

Questions & Answers



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Questions

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Commercialization Funding Mechanisms

December 4, 2023



TEXAS A&M
INNOVATION

Locations:
McFerrin Center for Entrepreneurship &
Webinar

Welcome



Chris Scotti

Director

Texas A&M Innovation



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Translation Strategies for Internal R&D

Accelerating Market & Technology Maturation



Saurabh Biswas, Ph.D.

Executive Director, Technology Transition
Texas A&M Engineering Experiment Station



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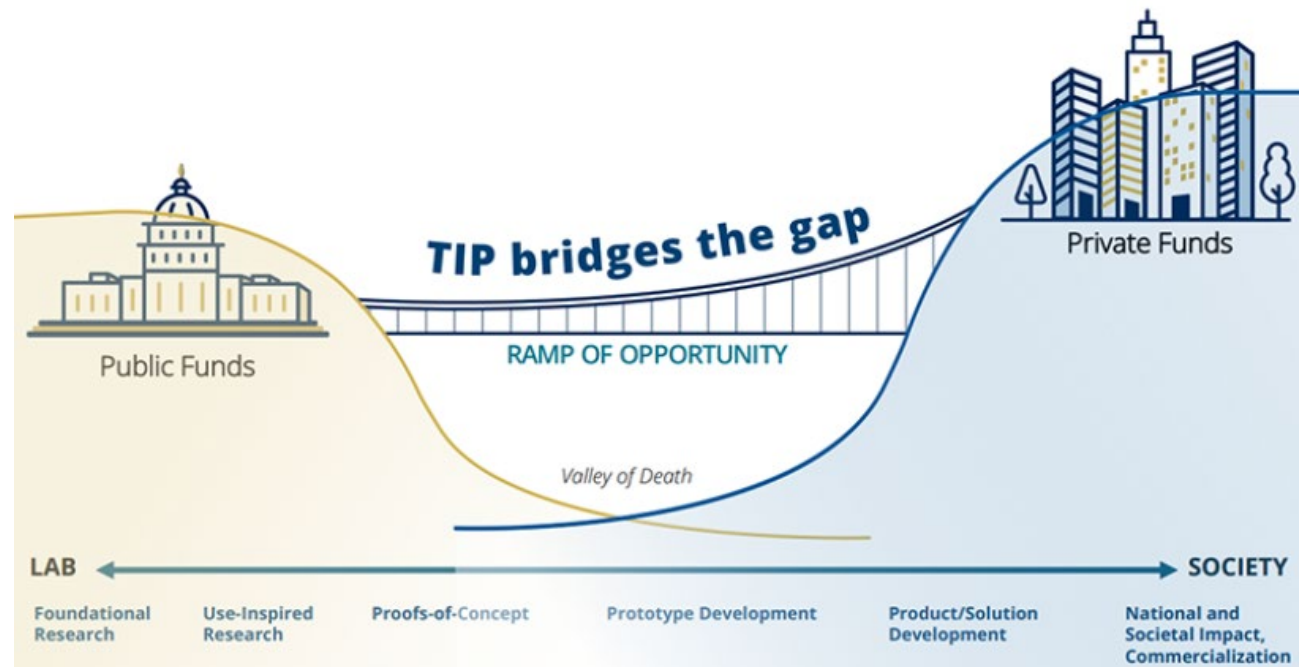


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Research & Translation

Challenges of translating Deep Tech Innovations

1. Long R&D Cycle
2. Complex customer & stakeholder needs
3. Extensive IP Portfolio
4. High Capital Needs
5. Challenging talent acquisition
6. Shifting market hype-cycles
7. Regulatory issues
8. Prototyping & Scale-up



A graphic used in a presentation by NSF TIP Directorate head Erwin Gianchandani, (Image credit – NSF)



Key Question

**How do you
Address/ Mitigate/ Manage**



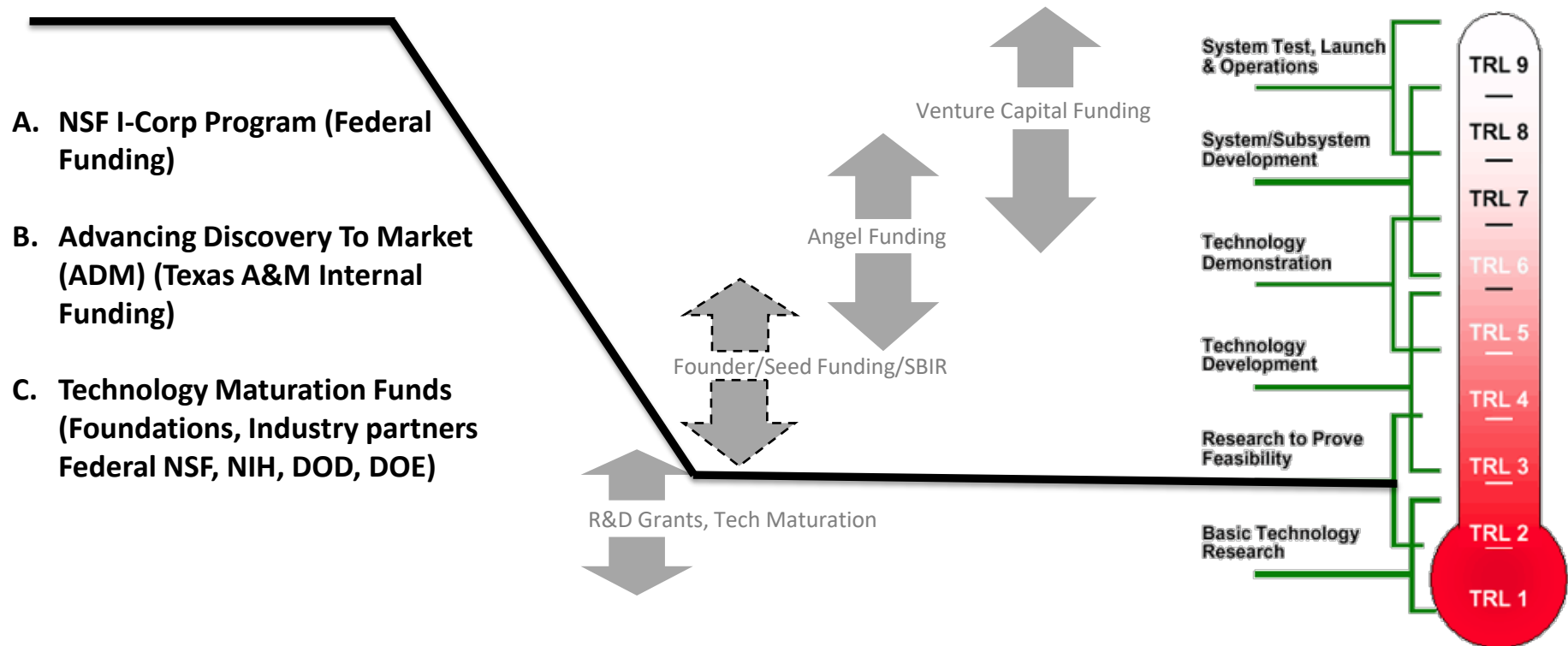
**TECHNOLOGY
RISK**



**MARKET
RISK**

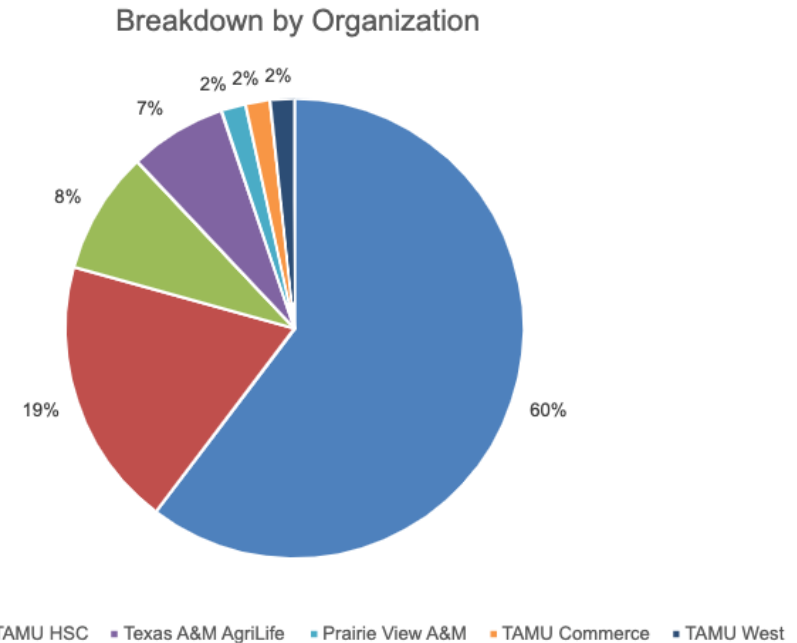


Concept to Product Roadmap



NSF I-Corp Program


- Foundational program for whole US academic R&D enterprise
- 10 years in existence
- From 2023 transition to I-Corp Hubs
- SOUTHWEST NSF I-Corp Hub awarded (5yr /\$15M funding)
- Texas A&M I-Corp Hub, founding team member of Southwest Hub
- 10-yr I-Corp history at Texas A&M as prior NSF Node & Site
- NSF I-Corp Biennial Report
- **HUBWIDE PROGRAM SUPPORT:**
 1. IDEALAUNCH (3 wk)
 2. NATIONAL I-CORP (7 wk)




- National statistics: 2500+ Teams, 7800+ participants, 1380 Start-ups, \$3.16b funding raised
- Texas A&M National I-Corp Teams: 60 Teams, 20 start-ups
- NSF, NIH & DOD I-Corp



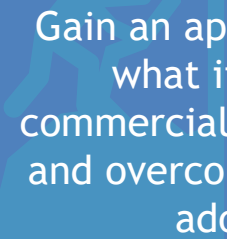
Why IDEALAUNCH & National I-Corp



Develop an understanding of where/why your technology has value and to whom



Find potential beachhead markets for your technology



Gain an appreciation for what it takes to commercialize technology and overcome barriers to adoption

Expand your network of like-minded peers, mentors, customers, and potential investors



Learn about entrepreneurial approaches that reduce time to market and increase access to resources and capital



\$50,000 NSF grant

1 PAGE EXECUTIVE SUMMARY + 30 MINUTE INTERVIEW + 5-PAGE NARRATIVE



I-Corp Funding Roadmap

FUNDED RESEARCHER in Any Area

INVENTION DISCLOSURE STAGE

LineageLaunch OR IdeaLaunch
(Lineage for National Program)

NSF NATIONAL I-CORPS (\$50,000)

Technology Maturation Funds

COMPANY
CREATION/LICENSING
AGREEMENT

Non-Dilutive &
VC FUNDING

EXIT



Participants

ENTREPRENEURIAL LEAD (EL)

WHO THEY ARE:

- Graduate students, postdoctoral scholars, or staff members with relevant knowledge of the technology or market and a commitment to investigate the potential opportunity for commercialization
- Undergraduates are rarely accepted

WHAT THEY DO:

- Drives the customer discovery process and support the transition of the technology into the marketplace if it demonstrates commercial viability
- Commits approximately 30 hours/week to I-Corps program

TECHNICAL LEAD (TL)

WHO THEY ARE:

- Individual involved in creating the technology that forms the basis of the team's business concept OR possesses a high level of relevant technical expertise
- Often a faculty member with PI status

WHAT THEY DO:

- Leads project management efforts
- Plays a key leadership role as a scientific advisor or chief technical officer
- Commit approximately 10 hours/week to I-Corps program

INDUSTRY MENTOR (IM)

WHO THEY ARE:

- Experienced entrepreneur, intrapreneur, or corporate innovator

WHAT THEY DO:

- Guides the team, navigates industry sectors, and assists with industry connections
- Commits approximately 5-10 hours/week to I-Corps program

TEAMS DO NOT HAVE TO IDENTIFY AN IM PRIOR TO APPLICATION BUT ARE ENCOURAGED TO DO SO



IDEALAUNCH: 3-week Program

LINEAGE FOR NATIONAL I-CORP PROGRAM

FORMAT & TIMING:

PRE-LAUNCH WEBINAR (1.5 HOURS)

What to Expect & Prepare

OPENING WORKSHOP (1 DAY)

Lectures & Exercises

MID-TERM WEBINAR (HALF DAY)

Report Outs & Review

CLOSING WORKSHOP (HALF DAY)

Report Outs & Next Steps

DETAILS:

- Optional office hours are offered during the program
- Graduate Student or Post-docs (EL- Entrepreneurial Lead) required to attend
- Faculty (TL- Technical Lead) encouraged but attendance not required
- Industry mentor not required
- Participants will attend focused workshop & conduct 30 interviews in 3 weeks
- 2024 schedule in place: Cohorts filling up
- Lineage for participating in National - I-Corp



National I-Corp Program

PATHWAY 1

ESTABLISHED LINEAGE WITH NSF

- The team/PI already has a demonstrated NSF funding history
- The NSF award must be current or did not expire >5 years ago
- The 3-member team composition must be acceptable to NSF
- Team must attend a LineageLaunch ahead of national cohort application.

PATHWAY 2

REGIONAL LINEAGE THROUGH AN I-CORPS HUB

- If there is no demonstrated NSF Lineage, **the team must successfully complete an IdeaLaunch Regional Program** prior to applying
- The team must also achieve endorsement from the Core Instructor(s) of the IdeaLaunch program

REQUIREMENTS

- Be university-based IP
- Demonstrate commercial promise for translation into a product, process, or service
- Relate to at least one previously awarded NSF grant

AND/OR

- Be a “deep tech discovery” from fundamental STEM-based research



Program Format: 7 Weeks

OPENING WORKSHOP

3.5 DAYS - BOOTCAMP STYLE

WEEKLY SESSIONS/OFFICE HOURS

5 WEEKLY SESSIONS + REPORT OUTS

- *DISTRIBUTION CHANNELS*
- *CUSTOMER RELATIONSHIPS*
- *REVENUE MODELS*
- *PARTNERSHIP STRATEGY*
- *KEY RESOURCES/COSTS*

CLOSING WORKSHOP

2 DAYS - LESSONS LEARNED REPORT OUTS

TEXAS I-CORP HUB CONTACT: IDEALAUNCH & NATIONAL PROGRAM
LENAE SCROGGINS, PROGRAM MANAGER. lenae@tamu.edu



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Advancing Discovery to Market

- Texas A&M University internal technology maturation fund.
- Frequency - Annual
- Duration: 24 Months, Milestone focused funding
- Focused on developing and maturing existing R&D and IP portfolio to enable further technology development towards licensing to an existing or a new start-up company.
- Invention Disclosure Submitted
- External Reviewers
- 2023 cycle awarded

Eligibility:

Open to researchers, faculty, staff, and students of Texas A&M University, and its Texas A&M System partner research state agencies: the Texas Engineering Experiment Station, the Texas A&M Transportation Institute, and Texas A&M AgriLife Research.



ADM-Funding & Review

- A total of \$5,000,000 is available annually in this fund. There are two award levels based on the maturity of the discovery:
- **Type 1**
- \$99,000 or less, focused on immature discoveries where an innovation has been formulated with the understanding that the application may still be speculative.
- **Type 2**
- \$100,000 to \$500,000, focused on discoveries where a concept is established, but refinement is necessary to advance towards the market or a start-up.
- Application Details: <https://vpr.tamu.edu/research-development-services/internal-funding-opportunities/advancing-discovery-to-market/>

REVIEW CRITERIA

- **Merit and Significance:** Does the discovery solve a significant problem?
- **Market Viability:** Is there a clear customer base or market need for the product or service created by your discovery?
- **Feasibility:** What is the maturity of the discovery? What is the technical soundness, feasibility, likelihood of success(risk), and availability of needed facilities and equipment?
- **Objectives:** What are the proposed goals attainable within 24 months of award?
- **Resource requirements:** What are the investment requirements to advance discovery to a commercial state?
- **Commitment:** Commitment by the inventor to protect the IP as appropriate.



Translational Investment Fund (TIF)

- Texas A&M University System-wide internal technology maturation fund.
- Frequency – Annual
- Funding Amount: Up to \$75,000, year long projects, milestone focused
- Focused on developing and maturing existing R&D and IP portfolio to enable further technology development towards licensing to an existing or a new start-up company.
- Application Details:
<https://innovation.tamus.edu/tif/>

Eligibility:

- Must be a current employee of The Texas A&M University System or its members.
- Must be a lead or co-inventor on a previously filed invention disclosure of System-owned intellectual property.



Academic Translational Funding

- Key challenges of lack of prototype development funds and preclinical validation funding well understood at federal agency level.
- NSF, NIH, DOD, DOE, DARPA, ARPA-H, CPRIT have funding to develop validation studies still being developed within the academic labs.
- Funding focused on training entrepreneurial graduate and post-docs to take industry or start-up leadership roles.
- IP, DATA & R&D management plan key with a clear roadmap of how it is being protected and will be managed.
- Industry partnership heavily encouraged or required to bring in technical capabilities/clinical mentorship.
- External partnerships with outside service entities like CRO's, regulatory teams, FDA meetings strongly encouraged. (Mandated).
- Non- profit Foundations with very targeted interests to solve specific problems are open to partnering with a clear roadmap of impact.

Examples:

- NSF Partnership for Innovation (PFI),
- NSF Convergence Accelerator,
- NSF IUCRC, ERC, POSE
- NIH HEAL
- NIH U44 Mechanisms
- DOD – CDMRP – Health
- Large Consortium Grants (Technology transition is a key goal)
- NIST – Manufacturing Institutes
- ARPA-H
- CHIPS ACT

Key Takeaways

NSF I- CORP Program 1. IdeaLaunch (3 wks) 2. National I-Corp (7 wks, \$50K)	Texas A&M Tech Maturation Funds 1. Advancing Discovery to Market 2. Translational Investment Fund	NSF, NIH, DOD, DOE Programs 1. Product Development 2. Prototype and Preclinical
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- Disclose your inventions timely, build strong foundational portfolio, **IP is a key asset**
- Understand your **customer, market** and product **ecosystem**.
- Understand your strategic partner's needs, gaps and **refine your problem statement**.
- Understand your **capital needs** as you enter the non-dilutive and private capital market.
- Robust technology development roadmap informed by **customer input**.
- Technology development **milestones strongly focused on a MVP** (Minimal viable product) with clear understanding of regulatory needs where applicable.
- Identify gaps in your team and **build early relationships** with deep-tech entrepreneurs, industry partners, investors, grand funding agencies.
- Finally make an **evidence-based decision** to transition to a new venture.



Thank you



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Texas A&M Engineering
Experiment Station

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Non-Dilutive Company Funding



Pete O'Neill

Chief Innovation Officer
Texas A&M Innovation



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SBIR-STTR

- SBIR = Small Business Innovation Research
- STTR = Small business Technology Transfer
- Both are awards to company

	SBIR	STTR
PI Employment	≥50% in the company	Company or Research Institution
Maximum Subcontract	Phase 1: 33% Phase 2: 50%	60%
% of Extramural Budget	3.00%	0.45%



SBIR

- Phase 1: Proof of concept,
 - 6-12 months.
- Phase 2: Commercialization,
 - 2 years.
- Fast-track,
 - Combined Phase 1 and Phase 2.
- Direct to Phase 2,
 - Previously completed equivalent of Phase 1.



PedialyDx Inc.

- Machine Learning analysis of baby cry acoustics as a diagnostic.
- Technology 25+ years research at Brown University.
 - 2 active R01:
 - \$3.96M Neonatal Opioid Withdrawal Syndrome (NOWS),
 - \$4.24M Autism,
 - \$100K proof of concept funding from Brown,
 - 1 issued patent, 1 pending.
- Seemed like a lot of background work.



Investor Feedback

- Brown Angel network,
- Autism Impact Fund,
- North Coast Angels (Cleveland specific),
- Slater Fund (Rhode Island specific),
- Springhood Ventures (pediatric specific),
- Other early investment funds,
 - Over 1 year,
- Consistent positive feedback,
- Consistent “PedialyDx is too early.”



SBIR Strategy

- Phase 1:
 - Better chance for funding,
 - \$275K not enough to hire team and do meaningful work.
- Direct to Phase 2:
 - Lower chances for funding,
 - \$1.8M enough to hire team and do work.
- Published NOWS data seemed equivalent to Phase 1.
- Decision: Try for Direct to Phase 2.

SBIR Application Process

- Connected with NIH Program Officials, months before application deadline:
 - Develop relationship,
 - Understand agency funding priorities.
- Company preparation,
 - DUNS, SAM.gov, company address, etc.
- Prepare application:
 - Outline project,
 - Define Specific Aims,
 - **Work with a consulting firm to draft proposal,**
 - Follow SBIR proposal guidelines <https://grants.nih.gov/grants/how-to-apply-application-guide/forms-h/sbir-sttr-forms-h.pdf>,
 - Use other awarded proposals as guides.
- Submit through eRA Commons,
 - Similar systems for other agencies.



Award, ...

- Borderline score,
 - Relationship with Program Official may have tipped decision in our favor.
- Awarded on first round!
- Hired accounting group to manage finances.
- ...
- Decided to submit a Phase 1 for another application.
- Seemed like “chip shot” compared to Direct to Phase 2:
 - Did not connect with Program Official.
- Used same consulting group to prepare and submit.
- Did not get scored.
 - Reviewer comments seemed severe for a Phase 1.



SBIR Support at Texas A&M

- Innovation team available to help shape projects.
- In-process support services:
 - SBIR application consultants.
- Future support services:
 - Company structuring,
 - Accounting for awarded projects,
 - PIs.



Thank you for your time and interest!

Texas A&M Innovation
innovation.tamus.edu



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External Dilutive Funding



Matthew Kebodeaux

Board Member

Aggie Angel Network



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So, You Think You're Ready to Raise Money?

Seek legal counsel

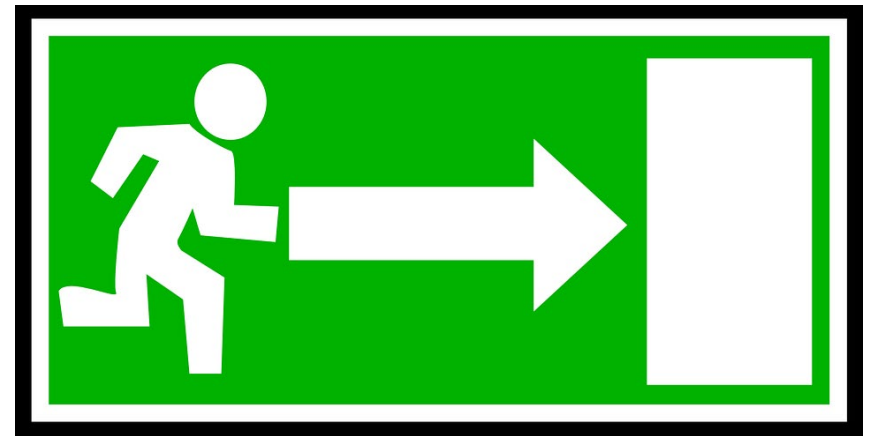
- Watch out for potential landmines
 - Company formation
 - Investment vehicle options
 - Understand restrictions on accepting money
- Online vs in-person options
 - Start of what is hopefully a long-term relationship
 - Legal understanding is an early indicator to investors



First Step in Seeking External Dilutive Funding

How are you going to exit?

- Build and scale a business
 - IPO
 - M&A
- Develop and let someone else shoulder the burden
 - Licensing
 - Franchising



Sources of Dilutive Funding

1. You!
2. Friends, Families & Fools
3. Angel Investors
4. Venture Cap
- ~~5. Private Equity~~
6. Other
 - Competitions for start-ups
 - Accelerators / Incubators (techstars)
 - Crowdfunding (Kickstarter)
 - Debt (revenue-based financing)



McFerrin Center for
Entrepreneurship



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Angel Investors/Angel Networks

- Group of SEC-Accredited Investors
- 250+ Angel networks across the US
- 12+ Angel networks in Texas
- AAN launched 2010 as Texas Not-for-Profit 501(c)3
- 35+ Members
- 10 Pitch Meetings ~ 35 companies per year
- Have ~ 100 applicants/year
- Average over 10 deals annually/\$500,000 - \$1,000,000+ invested per year



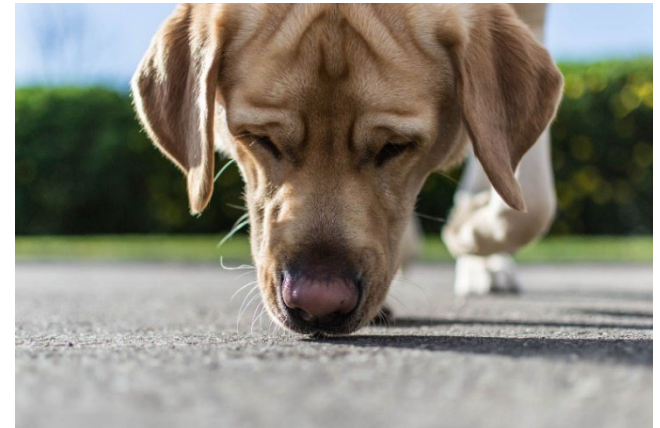
ANGEL CAPITAL ASSOCIATION



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Passing the Sniff Test

- Strong management/advisory team
- Real competitive advantage/large potential market
- Understanding of the market/market entry
- Industry partner/field trial
- IP / barriers to entry for others
- Potential for a strong return on investment (10x – 20x)
- Strong presenter/solid pitch



Now That You've Got an Investor's Attention...

Are you ready for the deep dive?

- Cap table (Equity ownership)
- ProForma (Detailed actual financials / 3 - 5 years of projections)
- Understanding of what it will take to scale
- Solid exit strategy (5 – 7 years)
- Valuation
- Personality test / fit
- Alignment between founders
- Ability to deliver when things get tough

Special Model	2011	2012	2013	2014	2015
Revenue	1000000	1200000	1500000	1800000	2200000
Expenses	800000	950000	1100000	1300000	1600000
Profit	200000	250000	400000	500000	600000
...



Show Me the Money!



Thank you for your time and interest!

Aggie Angel Network

[Website Link](#)



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Texas A&M Innovation Future Events

- Educational Seminar: Starting a Company
Tuesday, February 6, 2024, 4:00 pm – 6:00 pm
- 2024 Patent and Chancellor's Innovation Awards
Luncheon, April 12, 2024
- Educational Seminar: Case Study of a Company
Tuesday, April 16, 2024, 4:00 pm – 6:00 pm
- 10th Annual Texas A&M New Ventures
Competition, May 21-22, 2024
- Innovation Forward “IF” Conference, Fall 2024



Thank you!

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