Have you ever wondered what makes innovation ecosystems like Kendall Square/Greater Boston, Israel or Silicon Valley such a special place for the formation and growth of entrepreneurial firms? Have you asked what other global regions – from Lima to London to Lagos - might learn from their experience to drive entrepreneurship and economic growth?

Have you thought about the strategic actions you and your organization – large corporation, government, not-for-profit – might undertake to access opportunities in a regional innovation ecosystem? And in turn how your organization might contribute effectively to your ecosystem? How might you design effective accelerators, prize competitions, co-working spaces etc.?

These questions are of central importance to those leading innovation in global corporations and in governments. It is also the responsibility of entrepreneurial leaders to understand how to create the conditions for the next generation of entrepreneurs who follow them!

REAL (Regional Entrepreneurial Acceleration Leaders) is a practical MIT course aimed at students wishing a research-based but action-oriented understanding of how to accelerate innovation-driven entrepreneurship (IDE) and build vibrant regional economies. Its starting point is the innovation-driven entrepreneurial ecosystem that has served as the foundation of many successful regions since the first industrial revolution.

The course assesses the innovation and entrepreneurship foundations of these systems. It then takes the perspective of the five critical stakeholders: entrepreneurs, risk capital providers, and universities, as well as policymakers (government) and large corporations. We provide tools for designing key programs and policies e.g. accelerators, prizes, visa policies, tax policies etc. - that can be implemented by stakeholders in regional economies worldwide.
COURSE OBJECTIVES

The emphasis throughout REAL is on theory and practice: theories of innovation-driven entrepreneurial (IDE) growth are used as the basis of practical analyses of specific policies and catalytic programs that can be implemented by corporate leaders, entrepreneurs and investors to enable regional entrepreneurial acceleration.

Our objectives include providing you with:

- An MIT framework to help you analyze innovation ecosystems and their stakeholders, building on economic, political and social theories of how ecosystems accelerate economic prosperity.
- Insights into different regions worldwide both in terms of their current state but also the path dependencies that enable their current success (or failure) through the lens of the MIT framework.
- Detailed tools and metrics to design, implement and measure policies and programs that can be undertaken by a variety of stakeholders to accelerate ecosystem development and drive innovation strategy including accelerators, hackathons and prizes.
- Throughout we will examine regions in the USA, Europe, Asia, Middle East, Africa and South America, and we will cover sectors from IT and media, through clean energy, to the life sciences.

COURSE DESIGN

Seminar Sessions: We will achieve our objectives through a series of weekly interactive seminar-style discussions, in addition to short summary lectures on specific topics. We will also invite key speakers who have extensive experience in building innovation ecosystems from a corporate, entrepreneurial and/or government perspective, as well as leaders of accelerators and prizes.

Final Project: The final project is an opportunity for you to work in small teams to explore a region or policy/program of your choice, and produce a short written analysis (as well as a brief in-class presentation for your classmates). This is a chance to reflect and integrate the class lessons for regional entrepreneurial acceleration in a context of personal interest.
CLASS TIME & LOCATION:

Tuesday: 5:30-8:30 PM (see below for dates) e62-262. Dinner will be provided.

NOTE: We will make video-conferencing available to a small number of students.

FACULTY:

Dr. Phil Budden  pbudden@mit.edu
Prof Fiona Murray  fmurray@mit.edu
Carolyn Fu (TA)  cjfu@mit.edu (please address queries to Carolyn)

READINGS:

Course material will also be made available through Canvas.

MIT students who have added 15.364 to their registration should have automatic access (if not please email our TA). Non-MIT students please contact our assistants, Kim McGrath (mcgrathk@mit.edu) or Stephanie Taverna (staverna@mit.edu), for an @mit.edu Kerberos account.

GRADING:

The class grade has three elements

1. Class participation (30%) – we expect you to participate in class (either in person or remotely). Excused absences are, of course, acceptable for personal or medical emergencies (please let the TA know via email). You should be prepared for discussion, having read the material critically.

2. Exercises (40%) – Choose four sessions in the semester for which to write up and submit a 1-2 pager on the exercise activity for the week. Use the questions provided to structure your analysis of your region of interest. Please submit your written exercise in advance of the relevant class to the TA via Canvas.

3. Final Paper & Presentation (30%) – working in teams (up to four people), you will develop a research report evaluating the past, current and future potential of a region or policy/program to drive innovation-driven entrepreneurship. In the case of a region, you will analyze the region through the MIT frameworks and make recommendations for its further upgrading. For those exploring a program/policy, please compare its success or failure in at least three or more modes of implementation. Your final paper should be 15 pages - including as much factual detail as possible. You will be asked to make a 10-minute presentation of your findings in class.
<table>
<thead>
<tr>
<th>DATE</th>
<th>CLASS TOPIC</th>
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<tbody>
<tr>
<td>February 6</td>
<td><strong>Framework: MIT innovation ecosystem (iEcosystem) Model</strong>&lt;br&gt;MIT model of ‘innovation ecosystems’. Innovation-driven enterprises (IDEs vs. SMEs) and role of geography in agglomeration (e.g. from Marshall to Moretti). Analyse through: System, Stakeholders and Strategy. Comparing the challenges and issues for innovation ecosystems in the developed versus the developing world.&lt;br&gt;<em>Case</em>: Kendall Square (and Greater Boston)</td>
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<td>February 13</td>
<td><strong>Framework: System - analyzing &amp; measuring innovation ecosystems</strong>&lt;br&gt;Importance of (and differences between) entrepreneurship and innovation, each with its own measurable capacity (I-Cap vs E-Cap). Systematic metrics to assess ‘innovation-driven entrepreneurship’ in an ecosystem (with a new ‘web app’).&lt;br&gt;<em>Case</em>: Amazon HQ2</td>
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<td>February 20</td>
<td><strong>NO CLASS</strong></td>
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<td>February 27</td>
<td><strong>Framework: System – Comparative Advantage</strong>&lt;br&gt;Understanding the role of comparative advantage in opportunities for innovation ecosystem development. Basic approaches to determining comparative advantage and opportunities to intervene. Challenges for building comparative advantage across regions, and the political complexities of the distribution of advantage in the developed and developing world.&lt;br&gt;<em>Case</em>: London’s Tech City</td>
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<td>March 6</td>
<td><strong>Framework: Stakeholders - analyzing &amp; engaging them</strong>&lt;br&gt;Stakeholder model. Role of different stakeholders in building and contributing to iEcosystems. Changing role of stakeholders over time – path dependency. Importance of collective impact on stakeholder engagement. Examples from REAP teams with different stakeholder leadership approaches.&lt;br&gt;<em>Case</em>: Silicon Valley</td>
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<td>March 13</td>
<td><strong>Framework: Strategy - ‘policy &amp; program interventions’ (PPIs)</strong>&lt;br&gt;Developing an approach to the design of programmatic interventions. Exploring the range of programs. Defining the elements of program design (using the collective impact approach) as applied to accelerators. We will also explore how to develop effective and useful approaches to program evaluation.&lt;br&gt;<em>Case</em>: MassChallenge</td>
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<td>March 20/27</td>
<td><strong>NO CLASS – SIP WEEK &amp; SPRING BREAK!</strong></td>
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<td>Date</td>
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<td>April 3</td>
<td>Deep Dive: Policies &amp; Programs to build an Entrepreneurial Capacity (eg Culture)</td>
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<td>Evaluation of a range of policies and programs to improve entrepreneurial human capital and build a more entrepreneurial culture. Policies e.g. visa, bankruptcy policy, non-compete agreements, and Programs especially the role of university-based programs e.g. hackathons, entrepreneurship education and competitions.</td>
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<td>Case: Singapore</td>
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<td>April 10</td>
<td>Deep Dive: Policies &amp; Programs to build Innovation Capacity (eg Human Capital)</td>
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<td></td>
<td>Evaluation of a range of policies and programs to improve innovation capacity (I-Cap), including human capital and infrastructure. Exploring the role of different universities, and examining the role of international aid in shaping innovation capacity especially in the developing world.</td>
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<td>Case: Ghana</td>
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<td>April 17</td>
<td>NO CLASS – IN HONOUR OF PATRIOTS DAY!</td>
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<td>April 24</td>
<td>Deep Dive: Policies &amp; Programs to build Risk Capital</td>
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<td>Evaluation of a range of policies and programs to improve access and availability of risk capital e.g. Angel investment policy (UK, Lerner) &amp; tax policies for early-stage capital. Alternative stakeholder programs to encourage risk capital development (e.g. government, corporate &amp; university programs).</td>
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<td>Case: Israel &amp; Start-Up Nation</td>
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<td>May 1</td>
<td>Leadership: Ecosystem Engagement by Large Corporations</td>
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<td>Can large corporations lead ecosystem change? Using examples from a variety of different countries – Nokia/Finland, Microsoft/Beijing - we will examine the particular challenged faced by large corporations as they attempt to accelerate entrepreneurship and innovation in ecosystems where they are key anchors.</td>
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<td>Case: Morocco, OCP</td>
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<td>May 8</td>
<td>Leadership: Ecosystem acceleration by Entrepreneurs</td>
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<td>We will explore the variety of roles that successful entrepreneurs can play in leading and shaping their innovation ecosystems by exploring several cases in the United States and elsewhere. Our focus will be on the opportunities and challenges that entrepreneur-driven ecosystems present, the importance of role-models, responsibilities of successful entrepreneurial leaders, and the role of the diaspora.</td>
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<td>Examples: Boulder, Las Vegas, Lagos</td>
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<tr>
<td>May 15</td>
<td>Student Presentations</td>
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<td></td>
<td>We will use the last session to hear a short 10-15 minute presentation from each of the class teams. Each presentation will be followed by Q&amp;A from the instructors and all class participants.</td>
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</table>
## Framework: MIT innovation ecosystem (iEcosystem) Model

We define and introduce the critical role of innovation-driven enterprises (IDEs), contrasting them with SMEs, as a core part of the MIT innovation Ecosystem framework. Our focus will then shift to spatial patterns of economic activity (going beyond ‘clusters' to 'ecosystems'), and how all this is distributed across regions and nations and over time. This will be illustrated across the history of eg Greater Boston and Kendall Square around MIT.

As you read, consider the following questions:

- **Why are ‘place’ and 'location' a paradox in today’s knowledge economy?**
- **What are the factors driving agglomeration?**
- **What are the special characteristics of IDEs (as opposed to SMEs)?**
- **What shaped Kendall Square’s success as an innovation ecosystem?**
- **Exercise:** Consider a region you know well, what are the main opportunities/challenges contributing to its effectiveness as an innovation ecosystem?

### Readings

- Budden, Phil & Fiona Murray. 2015. MIT Case Study: MIT in Kendall Square ([https://innovation.mit.edu/assets/MIT-Kendall-Sq.-Case_10.22.15.pdf](https://innovation.mit.edu/assets/MIT-Kendall-Sq.-Case_10.22.15.pdf))

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## Frameworks: Analyzing and Measuring iEcosystems

In this session, we look at two capacities within an innovation-driven entrepreneurial ecosystem (iEcosystem) – namely the ‘innovation capacity’ (iCap) and ‘entrepreneurial capacity’ (eCap) – as a means of analysis, and comparison. This insight allows us to take a more systematic approach to assessing such iEcosystems (as set out in our Working Paper). Using this framework, we then consider Amazon’s recent HQ2 bid.

As you read, consider some of the following questions:

- **What are the key differences between ‘innovation capacity’ (I-Cap) and ‘entrepreneurial capacity’ (E-Cap)?**
- **What are the most effective measures that can capture inputs to each?**
- **Which metrics are consistent with Amazon’s HQ2 RFP bid requirements?**
  - Which ones are relevant to which types of firms?
• Exercise: For your chosen iEcosystem, what are the key metrics of I-Cap and E-Cap? Using the MIT Web App fill in innovation eco-system metrics for your country for the time period 2010-2015.

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

Framework: System – comparative advantage
Through the prism of the MIT approach to the innovation system, we examine the role of comparative advantage to assess opportunities to intervene. We use the case of London’s growing IDE activity to address the question of whether and how such ecosystems can be accelerated through well-designed strategic interventions. We explore the factors that shaped the rise of London and the key policies that have been enabling its recent success. In particular, we contrast Porter’s traditional cluster approach with that for IDE ecosystem policy.

As you read, consider the following questions:
• Using the MIT frameworks, why did London historically emerge as an innovation ecosystem? What problems did it face by the end of the C20th?
• How does the UK do on the MIT I-Cap and E-Cap metrics? Beyond these measures, what are the strengths & potential weaknesses of London’s iEcosystem in 2010?
• What is the comparative advantage of London around this time? How does ‘TechCity’ build on that?
• What were the tensions that seemed to arise between the government and entrepreneurial community?
• Exercise: For your chosen iEcosystem, what are the key sources of comparative advantage? Are they being used as the basis for building the iEcosystem – if so how? And if not what could be done?
**March 6 (SJ Maxted)**

**Framework: Stakeholders - analyzing & engaging them**

We introduce the ‘MIT Stakeholder’ model for building and contributing to Innovation Ecosystems. We will look at the five Stakeholders’ different roles (eg in the history of Silicon Valley), and at how ‘collective action’ can now help engage stakeholders in regions. This session will also introduce MIT’s “Regional Entrepreneurship Acceleration Program” (REAP) and the ways in which it is structured as an action-oriented approach to shaping ecosystems by convening regional stakeholders.

As you read, consider the following questions:

- For 'Silicon valley', who were the key stakeholders in its 'history'?
- According to Saxenian, what were the factors shaping the success of Silicon Valley over Boston’s Route 128?
- Who were the main actors contributing to its growth in the past? And today?
- *Exercise*: Define & assess the key stakeholders in your chosen iEcosystem. What are the strengths and weaknesses of the various stakeholders in the iEcosystem and what is the nature of their engagement? What is your role in this (or another) ecosystem?

**Readings**

- Sydell, Laura. 2012. “A Rare Mix Created Silicon Valley’s Startup Culture”. NPR.

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**Readings**

- Report on REAP Team London and ‘Growth Builder’ [Alum magazine]
March 13  

**Framework: Strategy - ‘policy & program interventions’ (PPIs)**

This session outlines the catalytic ‘policy & program interventions’ (PPIs) that may be implemented to accelerate innovation ecosystems. Their effectiveness depends upon assessing which are most appropriate for a specific ecosystem, then designing them well and finally implementing/evaluating them. By exploring MassChallenge and prize competitions, we will determine their key design variables, the role of stakeholders and the ways in which such programs must strengthen I-Cap and E-Cap in a region.

As you read, consider some of the following questions:

- What are the main types of ‘policy & program interventions’ (PPIs)?
- Why are accelerators considered to be effective programs that can rapidly improve Innovation Ecosystems? How do they shape I-Cap and E-Cap?
- What contribution does MassChallenge make to the Boston ecosystem? And how might MassChallenge need to change its design in different contexts?
- When might you use an accelerator compared to a prize?
- **Exercise:** For your chosen iEcosystem, what are the current set of programs that exist to support iCap and eCap in the region? What are their strengths and weaknesses?

**Readings**

- Budden, Phil; Dan Fehder & Fiona Murray. 2014. MIT Case: "MassChallenge"

April 3

**Deep Dive: Policies & Programs to build an Entrepreneurial Culture**

In this session, we will continue our detailed analysis of policies that can accelerate innovation-driven entrepreneurship. Our focus today is on policies and programs that shape the nature and availability of talented individuals in ecosystems, with a special focus on building entrepreneurial talent (and culture). We will emphasize this in the case of Singapore.

As you read, consider some of the following questions:

- **What policies and programs can a government use to build an entrepreneurial culture and build the capacity of such talent?**
What are the challenges and opportunities in Singapore’s innovation ecosystem? What type of human capital is missing in Singapore?

What would you recommend Singapore’s government do?

What role can universities play in strengthening entrepreneurial capacity?

Exercise: In your iEcosystem of interest, what sorts of policies/programs might make a difference to the entrepreneurial capacity of the region?

Readings

- MIT Case Study: “Singapore” (Fiona Murray and Phil Budden) (https://innovation.mit.edu/assets/Singapore_June-2015.pdf)

April 10

Deep dive: Policy & Programs to build Innovation Capacity

In this session, we evaluate a range of policies and programs to improve innovation capacity (I-Cap), including human capital and infrastructure. Exploring the role of different universities, and examining the role of international aid in shaping innovation capacity especially in the developing world.

Case: Ghana

As you read, consider some of the following questions:

- What policies and programs can a government use to build a strong innovation Capacity (I-Cap)? Why is this about more than just R&D spending?
- What are the challenges and opportunities in Ghana’s innovation ecosystem? What type of I-Cap inputs are missing there?
- What would you recommend the government do to solve its problems? And what might international aid agencies do?
- Exercise: In your iEcosystem of interest, what sorts of policies/programs exist to strengthen the innovative capacity of the region? And what additional programs would be valuable?

Readings

- MIT Case Study: “Ghana”
Deep Dive: Policies & Programs to build Risk Capital

The session explores the importance of ‘risk capital’ (beyond just Venture Capital), by exploring a range of policies and programs designed to improve access to, and availability of, risk capital e.g. angel investors, tax policies for early-stage capital and programs to encourage risk capital development (e.g. Yozma).

As you read, please consider some of the following questions:

- **What are the challenge of building ‘risk capital’? Why have public efforts to boost Venture Capital failed, according to Lerner?**
- **In the Start-Up Nation book, what are the factors shaping Israel’s success?**
- **What were the historical factors and path dependencies that positioned Israel’s comparative advantage? What policies & programs did Israel design to effectively drive early-stage capital flows into IDEs?**
- **Do you agree with Lerner’s argument that governments should NOT use public funds or does the case of Israel suggest there are circumstances when you might make an alternative decision?**
- **Exercise: In your iEcosystem of interest, assess the types of risk capital that are available and those sorts that are missing. What is the most effective program to use to close capital gaps in your region?**

**Readings**

| May 1 | **Leadership: Ecosystem engagement by large corporations**  
Corporations are key stakeholders in ecosystems, but what roles do they play? Can large corporations lead ecosystem change? How do large corporates choose to engage with different ecosystems? Using examples from a variety of different countries – Nokia/Finland, OCP/Morocco and GE/Boston – we will discuss the ways in which large global corporations might engage with and accelerate innovation ecosystems and the challenges that they confront in doing so.  

As you read, consider some of the following questions:  
- **How do global corporations decide in which locations (eg 'ecosystems') to undertake which corporate activities, like R&D/corporate venturing/etc?**  
- **Can large corporations embedded in a location contribute to its innovation-driven entrepreneurial (IDE) advantage? What sort of 'ecosystem strategy' might such a corporate undertake and through what type of programs?**  
- **What was the experience of Nokia in Finland, OCP in Morocco, GE in Boston?**  
- **Exercise: Consider your chosen iEcosystem: Are there corporations which play a role in your ecosystem? What do they do to support the ecosystem? How effective are they? How could they improve?**  

**Readings**  
- Budden, Phil & Fiona Murray. “Morocco and OCP” Case Study.  
- “Nokia’s Fall means the Rise of Start-Ups in Finland”.  
- GE reading?  

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| May 8  
(Georgina Campbell) | **Leadership: ecosystem acceleration by entrepreneurs**  
Can 'entrepreneurs' themselves – either those embedded in a location, or mobile 'innovation-driven' ones – have a positive impact on such ecosystems? Can entrepreneurs play a 'leadership' role within their ecosystem? What you would propose if you were to be in this role?  

As you read consider the following questions:  
- **How might location-based entrepreneurs help (and stay in) a home region? How can they support other local entrepreneurs?**  
- **What might they attract other mobile 'innovation-driven' entrepreneurs to a region?**
- How might a region's entrepreneurial diaspora help the home region build its innovation ecosystem?

Readings:

- Brad Feld. *Start-Up Communities*. See chapters 1 and 3 on Building an Entrepreneurial Ecosystem in your City; Chapter 5 on Attributes of Leadership.

May 15

**Student Presentations of their REAL Projects**

We will use the last session to hear a short 10 minute presentation from each of the class teams.