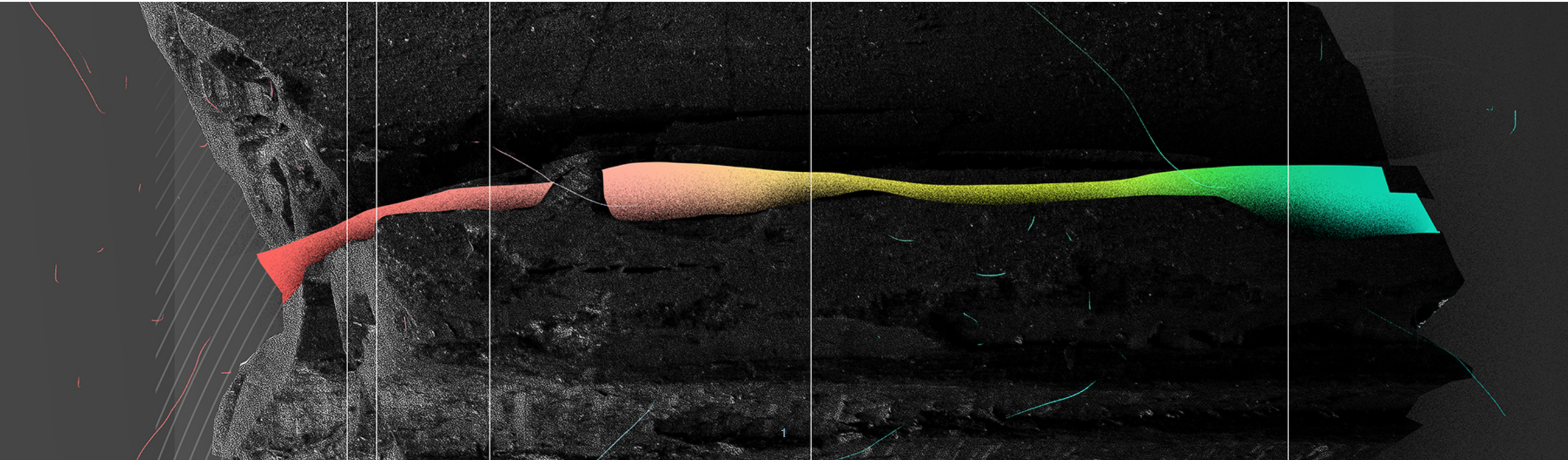
THE ENGINE

Built by MIT

Prepared for the Harvard Energy Journal Club (HEJC)

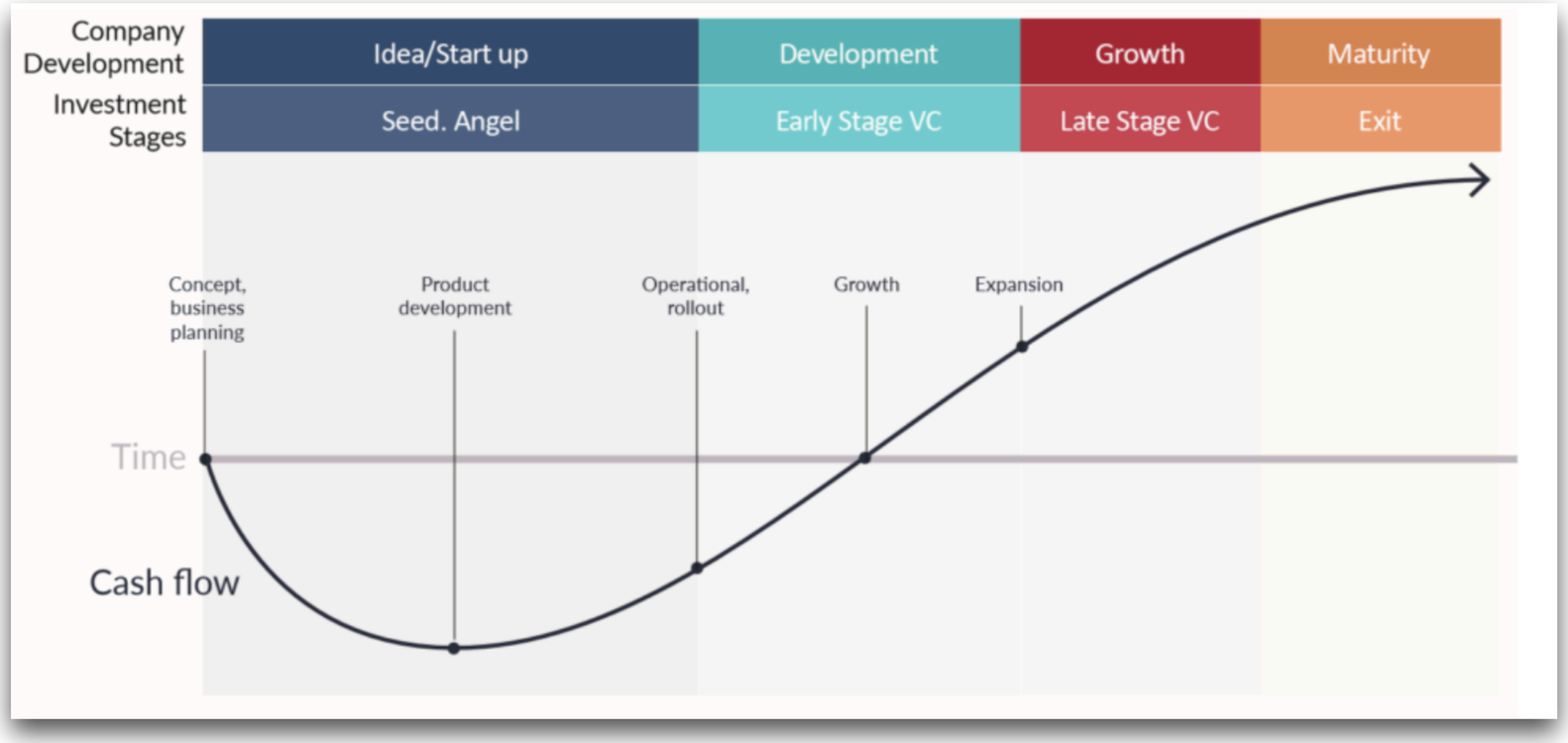
15 October 2021



Venture Capital 101

Types of investors

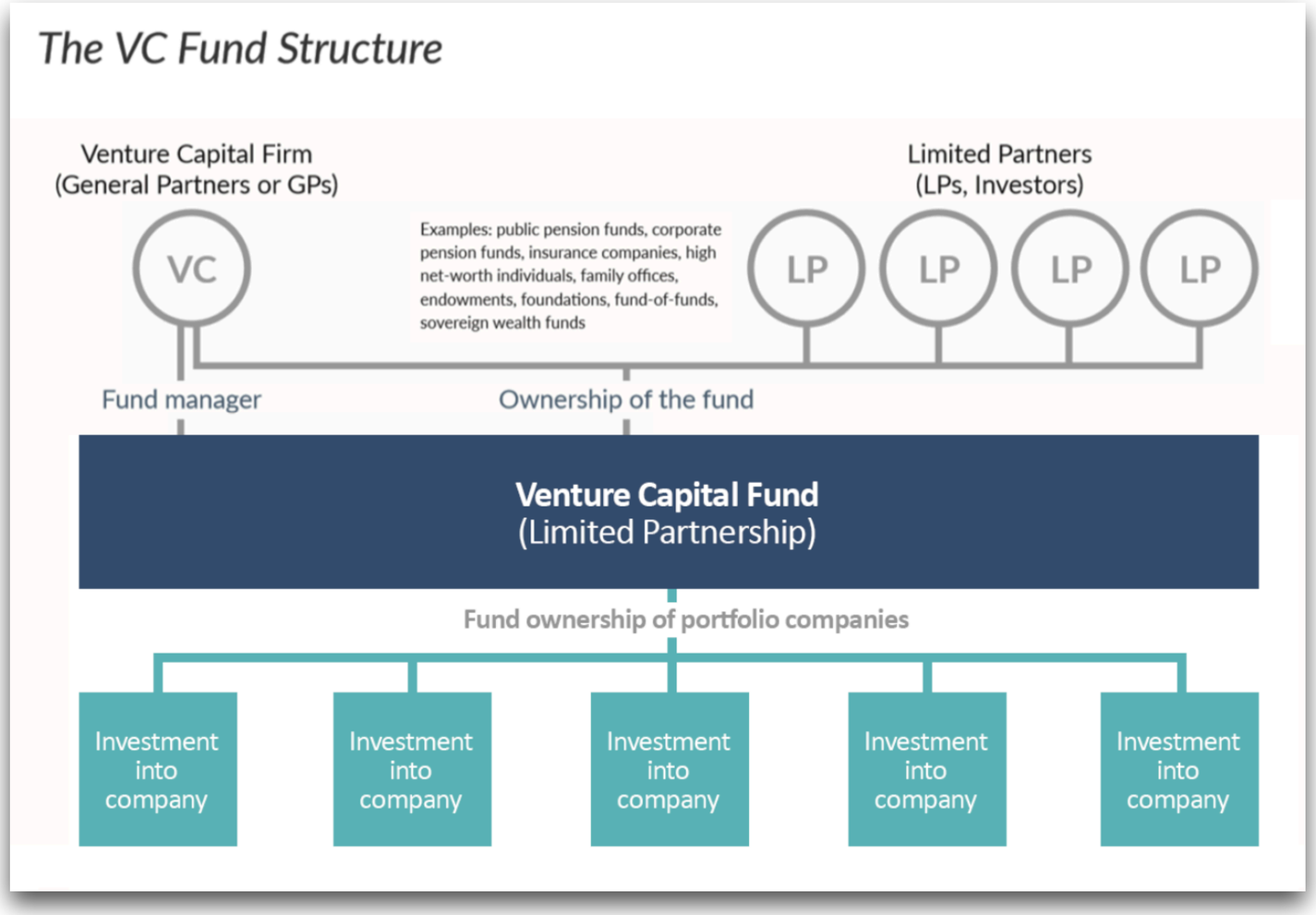
- Angels
- **Venture Capital (VC)**
- Corporate (Strategic)
- Customers (NRE, JDA, etc.)
- Grants (Gov’t, Philanthropic)



Source: NVCA

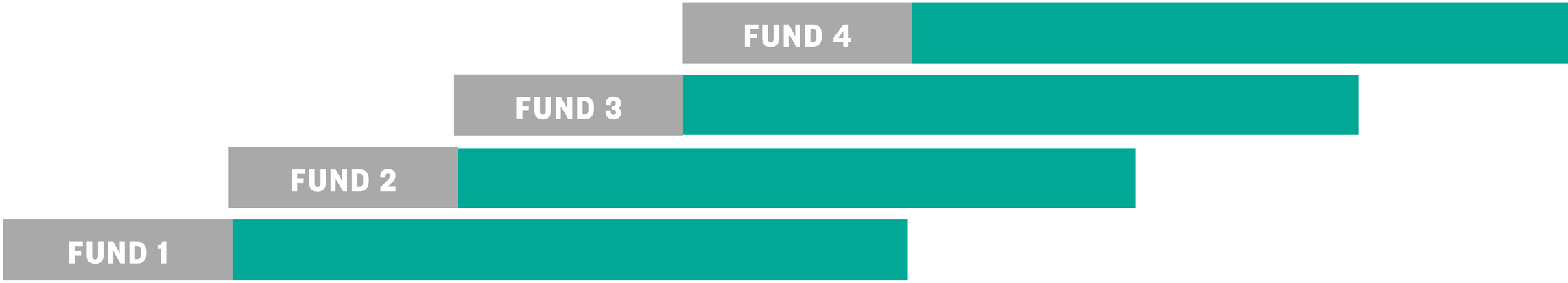
Venture Capital: Structure

- Limited Partners
- General Partners
- Management fees and carry



Source: NVCA

Venture Capital: Funds



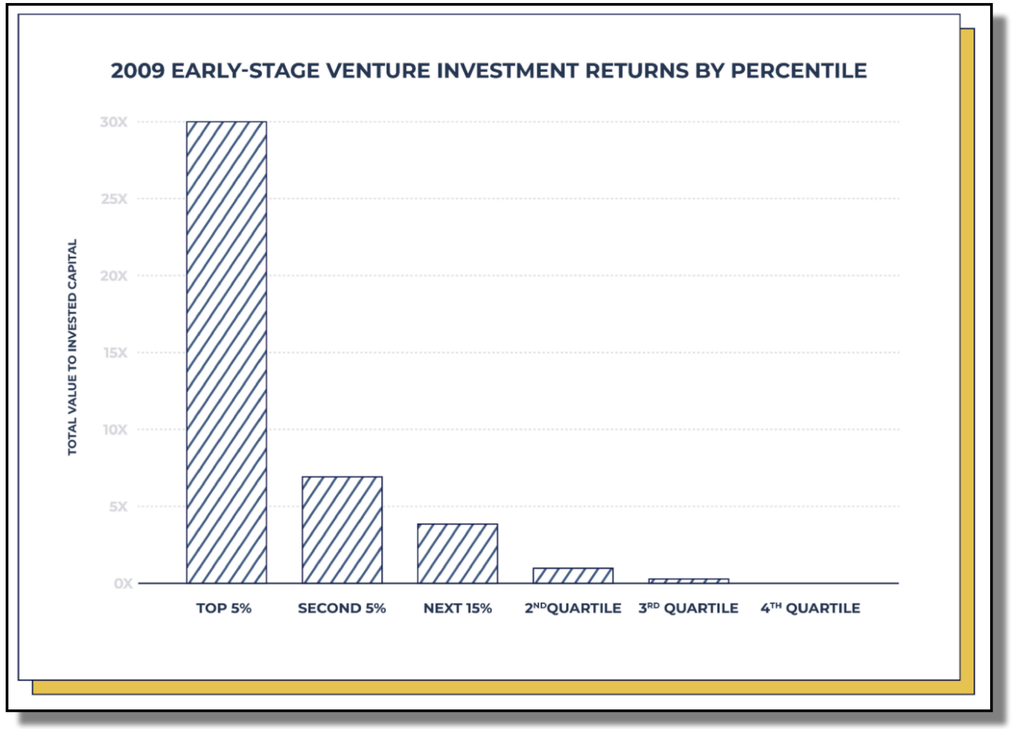
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
New Companies	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Exited Companies	—	—	—	—	—	—	—	—	+	+	—	—	+	+	—	—	—	+	—
Total Companies	12	24	36	48	60	72	84	96	108										

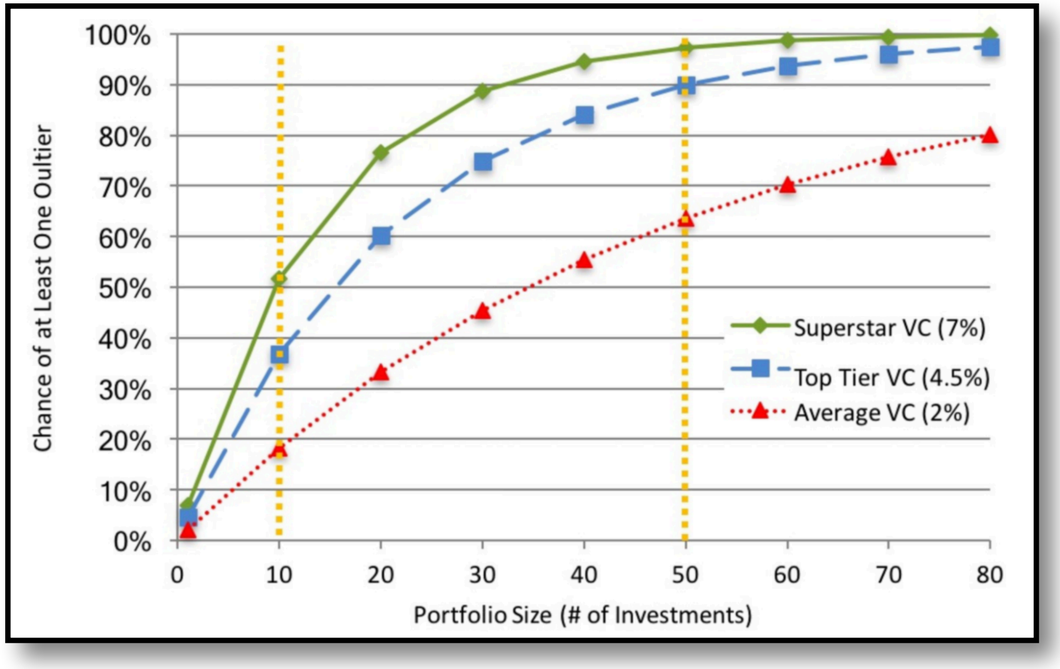
To consider: Fund life, Fund investment period, Intermediate return requirements

Source: medium.com

Venture Capital: Strategy

- VCs look for high quality companies/technologies at a time when there is very little appreciable signal for quality
    - **Power Law:** a small number of wildly successful investments drive overall returns for the industry, individual funds, and specific venture investors within those funds





- VCs are looking to maximize the outliers; cast a wide net and plan for a few companies to hit

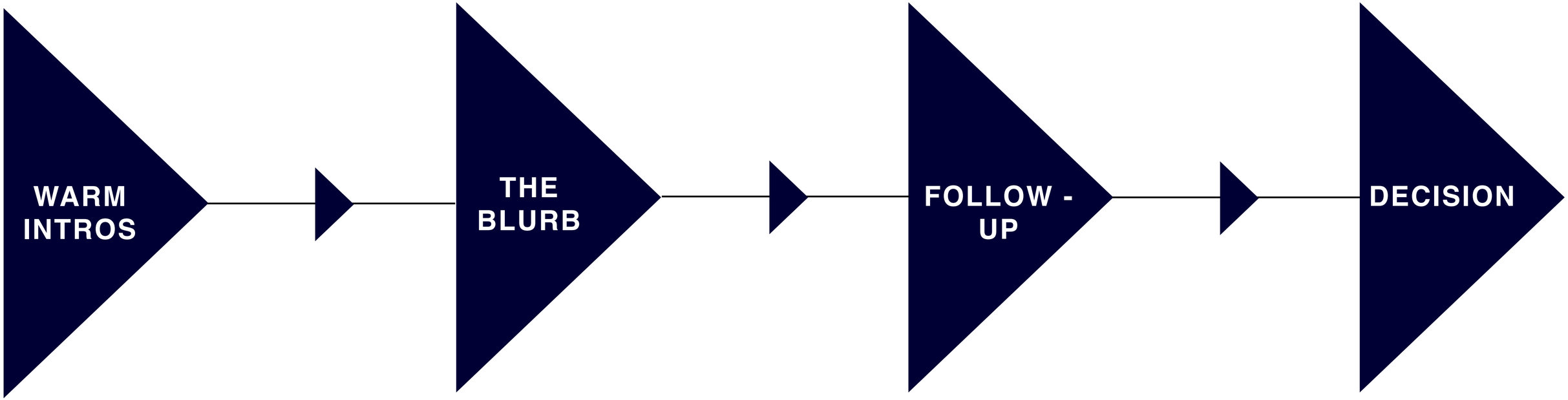
Source: medium.com

The Meeting: Know your audience

Stage	Pre-seed	Seed	Series A	Series B+
Investment	< $1M	$1-5M	$5-10M	> $10M
Geography	Local	Regional	National	International
Focus	Industry	Hardware vs. Software	Financial vs. Impact	B2C vs. B2B
Strategy	**One investment per industry** No portfolio competition		**Multiple investments per industry** Portfolio competition permitted	
Role	Lead		Follow-on	

BLUEPRINT

The Meeting: Goals



Make our internal conversations as easy as possible

- Easy to follow and specific - tell a story
- Answer what gives you credibility
- Show you can recruit allies

Consist of additional meetings, diligence calls, specific asks

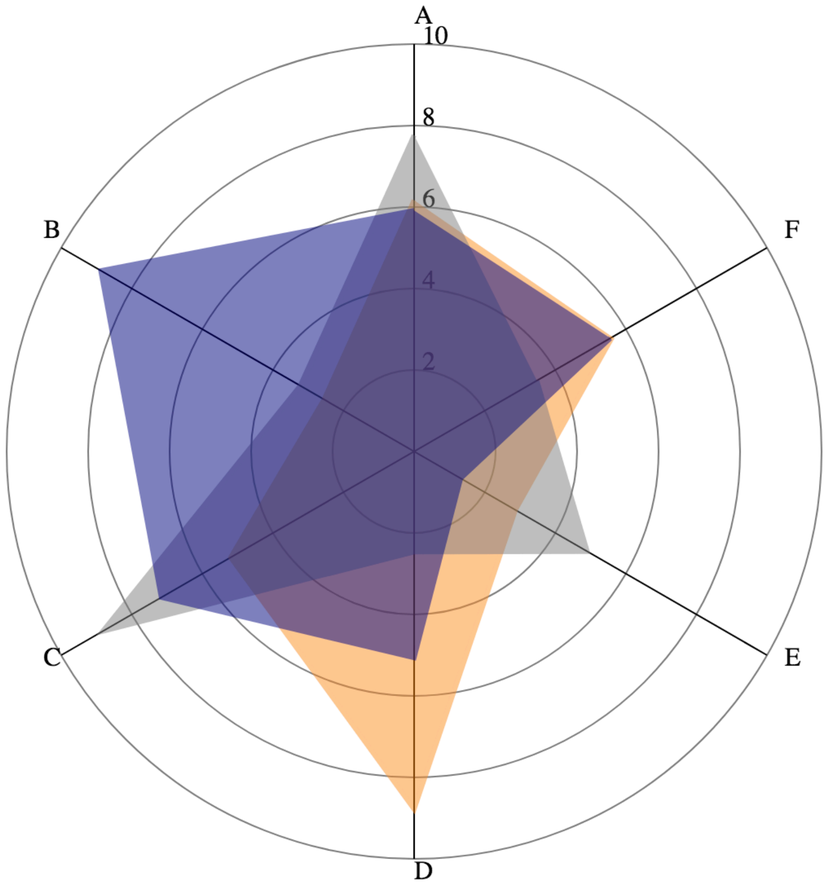
- Be proactive with reaching back
- Providing updates is helpful to keep internal momentum
- 5-7 days lag time
- Be prepared for deep diligence

1st Goal - Get a yes from the right people for the right reasons

2nd Goal - Get to a no as fast as possible and learn and grow

The Meeting: Behind the scenes

- VC Assessment:
  - **Technology** - PoP, Advantage
  - **Team** - Make up, Dynamic, Credibility
  - **Opportunity** - Market size, Strategy
  - **Deal** - Size, Timeline, Milestones
  - **Fit** - Thesis, Relationship

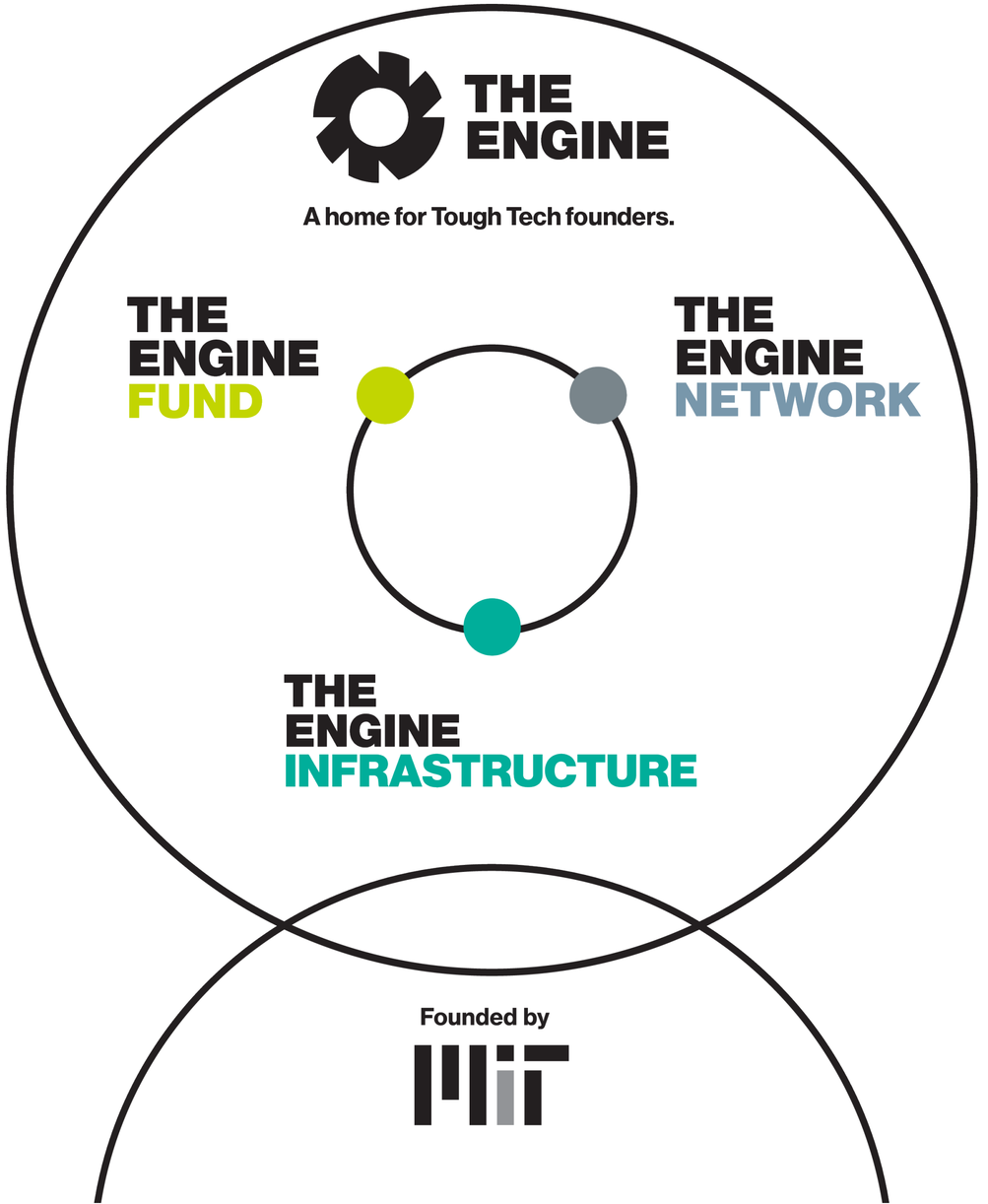


The Engine

The Engine

The Engine, built by MIT, is a venture firm that invests in early-stage companies solving the world's biggest problems through the convergence of breakthrough science, engineering, and leadership.

Our mission is to accelerate the path to market for Tough Tech companies through access to a unique combination of investment, infrastructure, and a vibrant ecosystem.



Tough Tech is transformative technology that solves the world's most important challenges through the convergence of breakthrough science, engineering, and leadership.

Advanced Manufacturing

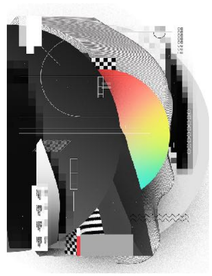
BioTech & Life Sciences

Advanced Materials

Internet of Things

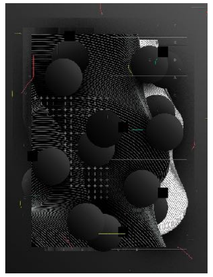
Energy

AI & ML



Advanced Computing

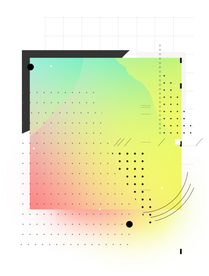
Robotics

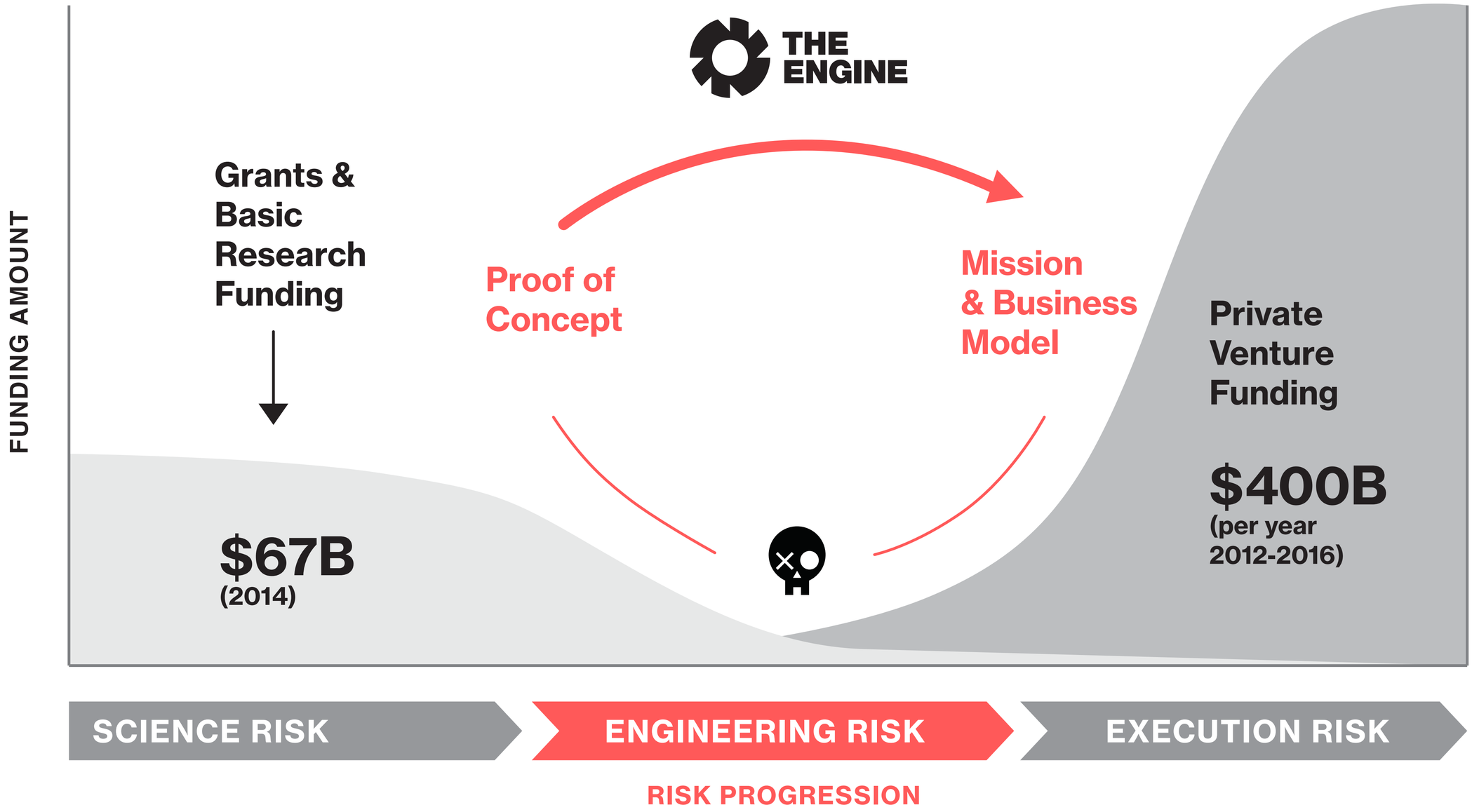


Semiconductors

Space

Food & Agriculture



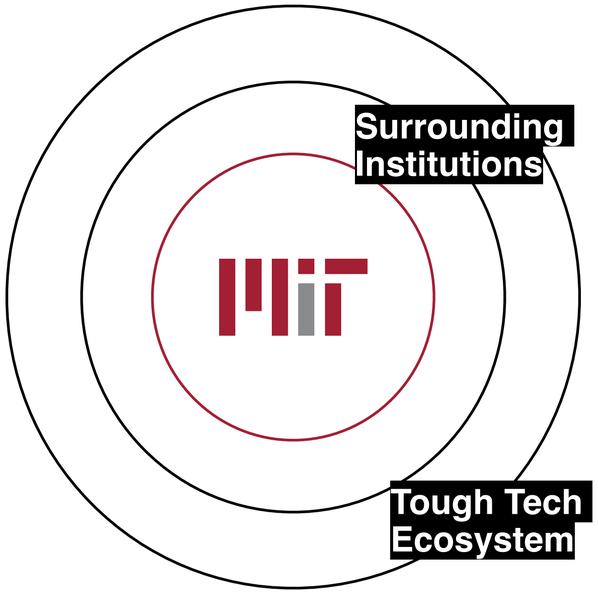

FUNDING AMOUNT
THE ENGINE
Grants & Basic Research Funding
$67B
(2014)
Proof of Concept
Mission & Business Model
Private Venture Funding
$400B
(per year 2012-2016)
SCIENCE RISK
ENGINEERING RISK
EXECUTION RISK
RISK PROGRESSION

The Opportunity

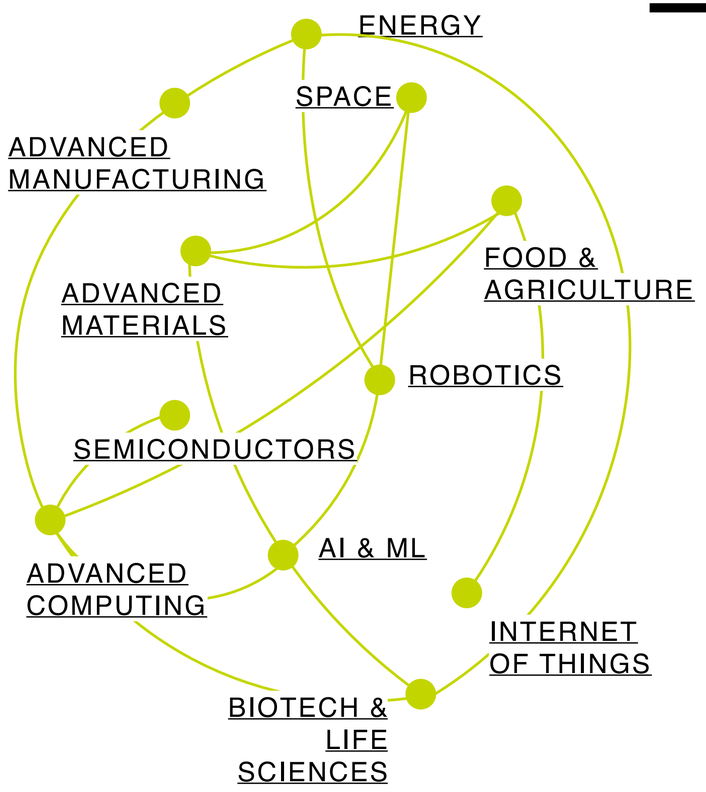
The Engine is **unlocking the potential of MIT,** the surrounding institutions & regions where breakthrough opportunities lie.

It does so by **investing in companies** that are rooted in breakthrough science & technology that will **transform markets**

Its **model uniquely positions** the Fund to develop these **companies at the earliest stages** to **commercialization**



- THOUSANDS OF P.I.S
- CROSS INSTITUTIONAL RESEARCH LABS
- HUNDREDS OF PATENTS FILED ANNUALLY IN BOSTON REGION



THE ENGINE
Built by MIT
+

PORTFOLIO COMPANIES **34**

TOTAL EMPLOYEES **707+**

TOTAL CAPITAL RAISED **~$750M**

FUND I & FUND II **$515M** AUM

Mitigating, adapting to, and ultimately reversing the universal crisis of climate change, with new materials and processes to adjust energy sources, reduce carbon emissions, and redefine energy storage.

VEIR

Reinventing the architecture of electricity transmission to enable a decarbonized grid.

EMVOLON

Converting wasted resources into valuable liquid chemicals through a low-cost, distributed platform.

form energy

Making renewable energy available 24/7 with bidirectional power plants.

RISE

Enabling the next era of fully electrified heavy machinery.

QUAISE ENERGY

Providing universal access to geothermal energy through disruptive energy drilling technology.

SUBLIME SYSTEMS

Producing cost-effective, zero-carbon cement using renewable electricity.

Commonwealth Fusion Systems

Safe, unlimited, carbon-free fusion power for the grid in 10-15 years.

BOSTON METAL

Efficient, lower-cost production of steel and alloys with zero emissions.

VIA SEPARATIONS

Up to 90% energy savings in separation process in the pulp & paper, chemical, and dairy industries.

Lilac solutions

The fastest, most sustainable, and most efficient lithium extraction platform.

SYZYGY PLASMONICS

ENERGY. TECHNOLOGY. SUSTAINABILITY.

Chemical production driven by light, enabling cheaper scalable on-site production.

HUMAN HEALTH

Enabling a healthier global population through the advancement of biotech and life sciences, by developing foundational technologies to improve health diagnosis and treatment and application of science-driven processes to ensure food security.

cellino

A tissue foundry for regenerative medicines.

mori

A natural coating to reduce food spoilage and packaging waste.

EASBIO

Rapid, accurate diagnosis of infectious disease at the point of care.

BIO BOT

Transforming wastewater into public health observatories.

seaspire SKINCARE

The future of sustainable skincare.

KYTOPEN

Cellular engineering, at unparalleled speeds, from discovery to medicines.

lucytherapeutics

Breakthrough mitochondrial-based therapies for neurological diseases.

VAXESS technologies

Vaccines & immunotherapies applied by patch & mimicking natural challenge to the immune system.

suono bio

Ultrasound drug delivery for difficult-to-treat diseases.

Axoft

Next generation of brain probes.

ADVANCED SYSTEMS & INFRASTRUCTURE

Adapting and evolving critical industrial systems that provide the backbone of advanced manufacturing and supply chains, the built environment, and space.

sync COMPUTING

Building the world's first Optimization Processing Unit to help unlock solutions from computing to networking.

Cambridge Electronics

Significantly more efficient electronics: from data centers to electric vehicles.

wolfo

Pioneering building construction through technology.

celestial AI

Next generation AI chips.

THE ROUTING COMPANY

Powering the future of public transit.

ISEE

Automating the logistics industry with a humanistic AI-powered autonomous driving system.

HYPERLIGHT

Ultra-efficient optical circuits to de-bottleneck data centers and telecom networks.

ZAPATA

Quantum software and algorithms to solve industry's hardest problems.

x^{∞} analytical space

Real-time satellite network connecting space to Earth 24/7.

S_2 SENSE

Miniaturized, mobile sensing solutions for a healthier and safer world.

RADIX

Automating biology lab processes from experiments to mass production.

THE ENGINE NETWORK

Convening & Engaging Tough Tech Leaders

We work with a diverse group of strategics, government agencies and organizations to help us accelerate Tough Tech growth and to create new solutions for the commercialization of Tough Tech companies.

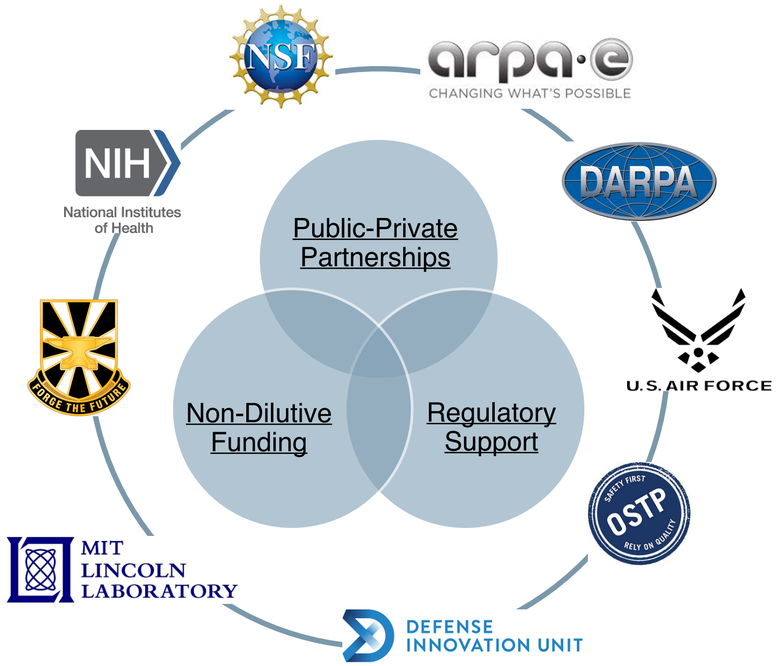
PLATINUM MEMBERS

U.S. ARMY
DEVCOM ARMY RESEARCH LABORATORY
MITSUBISHI ELECTRIC — Changes for the Better
Breakthrough Energy VENTURES
Nitto — Innovation for Customers
HYUNDAI CRADLE
IMA SPA — Sustain Ability
PNC BANK

GOLD MEMBERS

ARROW — Five Years Out
camber road
GD GUNDERSON DETTMER
MINTZ
svb Silicon Valley Bank

CONVENING & ENGAGING POLICY MAKERS



THE ENGINE INFRASTRUCTURE

The Engine Infrastructure provides access to the specialized labs, equipment, tools, and space necessary to build transformative technologies as economically and efficiently as possible.

501 Mass Ave: 30,000 sq ft

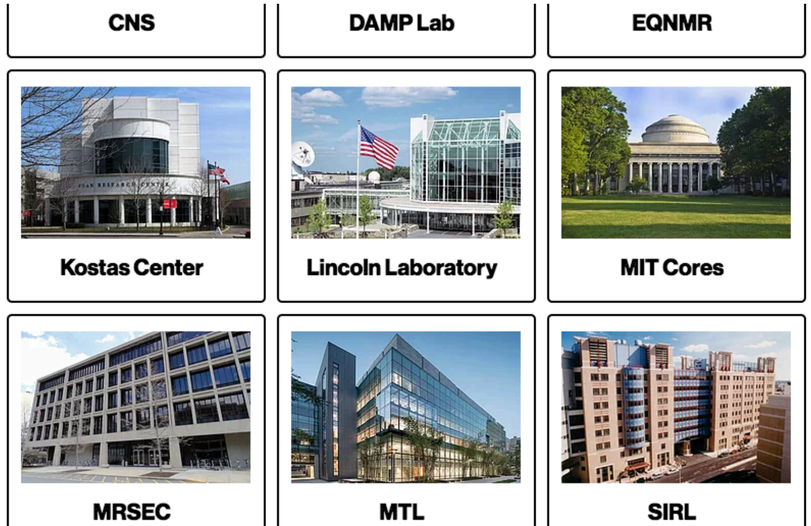
Specialized labs, equipment, tools and space at The Engine Headquarters. A unique mix of Chem, Bio Labs, Fab/Maker Space.

The Engine Room: Access to 22 Facilities

Access to 22 specialized facilities with over 1,200 pieces of equipment across the region increasing efficiently and affordability.

Curated list of Resources & Contractors

External resources available to companies including HR firms, legal firms, marketing firms, vendors & more.



The Engine Hub @ 750 Main Street

Opening October 2022
The Engine Hub

730-750
MAIN STREET

80-100
COMPANIES AT A TIME

1000
SCIENTISTS, ENTREPRENEURS, TECHNOLOGISTS, AND PARTNERS

155,000
SQTF SITUATED BETWEEN CENTRAL, KENDALL, AND MIT

650+
BENCHES

BLUEPRINT

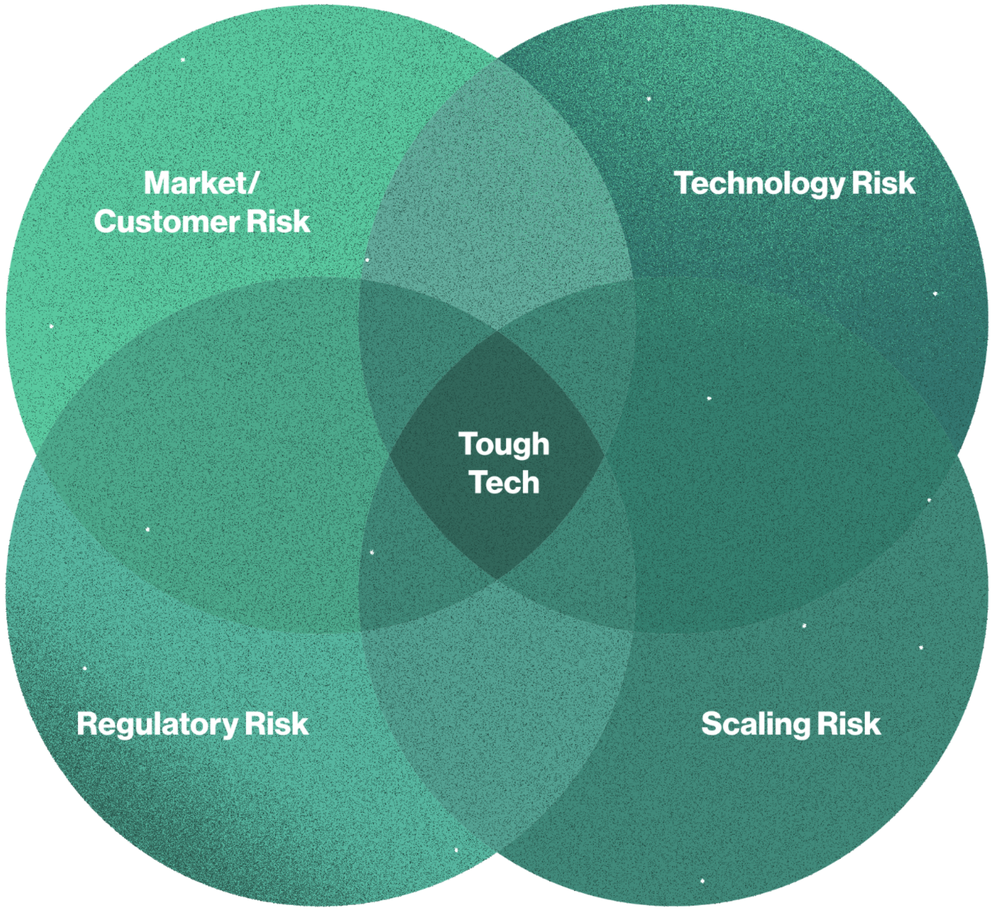
A TOUGH TECH COMMERCIALIZATION PROGRAM

- Personalized feedback and mentoring from The Engine's fund team
- Guest speakers from The Engine's portfolio and network
- Interactive case studies
- Pitch practice

Two five-week sessions per year:

Fall | September - October

Spring | March - April



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Tough Tech Summit® 2021

Build 10.27 — Invest 10.28

Explore the challenges and opportunities of bringing Tough Tech to market and how we can work together to accelerate the commercial success of world-changing technologies.

Join founders, entrepreneurs, investors, policymakers, industry leaders, and others for two days of keynotes, panels, case studies, and networking.

Day 1 is open to all and will feature a mix of keynote talks and sector-specific conversations focused on commercializing Tough Tech breakthroughs.

Day 2 is designed for an intimate audience of founders and investors. Conversations will focus on investment pathways and strategies. Attendees will also have the opportunity to view select founder pitches.

Register here

Thank You

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