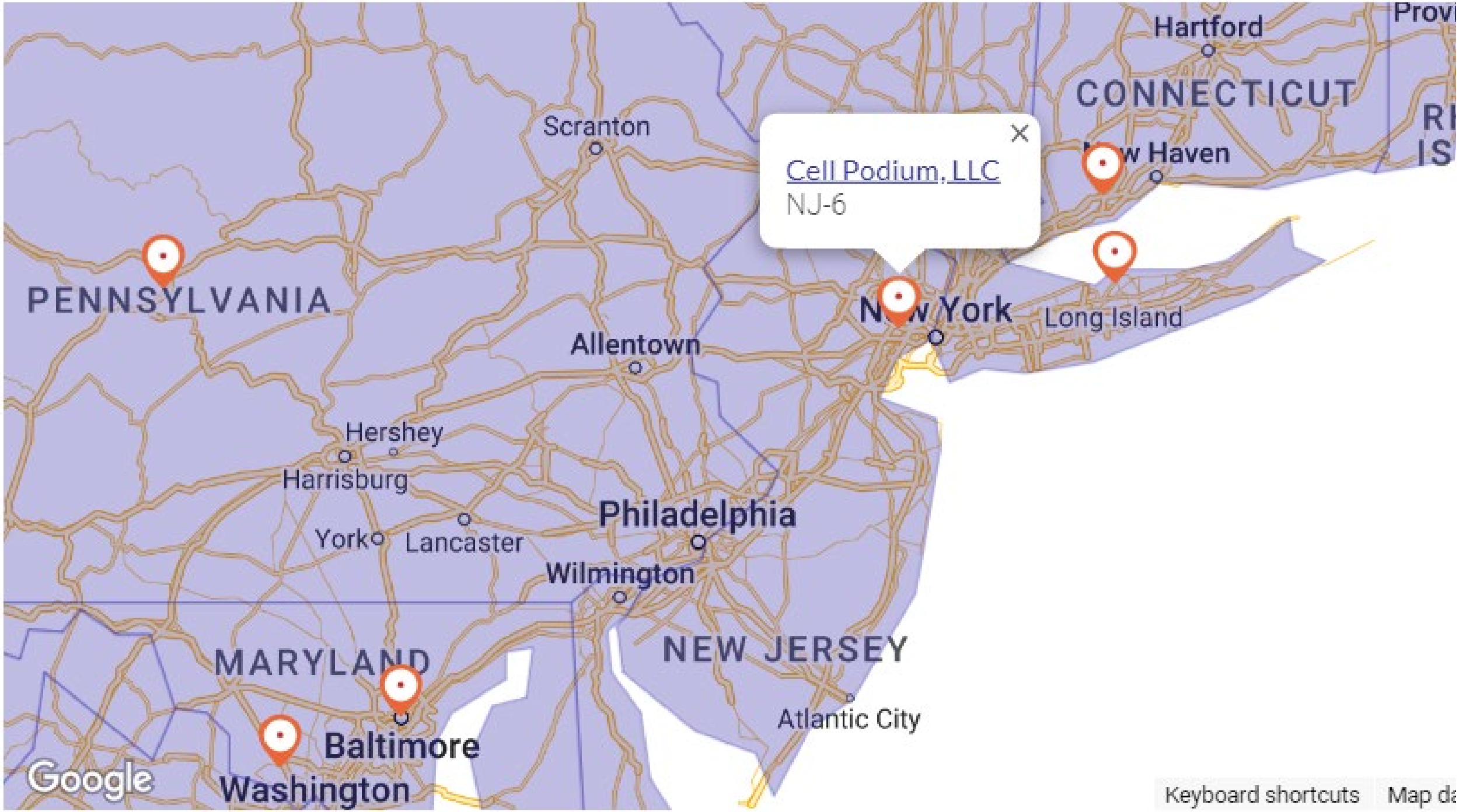


Technology

- [ ] Diagnostic
- [ ] Digital Health
- [ ] Drug
- [ ] Medical Device
- [ ] Research Tool

Development Stage

- [ ] Approved for Use
- [ ] Early Development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Keyboard shortcuts

The Innovation Ecosystem of the NIEHS Worker Training Program

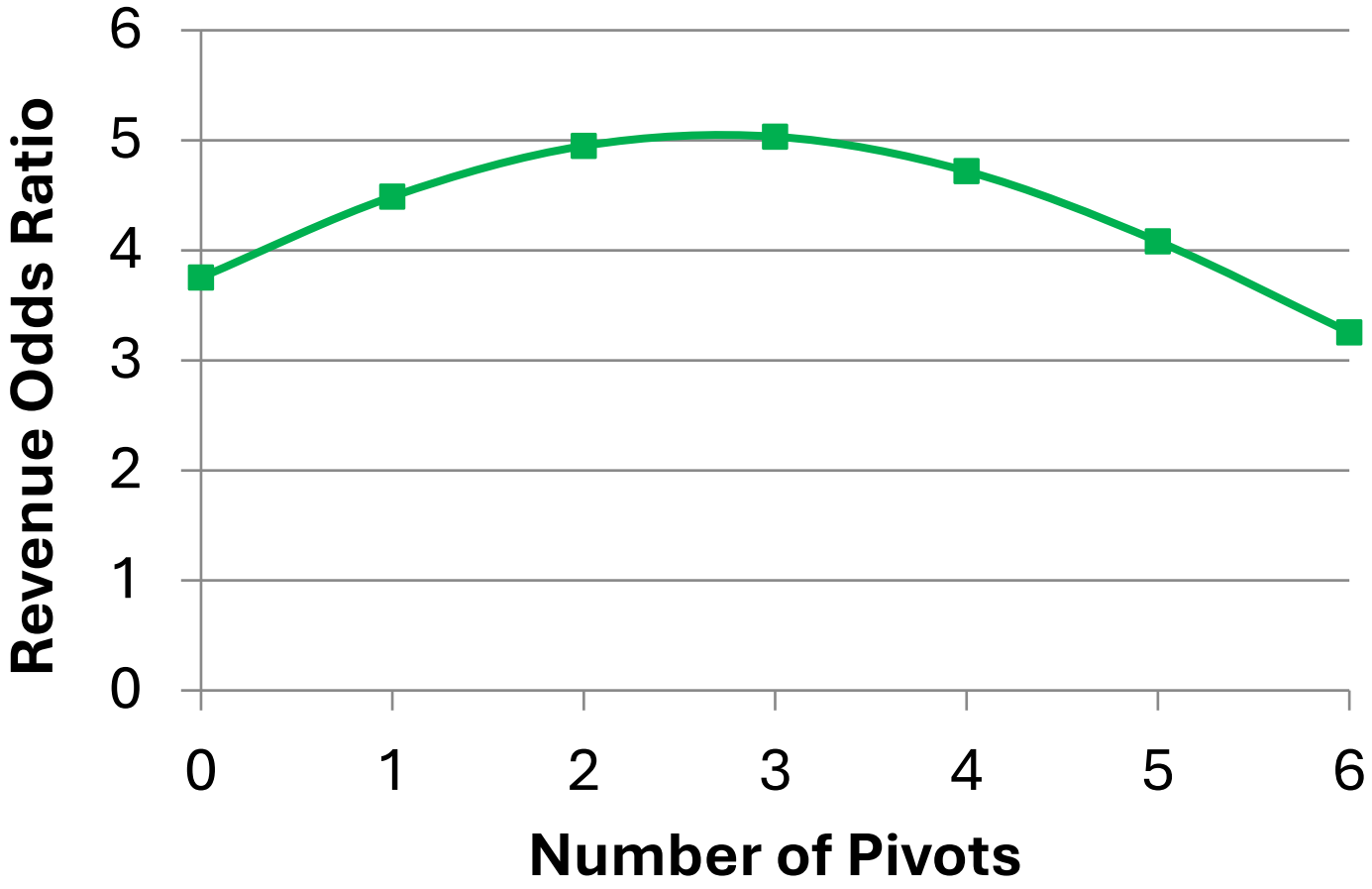
"NIEHS encourages [SBIR] applicants to ...

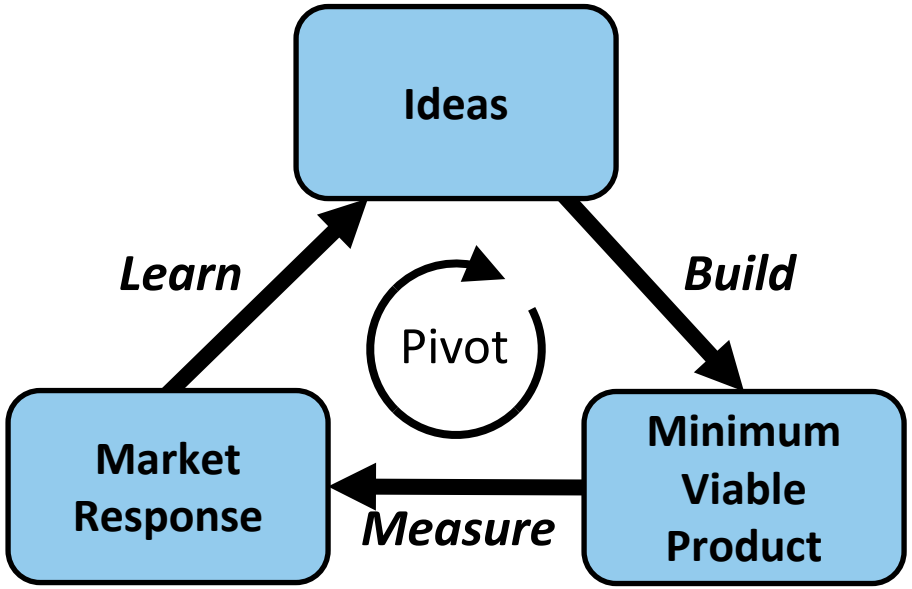
- ***pursue partnerships and collaboration with NIEHS WTP [U45, UH4] awardees,***
- ***and to design new technology-enhanced training methods or e-Learning products that can enhance the existing NIEHS-supported curricula and training"***

(RFA-ES-23-005)

#1 Startup Mistake: Build something that nobody wants

Expect to pivot!





Bandera, C., Thomas, E. (2019). *To Pivot or Not To Pivot:On the Relationship between Pivots and Revenue among Startups*. In Murray Jennex (Ed.), Proceedings of the 52nd Hawaii International Conference on System Sciences, Jan 5, Maui, HI.

Introductions

- Program Name: Augmented Reality in HAZMAT Training
- Institution: Cell Podium
- PIs: Cesar Bandera, Ph.D. & Peter Schmitt, Ph.D. (Founding Partners)
- Grant numbers: 2R44ES028142-02, 1R43ES035276-01
- Collaborating institutions:
  - Center for Public Health Workforce Development, Rutgers School of Public Health
  - Labor and Occupational Safety and Health Program, UCLA
  - Institute for Environmental Education, Universidad Ana G. Méndez (PR)
  - University of Minnesota School of Public Health Industrial Hygiene Program
  - Environmental Management Institute, Ivy Tech Community College
  - National Volunteer Fire Council
  - Bioenvironmental Engineering, Joint Base McGuire-Dix-Lakehurst, NJ


MSA


HAZARD SENSOR SIMULATOR
LEL 2.1%
PID 5.7%
O2 20.3%
RAD 1.5 mrem
65mm diameter
Sensor behaves as if hazards are real because SensorSim is aware of reality.
Exposure readings update in real-time as learner moves among hazards.

Responder skills rehearsed:

- Operate exposure sensors and interpret readings
- Detect and classify hazards
- Delineate zones (e.g., hot zone, decontamination area)
- Communications protocols

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Features for the instructor

- Supports indoor and outdoor exercises
- Supports single learners and team exercises
- Instructor can reconfigure hazards and sensor displays
- No limit on the number of hazards or sensors in exercise, from small-scale leaks to wide-area natural disasters.


Virtex
virtex.cellpodium.com
Paused
Participant: Cesar (Teacher)
Scenario: Anhydrous_Ammonia
Participants (3) expand
Back
Lesson Plan
Invite
URL
Intro
Intro
Wind
Command Roles
Roles
IAP
Control Zones
Hot Zone
Map
Evacuation
Sensor
Sensor
Explore
Label
Labels
Survey
Gas Classes
Gas Classes
Accident
Get up
Fall
Rescue
Hop on Stretcher
Decon
Map
Gather
Cesar
Teacher
Justin
Rescue Team
Peter
Entry Team
RAE GAS
O2 20.9 %
LEL 9.8 %
CO 0.0 ppm
H2S 0.0 ppm
PID 82.1 ppm
FPS: 38

- VirtEx is an online multi-user tabletop exercise for distance learners.
- Requires only a web browser.
- Chemical/radiological sensors, real-time exposure simulation
- Lesson plan tracker.

Pivots/Lessons Learned (Pivots)

- Ultra-high (millimeter) spatial precision is not necessary. Instead, use low-cost Bluetooth beacons and any cell phone.
- Most instructors prefer physical Bluetooth beacons over geotagging mock hazards.
- Few instructors have detailed syllabi: what one wants vs. will actually use.

Call to Action

- Contact us and we will mail you three free Bluetooth beacons preconfigured to simulate chemical leaks.

info@cellpodium.com http://cellpodium.com

- The mobile app that simulates the handheld sensor is free; go to your phone's app store and search for Sensor Simulator