Co-Creation @MIT: An Innovation Ecosystem Approach

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OECD: Towards Effective Science-Industry Co-Creation

Co-Creation in Innovation Ecosystems*

- Innovation ecosystems are of central importance to building our innovation economy today - not only in the US, but also Europe, Middle East, Africa & Asia.

- Within innovation ecosystems key stakeholders must come together in new ways to engage in effective co-creation to solve the world's greatest challenges.

Universities & corporations play an important role these changes but are often slow to adapt.

* Thanks to key collaborators - Dr. Phil Budden (MIT), Dr. Lars Frolund (MIT), Gene Keselman (MITii), Prof Michael Cima (MIT), Prof Vlad Bulovic (MIT)

Innovation

- MIT's Innovation Initiative (MITii) defines innovation as the **"process of taking ideas from inception to impact"**;

- Emphasizing that an '**idea**' is the match between a **problem** and a **solution,** not just tech;
- Focusing on **process** (not products/services), highlighting the entire journey;
- Observing that a range of different **organizations** are engaged, from universities and startups, to corporations & even governments.

An innovative ‘idea’ usually starts with a problem or a solution…

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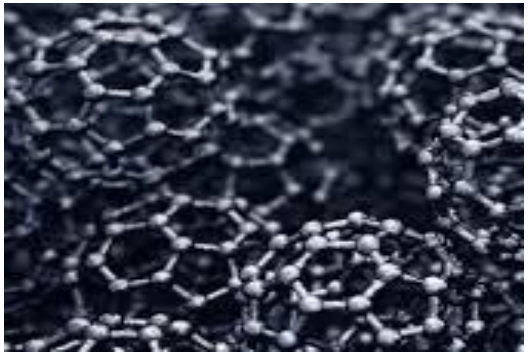
…but eventually requires the match between a problem and a solution



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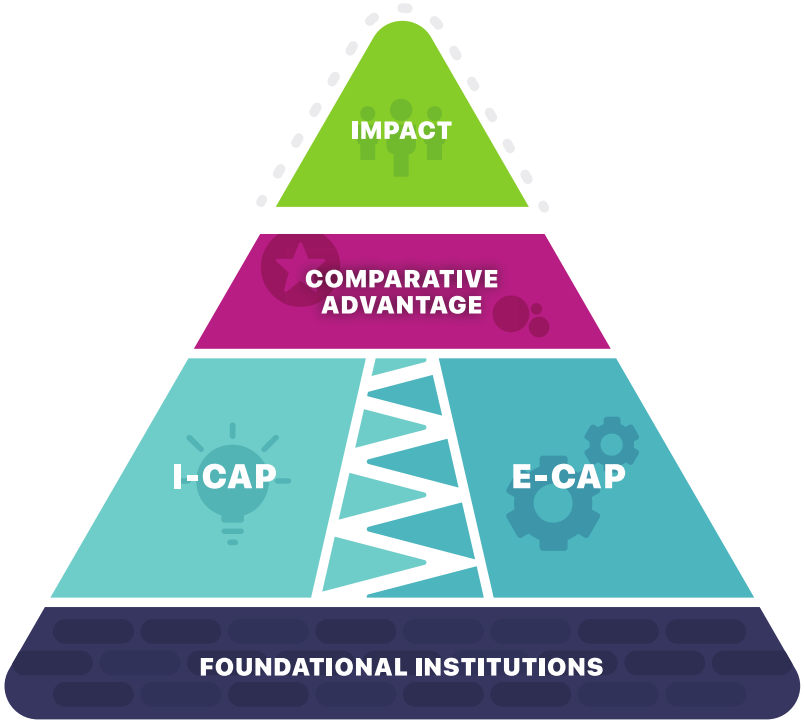
In today's innovation economy, the world of innovation is NOT flat…..

…instead there are a growing number of 'innovation ecosystems'- characterized by interactions and inter-dependencies between key stakeholders and their resources - supporting 'innovation-driven entrepreneurship'.

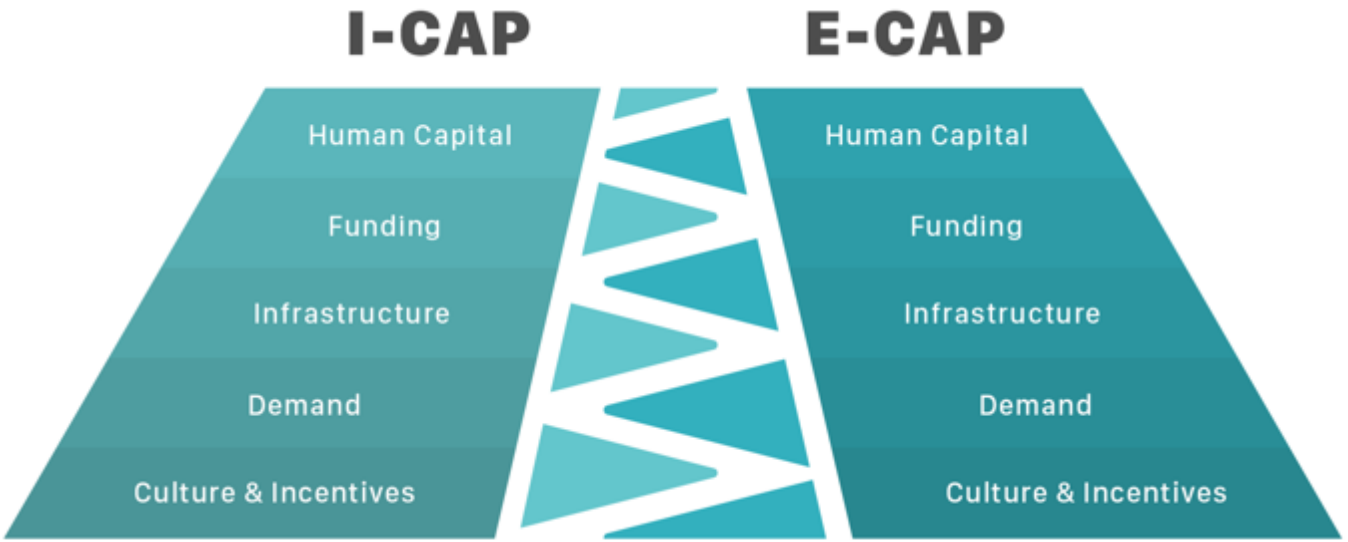



What are the lessons from successful innovation ecosystems worldwide?

In MIT's Innovation Ecosystem model, we outline this 'System'



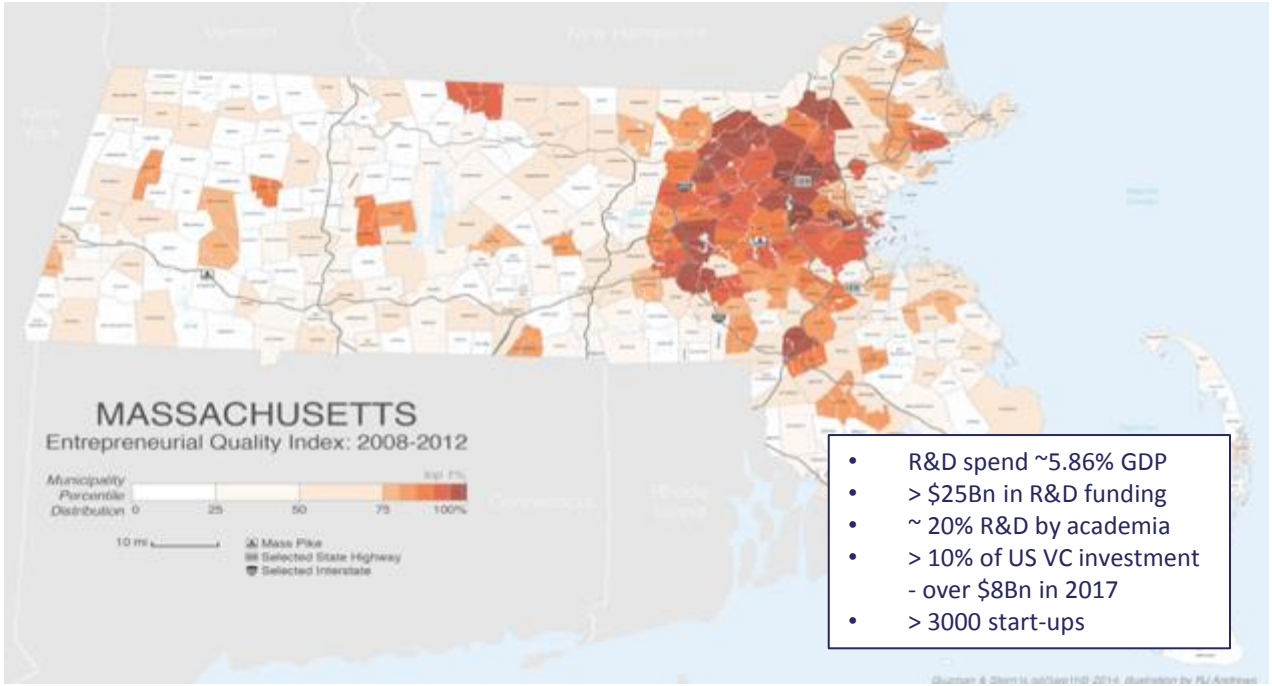
Innovative/Entrepreneurial Capacities are the ‘twin engines’ of the System.



https://innovation.mit.edu/assets/BuddenMurray_Assessing-iEcosystems-Working-Paper_FINAL.pdf

Often, although not always, highly concentrated in regions with strong universities, to support the ecosystem.

Innovation & entrepreneurship in MA is highly concentrated within the Greater Boston area and specifically around "Kendall Square"



- R&D spend ~5.86% GDP
- > $25Bn in R&D funding
- ~ 20% R&D by academia
- > 10% of US VC investment - over $8Bn in 2017
- > 3000 start-ups

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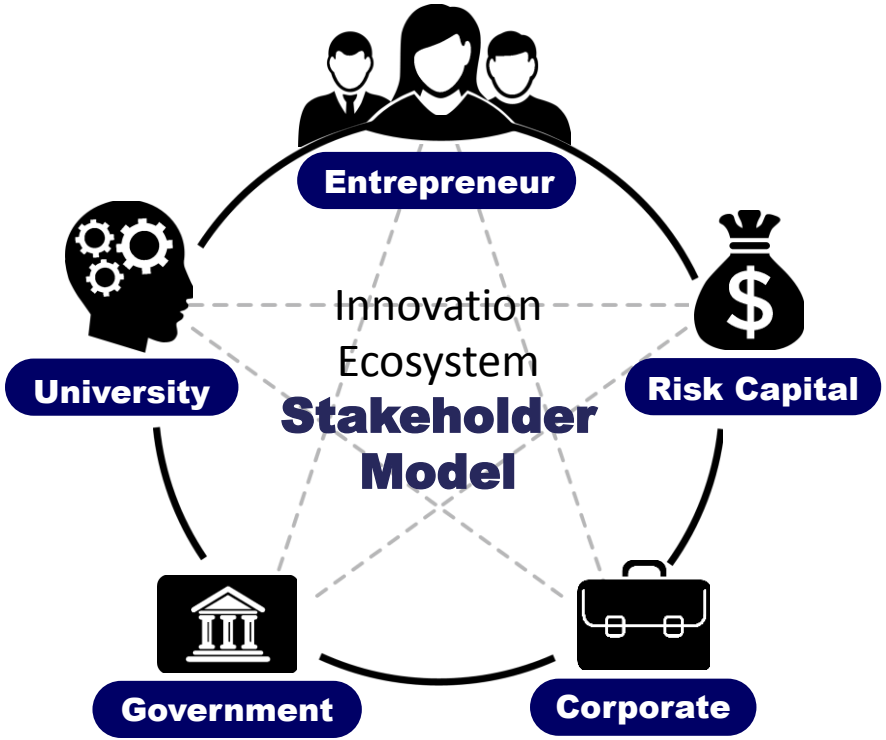
Leading Innovation Ecosystems are characterized by five Key Stakeholders…



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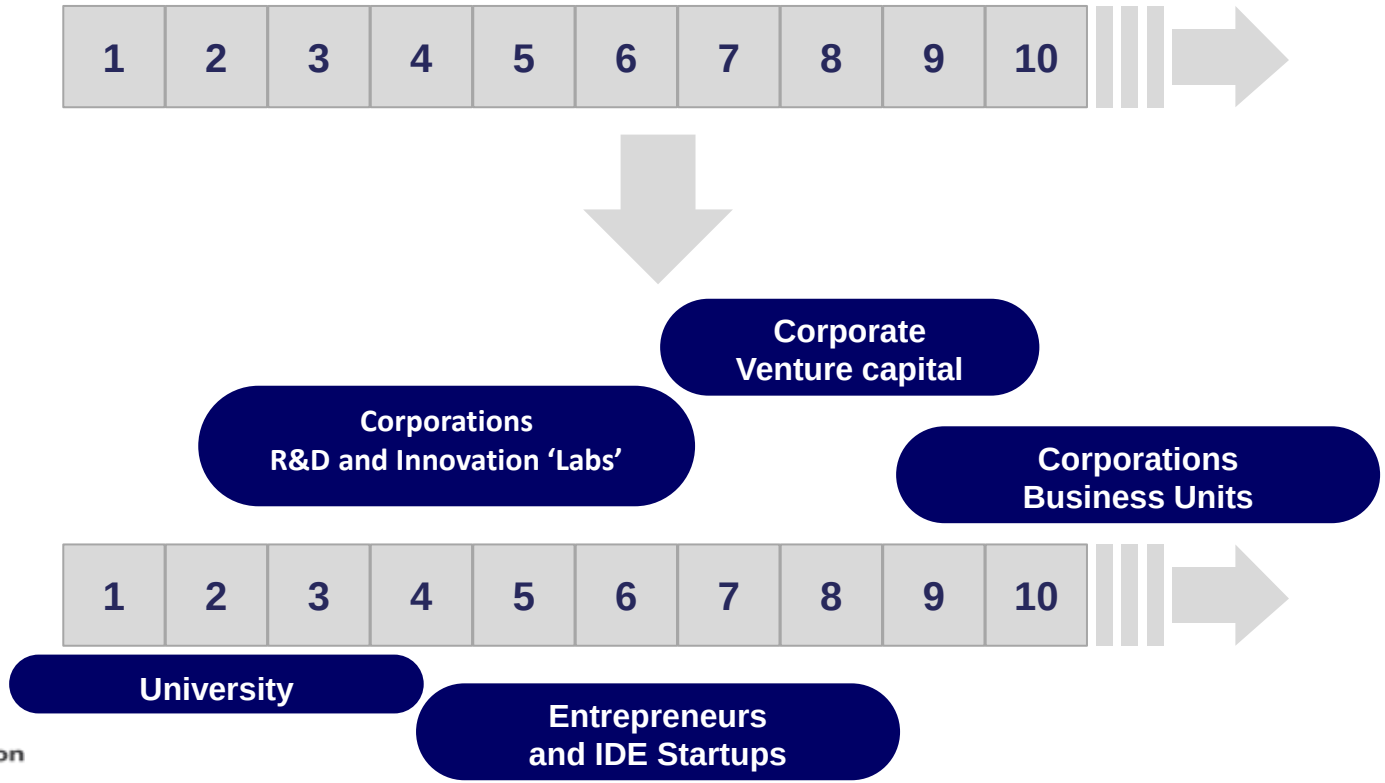
…coming together in new ways with a growing role for innovation-driven enterprises in the innovation process (especially in the earliest phases)



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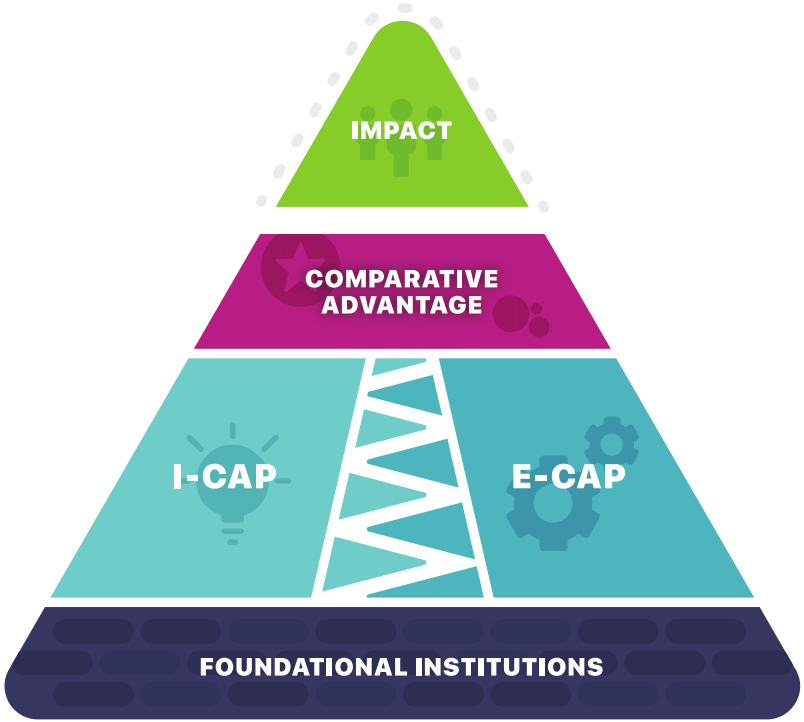
Effective regions build a strategy for co-creation around assets, identity & activities that drive comparative advantage



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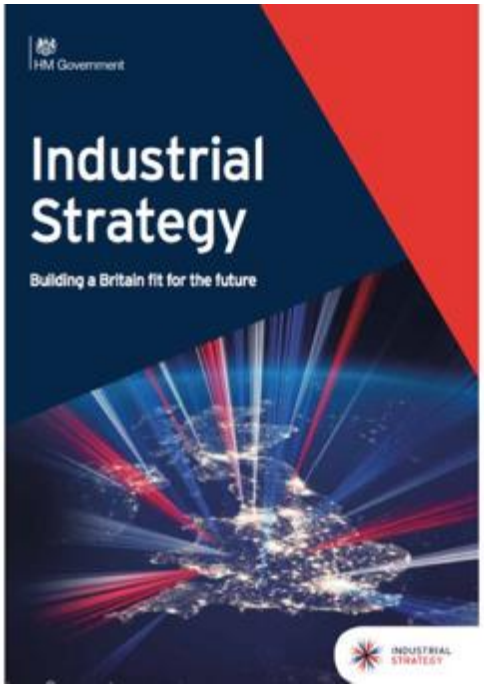
Governments can signal key grand challenges & missions that may shape the direction of co-creation based around comparative advantage



We will set Grand Challenges to put the United Kingdom at the forefront of the industries of the future:

AI & Data Economy
We will put the UK at the forefront of the artificial intelligence and data revolution

Clean Growth
We will maximise the advantages for UK industry from the global shift to clean growth

Future of Mobility
We will become a world leader in the way people, goods and services move

Ageing Society
We will harness the power of innovation to help meet the needs of an ageing society

New demand-side approaches can be used to direct innovation ecosystems via competitions, incentives & attention; tools that complement traditional R&D spending and tax incentives for innovation.

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E.g. Nova Scotia is building on its historical & emerging ocean advantage with its oceans ‘super-cluster’

The Nova Scotia team in the MIT Regional Entrepreneurship Accelerator Program (REAP) is learning from global best practices how progress in innovation-driven entrepreneurship can be sustained by an integrated approach and healthy partnership between higher education, entrepreneurs, venture capital, established companies and governments.

E.g. Pittsburgh is building its industrial ‘renaissance’ around computer science, robotics & autonomy

E.g. Dubai is emphasizing the government need to solve critical social problems as the foundation of its approach…

- *Goal* is to be the best run country of the future in 2030, pioneering new solutions to key government challenges;
- Using iEcosystem engagement of **entrepreneurs** (rather than traditional internal solutions);
- In doing so, also building a strong **entrepreneurial community**.

http://gulfnews.com/news/uae/government/dubai-launches-new-project-to-solve-future-challenges-1.1867799

Puts the emphasis on finding new formats or mechanisms for co-creation that put the mission at the core.

Requires universities & large organizations to find new ways to interact & to share their challenges to maximize the effectiveness of exchange recognizing the role of:

- Diverse human capital - e.g. specialized talent interested in problem-solving
- Funding - structured in a new and rich variety of formats
- Infrastructure - e.g. critical specialized equipment and datasets
- Demand - for novel solutions to critical problems
- Culture - opportunities to develop new shared cultures

INNOVATION & ENTREPRENEURSHIP REDEFINED

Fiona Murray

48-hour hackathons to share mission-critical topic & galvanize diverse participation & exchange

“Hack-a-thon” - from hacking and marathon - as an opportunity to pose specific corporate or other organizational challenges & attract attention by providing problem-insights, possible materials and props, a community of “solvers”.

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Semester-long course focusing on a single problem e.g. Beaverworks

Environmental Awareness In the Maritime Domain (Course 2.013/2.014): Mechanical Engineering course designed a deployable “blue water” resupply system. Networks of latent semisubmersible pods operate autonomously in a marine environment and provide power and comms links to extend the duration of maritime surveillance operations.

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Year-long grants for translating solutions
e.g. J-WAFS for water & food security, MITei for energy

Recognizing that faculty labs are motivated by opportunities to support translational research (in collaboration with those who understand the solution space), “ignition” and “innovation” grants along with mentoring provide a new mode of co-creation.

MIT FOOD AND AGRIBUSINESS INNOVATION PRIZE

J-WAFS Rabobank MITFAC

MIT | J-WAFS Abdul Latif Jameel Water & Food Systems Lab
Securing humankind's vital resources

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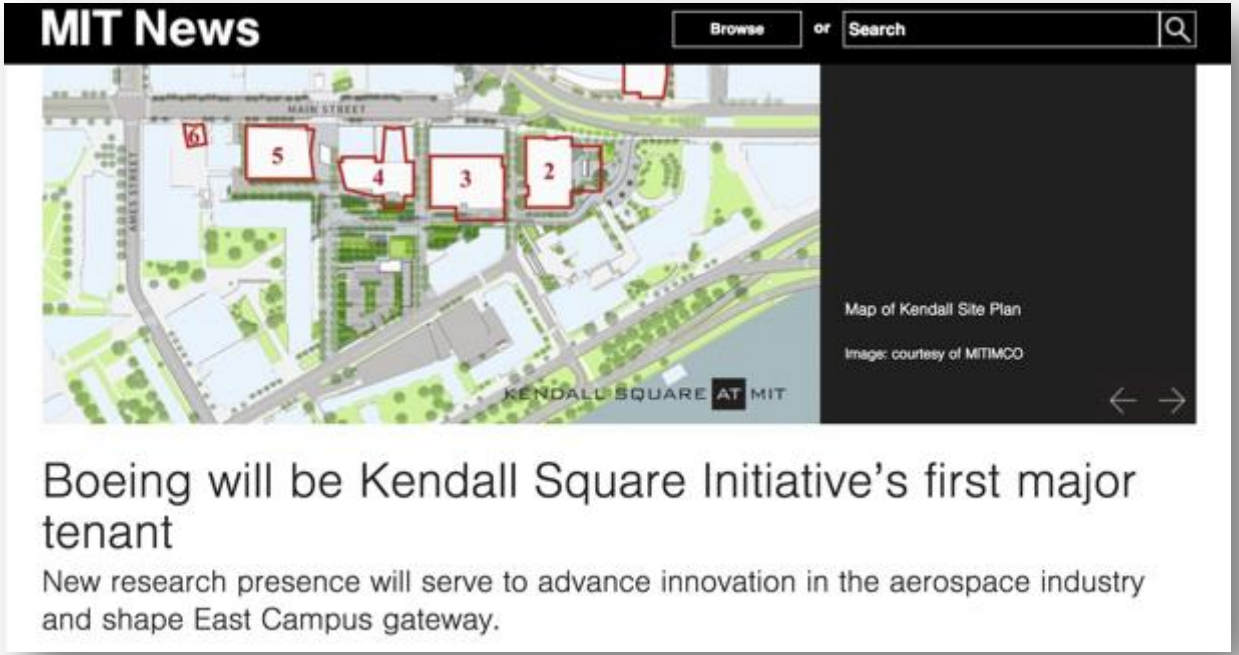
On-going problem-driven engagement enabled by proximity & multi-mode interactions



Aurora FLIGHT SCIENCE

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Educational approach

THEORY

PRACTICE

Educational Proposal

THEORY/MENS

- Discipline- and evidence-based education
- Combination of research-based insights with specific case studies (drawn from MIT & beyond)
- Move beyond “animal spirits” conception of entrepreneurship to a skills-based approach

PRACTICE/MANUS

- Practice in real-world environments but in a “safe” setting
- Problems of increasing complexity
- Practice of working in a team under resource constraints and high uncertainty
- Opportunity to explore entrepreneurial careers & activities

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Current generation of young people seem to find working on these mission-led opportunities especially appealing

For example:

- **90% of MIT graduates** choose their job on its “creative & expressive challenges”.
- **77% of MIT graduates** say “making a contribution to impact is essential” in their career.
- MIT graduates entering software, healthtech & energy jobs – risen from 15% to 40% in a decade.
- More than 15% now seek their first job in venture-backed start-ups for more rapid impact.

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