

15.S05 Regional Entrepreneurial Acceleration Lab (REAL)

MIT Fall 2014

Have you ever wondered where to locate your start-up? Have you thought about how to improve your local innovation ecosystem? Have you asked what makes Kendall Square so special as a place for entrepreneurial firms? REAL (Regional Entrepreneurial Acceleration Lab) is a practical MIT course aimed at students who want a research-based but action-oriented understanding of how to accelerate innovation-driven entrepreneurship in the development of vibrant regional economies. It takes as its starting point the innovation-driven entrepreneurial ecosystems (IDEA Ecosystems) that have served as the foundation of many successful regions since the first industrial revolution, and now characterize places such as Silicon Valley, Boston/Cambridge, London's TechCity and Singapore. The course examines the perspective of five critical stakeholders: entrepreneurs, risk capital providers, and universities, as well as policymakers (government) and large corporations. It provides frameworks for understanding the strengths and weaknesses of innovation-driven entrepreneurship in particular regions, and then focuses on policy and programmatic interventions that can be designed and implemented to accelerate entrepreneurship across regional economies worldwide.

COURSE OBJECTIVES

The emphasis throughout is on theory and practice: theories of entrepreneurially-driven growth as well as practical analyses of specific policies and catalytic programs to enable regional entrepreneurial acceleration. Our objectives include:

- Giving you familiarity with alternative economic, political and social theories of how ecosystems accelerate economic prosperity and a more synthetic, MIT-based framework designed to help you analyze ecosystems and their stakeholders.
- Providing you insights into a number of different regions (beyond media accounts) - in the U.S. and more globally – both in terms of their current state but also the path dependencies that enable their current success (or failure).
- Undertaking comparative and historical analysis of specific policies and programs that can be undertaken by a variety of stakeholders to accelerate their own ecosystem development.

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. The first few sessions will focus on comparing and contrasting different theoretical approaches and outlining the MIT-based approach to IDEA ecosystems, with specific examples of well studied ecosystems as examples. We will then turn to a series of deep dives into different regions that exemplify entrepreneurial growth and economic development across sectors and across the world. These deep-dives will be critical and analytic emphasizing causal factors for success and failure. In these sessions we will use the MIT IDEA Ecosystem framework as a lens through which you will analyze these specific regions, cities and nations. Our third set of sessions will examine specific policy and programmatic interventions and the roles that different stakeholders might take in their effective implementation. Throughout we will examine regions in the USA, Europe, Asia, Africa and South America and will cover sectors from clean energy, media and IT, to the life sciences.

Final Project: The final project is an opportunity for you to work in small teams to explore a region or policy 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:

Thursday: 6:00-8:00 PM (*see below for dates*), e62-250

NOTE: We will be making video-conferencing available to a small number of students who are currently enrolled in our part-time Executive MBA program.

FACULTY:

Dr. Phil Budden	pbudden@mit.edu
Prof Fiona Murray	fmurray@mit.edu
Daniel Fehder (TA)	dfehder@mit.edu (please address queries to Dan)

READINGS:

Course material will also be made available through the Stellar portal at:

<https://stellar.mit.edu/S/course/15/fa14/15.S05/>. MIT students who have added 15.S05 to their registration should have automatic access (if not please email our TA Dan Fehder). Non-MIT students please contact our assistant Lindsay Pike (lpike@mit.edu) for an @mit.edu Kerberos account.

Additional course information and readings will also be posted on Stellar. If you have material that you read and would like to share with the class, please send to the TA who will post it to Stellar.

GRADING

The class grade has three elements

1. Class participation (30%) – we expect you to attend class (either in person or remotely for those in our EMBA program). 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. Reflection Papers (20%) – you are expected to write two short reflection papers during the semester on sessions of your choice. They must be submitted in advance of the relevant class to the TA via email. Papers should be no more than 3 pages in length. They should be a critique of the material for the session, including the issues that you believe are not addressed by the readings or your view on why a particular region or policy is likely to be successful (or unsuccessful) given your own experience or learning.
3. Final Paper & Presentation (50%) – working in a group of up to three people, you may select a city/region (e.g. Berlin), program (e.g. government-led accelerators), or sector (e.g. biotech) and then develop a research report evaluating its current, past and future potential to drive innovation-driven entrepreneurship. In the case of a program or sector please compare its success or failure in two or more regions. Your final paper should be 15 pages including as much factual detail as possible. You will be asked to make a 5-10 minute high-level presentation of your findings in the final class.

COURSE SCHEDULE

DATE	CLASS TOPIC
September 4	Frameworks: Introduction to Innovation-Driven Entrepreneurial Ecosystems – innovation-driven entrepreneurship (IDEs vs. SMEs), role of ecosystems & geography (Marshall). Importance of focused entrepreneurship and innovation capacity & the links between them. Case of 18th Industrialization & 20th Biotech.
September 11	Frameworks: MIT Stakeholder Model – Alternative approach to regional advantage. <i>Silicon Valley Case</i> - Silicon Valley through the Stakeholder Model and through the iCap-eCap framework. Revisiting alternative theories of success.
September 18	Frameworks: MIT IDEA Ecosystems & Clusters. <i>Case of London</i>. Comparing the Porterian cluster approach versus a focus on entrepreneurs this session with use the MIT REAP model to analyze London's recent rise in entrepreneurship & explore the analysis of clusters as a lens through which to focus entrepreneurship policies.
September 25	Frameworks: Relevance in Developing World Contexts. <i>Sub-Saharan Africa</i>. Examining the role of innovation and the rise of entrepreneurship: can innovation ecosystems be developed without fundamental institutions? Invited Guest: Calestous Juma, MLK Visiting Professor
October 2	Catalytic Policies & Programs – Can you Accelerate Ecosystems or is it all about culture? <i>Case of Israel</i>. Interventional approaches to ecosystem development.
October 9	Catalytic Policies: Human Capital Development. Effective labor market institutions, Visas (Start-up Chile), Non-Competes (Silicon Valley), Universities (MASDAR)
October 16	Catalytic Policies: Risk Capital Development. Effective capital market institutions e.g. Angel investment policy (UK – Lerner) & tax policies for early-stage capital (OECD)
October 23	NO CLASS – SIP WEEK & REAP WEEK!
October 30	Catalytic Programs: Accelerators, Incubators & Hackathons. <i>MassChallenge Case</i>. Comparison to StartUp Weekend & eSpark Scotland etc. Invited Guests: Jonathan Harthorne (MBA '11)
November 6	Catalytic Programs: Prize Competitions – Effective Prize Design. Clean Energy Prize versus Saltire Prize. Invited Guest: Georgina Campbell (TPP '11)
November 13	Implementation – Ecosystem Orchestration by Governments: <i>Singapore Case</i> How important are governments as ecosystem leaders & what is their most effective role? And who in the government matters?
November 20	Implementation – Ecosystem Orchestration by Universities: <i>MIT Kendall Square Case</i>. Explaining MIT! How important are universities as ecosystem leaders & what is their most effective role?
November 27	NO CLASS – THANKSGIVING!
December 4	NO CLASS
December 11	Student Presentations (NOTE: Session will run 6-9pm)

READINGS

September 4

Frameworks: Introduction to Innovation-Driven Entrepreneurial Ecosystems

In this session we will explore the paradox of agglomeration. We will then introduce the critical role of innovation-driven entrepreneurship (IDE vs. SME) in vibrant regions and the notion of innovation and entrepreneurship capacity. This will be illustrated with historical examples as well as the example of Biotechnology.

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

- **Why is agglomeration i.e. the co-location of firms, such a paradox in the economy? What are the factors driving agglomeration?**
- **Consider a region you know well, what are the main factors contributing to its growth? What additional factors would you deem critical, above those mentioned by Asheim?**

Readings

- Bjorn Asheim. 2008 Industrial Districts: Contributions of Marshall & Beyond. Chapter 21, Oxford Handbook of Economic Geography, pp. 413-416 & 423-431.
- Bill Aulet and Fiona Murray. 2013. A Tale of Two Entrepreneurs: Understanding Differences in the Types of Entrepreneurship in the Economy. Kauffman Foundation Working Paper (~ 8 pages)
- Cortright and Mayer. 2003. Signs of Life: The Growth of Biotechnology Centers in the US. Brookings Institute Report.

September 11

Frameworks: MIT Stakeholder Model – Alternative approach to regional advantage. *Silicon Valley Case*

In this session we will explore the famous and frequently analyzed rivalry between Silicon Valley-Boston/Cambridge. We will focus on the role of different stakeholders and the critical linkages that must exist among them for vibrant IDEA ecosystems to emerge.

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

- **According to Saxenian, what are the factors shaping the relative success of SV as compared to Boston?**
- **In the light of Boston/Cambridge's more recent entrepreneurial success, what are the limitations of Saxenian's argument?**
- **Who are the key actors contributing to the success of SV & to Boston/Cambridge? How would you compare their role in each region? What role ought they to play?**
- **Consider a region you know well, who are the main actors contributing to its growth – in the past and today? Who is missing from the ecosystem or failing to play their role?**

Readings

- AnnaLee Saxenian. 1996. "Inside-Out: Regional Networks and industrial Adaptation in Silicon Valley and Route 128" *CityScape: A Journal of Policy Development*.
- **OPTIONAL:** Roberts, E. and C. Easley. 2012. Entrepreneurial Impact: The Role of MIT - An Updated Report. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2013399
- **OPTIONAL:** Easley et al. 2012. Stanford University's Economic Impact through Innovation and Entrepreneurship. (pp 1-14) Available at http://engineering.stanford.edu/sites/default/files/Stanford_Alumni_Innovation_Survey_Report_102412_1.pdf
- **OPTIONAL:** Boston vs. San Francisco: Two Cultures of Innovation. Available <http://www.xconomy.com/national/2014/07/11/boston-vs-san-francisco-two-cultures-of-innovation/>

September 18

Frameworks: MIT IDEA Ecosystems & Clusters. *Case of London.*

We will the case of London's burgeoning IDE entrepreneurial activity and the various policy approaches to explore more detail the factors the differences between the Porterian cluster policy approach and the approaches to entrepreneurship policy. We will use this case to synthesize the MIT REAP model of IDEA Ecosystems.

- **Using the MIT Frameworks assess the state of London's IDEA ecosystem in 2008 at the time of the economic crisis. What were the strengths & what were the potential weaknesses?**
- **What policy interventions are suggested by a cluster-based approach? How might the MIT Stakeholder model and a focus on entrepreneurship be at odds or consistent with this approach?**
- **What clusters ought London to focus on in their development?**
- **What were the specific tensions that seemed to arise between the government and entrepreneurial community? How can these be avoided or is this sort of creative tension inevitable and productive?**

Readings

- Budden, Phil & Fiona Murray. 2014. London Case Study [to be circulated]
- Budden, Phil & Fiona Murray. 2013. London TechCity: An Emerging Entrepreneurial Ecosystem. Boston Globe.
- McKinsey: 2011. East London: World class center for digital enterprise.
- Porter, Michael E., and Christian H.M. Ketels. "UK Competitiveness: Moving to the Next Stage." DTI Economics Paper Report Series, No. 3, 2003.
- Michael E. Porter. 1998. "Location, Competition and Economic Development:

	<p>Local Clusters in a Global Economy” <i>Economic Development Quarterly</i>.</p> <ul style="list-style-type: none"> Feldman, M. P., J. Francis, and J. Bercovitz., 2005. “Creating a cluster while building a firm: entrepreneurs and the formation of industrial clusters.” <i>Regional Studies</i> 39: 129-141.
September 25	<p>Frameworks: Relevance in Developing World Contexts. <i>Sub-Saharan Africa</i>.</p> <p>This session focuses on Examining the role of innovation and the rise of entrepreneurship: can innovation ecosystems be developed without fundamental institutions?</p> <p>As you read, please consider some of the following questions:</p> <ul style="list-style-type: none"> As you consider the role of eCapacity and iCapacity, what are the underlying institutions and policies that are critical to the existence of these capacities at a regional level? To what extent does innovation and entrepreneurship take place in various parts of Sub-Saharan Africa without these pre-conditions? Is very long-run institution building the only solution or are there other “quick fixes” that might be considered? Consider a developing world region you know well, what is the role of institutions in generating eCapacity and iCapacity? <p>Readings</p> <ul style="list-style-type: none"> STISA Union of African Nations 2014 http://www.gemconsortium.org/docs/2909/gem-2012-sub-saharan-africa-regional-report McKinsey Global Institute (2010). <i>Lions on the move: The progress and potential of African economies</i>. Washington, DC. Robb, et al. Entrepreneurship education and training : insights from Ghana, Kenya, and Mozambique, Ch 3 & 5. Optional: Juma, Calestous Schumpeter Paper
October 2	<p>Catalytic Policies & Programs – Can you Accelerate Ecosystems or is it all about culture? <i>Case of Israel</i>.</p> <p>This week, we analyze a storied and highly successful entrepreneurial ecosystem – Israel: considered an example of an ecosystem in which entrepreneurs were the dominant stakeholder. We will use this session to examine the tension between cultural explanations of IDEA ecosystems and the potential for an interventionist approach that allows for entrepreneurship acceleration.</p> <p>As you read, please consider some of the following questions:</p> <ul style="list-style-type: none"> To what extent does the development of Israel’s IDEA ecosystem accord with the MIT framework that we have laid out? What is the core argument in the Senor/Singer account? Is culture the central condition for IDE creation and

growth or can it be accelerated – by whom?

- To what extent are entrepreneurs a necessary and sufficient condition for ecosystem development? What Feld's argument in support of this view?
- Does the Israel case support Feld's perspective?

Readings

- Senor, D. and S. Singer. 2009. StartUp Nation: The Story of Israel's Economic Miracle. Available to buy at http://www.amazon.com/Start-up-Nation-Israel's-Economic-Miracle/dp/0446541478/ref=sr_1_1?s=books&ie=UTF8&qid=1378133785&sr=1-1&keywords=start+up+nation
- Isenberg, D. 2011. StartUp Nations: The Real Roots of Israel's Entrepreneurial Miracle. The Economist.
- Feld., Brad. 2012. StartUp Communities: Building an Entrepreneurial Ecosystem in your City. Chapters 1 & Chapter 3. Book is available to buy at <http://www.amazon.com/Startup-Communities-Building-Entrepreneurial-Ecosystem/dp/1118441540>

October 9

Catalytic Policies: Human Capital Development.

In this session we will continue with a more detailed analysis of specific policies that can accelerate IDE entrepreneurship when initiated by regions and nations to build iCapacity and eCapacity. We will also look at how these efforts must engage the range of stakeholders in the ecosystem. Our focus today is on labor market institutions i.e. policies that shape the nature and mobility of talented people in ecosystems. We will look specifically at the actions taken in Chile to deal with perceived talent challenges.

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

- **What role do talented individuals play in an IDEA ecosystem? Do you agree with Florida's argument that creative people cause cities' success?**
- **What is your assessment of the potential impact of the Start-Up Chile program and visa policy on Chile's iCap and eCap?**
- **What other policies can a government use to shape the flows of talent? Why do visa policy and non-compete policy matter? What is the evidence?**

Readings

- **HBS CASE:** Start-UP Chile
- Florida, Richard. 2003. *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life* (New York: Basic Books). Please read the preface and Chapters 4 & 12.
- Wadhwa, V. et al. 2009. America's Loss is the World's Gain. Kauffman Foundation White Paper on Visa Policy.
- Marx, M. and L. Fleming. 2011. "Non-compete Agreements: Barriers to

	<p>Entry...and Exit?" <i>Innovation Policy and the Economy</i> (12) (SKIM)</p> <ul style="list-style-type: none"> • OPTIONAL: National Foundation for American Policy. 2010. H1B Visas By the Numbers. Available at http://www.nfap.com/pdf/1003h1b.pdf
October 16	<p>Catalytic Policies: Early-stage Capital Development. (Europe)</p> <p>Our session today explores another critical IDEA ecosystem resource: early stage capital. As well as talented people, capital availability is most frequently cited as a limiting factor in the development of IDEA ecosystems. We will focus specifically on arguments for and against government provision of capital, and on related policies to help capital flows & support financial institutions e.g. tax policies for early-stage capital provision.</p> <p>As you read, please consider some of the following questions:</p> <ul style="list-style-type: none"> • What policies & programs can governments effectively develop to help early-stage capital flows into IDEs? Do you agree with Lerner's argument that governments should NOT use their funds? • According to the OECD report, what types of tax policies for early-stage capital have caused Europe's regional ecosystems to be more successful? From an entrepreneur's perspective do these make sense? • What is the role of major lending institutions such as commercial banks, of sovereign funds and regionally-based pension funds in IDEA ecosystems? • What role might entrepreneurs play in early-stage capital development? <p>Readings</p> <ul style="list-style-type: none"> • OECD. 2012. <i>Financing High-Growth Firms: The Role of Angel Investors</i>. OECD Publishing. Chapter 2 and Chapter 4. Available to read online at http://www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=9789264118782 • Lerner, J. 2011. <i>Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital have failed</i>. Ch 6: How Governments go Wrong & Ch 8: The Special Challenges of Sovereign Funds.
October 23	No Class
October 30	<p>Catalytic Programs: Accelerators, Hackathons & Incubators (MassChallenge, StartUp Weekend & eSpark)</p> <p>This session explores the first of a number of catalytic programs that may be implemented to shape and accelerate IDEA ecosystems: Accelerators. As will also programs, their effectiveness depends upon careful design and implementation (although this is often not acknowledged by those who implement these programs!).</p>

Through an analysis of MassChallenge and its global expansion, we will determine their key design variables, the potential role of all five stakeholders and the ways in which such programs must be designed to complement other underlying aspects of iCapacity and eCapacity in a region. We will also compare accelerators to more traditional business incubators looking at eSpark.

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

- **Why are accelerators considered to be effective programs that can rapidly improve IDEA Ecosystems? How do they shape iCapacity and eCapacity?**
- **What contribution does MassChallenge make to the Boston ecosystem?**
- **What are the Ecosystem conditions under which MassChallenge is likely to be successful or unsuccessful around the world?**
- **Which stakeholders should develop accelerators?**
- **What is the difference between an accelerator and an incubator? Which is more likely to be effective for IDEA Ecosystems? Does eSpark solve a problem with its current design? How might it be redesigned to be more effective?**

Readings

- MassChallenge Case (to be circulated)
- Feld, Brad. 2012. StartUp Communities: Building an Entrepreneurial Ecosystem in your City. Chapter 8.
- eSpark Material
- StartUp Weekend Annual Report
- Fehder, Hochberg, Murray. 2013. Accelerating Entrepreneurial Ecosystems. MIT REAP Working Paper

November 6

Catalytic Programs: Prize Competitions

This session explores the first of several catalytic programs that can be rapidly implemented to accelerate IDEA ecosystems. However, like many such programs, their effectiveness depends upon careful design and implementation. Through an analysis of two specific prize competitions (the Saltire Prize and the Department of Energy Clean Energy Prize) we will determine the key design variables and the potential role of all five stakeholders.

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

- **Why might prize competitions be effective programs that can rapidly improve IDEA Ecosystems? How do they shape iCapacity and eCapacity?**
- **What contribution does the Saltire Prize or DOE CEP make to the ecosystem?**
- **For a region of interest to you, how would you adapt the Saltire or DOE CEP approach to solve a specific ecosystem problem you have identified?**

- **What role might each of the key stakeholders play in the development and implementation of effective prize competitions?**

Readings

- Saltire Prize Manifesto
- Background on DOE Clean Energy Prize
- MacCormack, Alan, Fiona Murray & Erika Wagner (2013). How Competition can Spark Innovation. *Sloan Management Review*.
- Murray and Campbell. 2013. Prizes and Entrepreneurial Ecosystems. MIT REAP Working Paper.
- **OPTIONAL:** F. Murray, S. Stern, G. Campbell & A. MacCormack (2012). "Grand Innovation Prizes: A Theoretical, Normative and Empirical Evaluation". *Research Policy*, 41(10):1779-1792.

November 13

Implementation – Ecosystem Orchestration by Governments: *Singapore Case*

This session is one of two final sessions of the role of different stakeholders in orchestrating and implementing ecosystem change and acceleration. It asks how effective governments can be as ecosystem leaders & what is their most useful role? We will explore the opportunities and challenges associated with attempts at government-focused ecosystem development. Our focus will be on a famous government-led regions: Singapore.

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

- **What arguments does Glaeser make regarding the role of government in ecosystem development?**
- **Is Singapore a successful example of IDEA ecosystem development? If not, what is missing from the government-oriented approach?**
- **What would you recommend to the government based on the MIT IDEA Ecosystem approach and analysis?**

Readings

- **HBS Case Study:** Singapore (Michael Porter).
- Edward L. Glaeser. 2007. Do Regional Economies Need Regional Coordination? (March 2007)
- Feld on how terrible governments are
- <http://techcrunch.com/2013/05/31/russia-hopes-the-skolkovo-tech-city-will-produce-its-great-leap-forward/>
- <http://www.ft.com/cms/s/0/a9d3bd90-c157-11e2-b93b-00144feab7de.html#axzz2a4d9yIFi>
- <http://www.ft.com/intl/cms/s/0/0f48830a-6c4b-11df-86c5->

November 20	<p>Implementation – Ecosystem Orchestration by Universities: MIT Kendall Square Case.</p> <p>As the course comes to completion we deal again with the challenging issue of implementation! We focus specifically on the cultural differences that arise among the various stakeholders in the ecosystems, and between key stakeholders and the broader community/civic society. We do this through a case familiar to many of us – Kendall Square and the (often poorly understood) role of MIT in the development of this vibrant hub of IDE entrepreneurship. We look at the role of all key actors, and the tensions with the broader City of Cambridge and its residence. This case also speaks to the role of inequality in IDEA Ecosystems.</p> <p>As you read, please consider some of the following questions:</p> <ul style="list-style-type: none">• Using the MIT Frameworks assesses the state of Kendall Square’s IDEA ecosystem – is it really Kendall Square, Cambridge, Greater Boston or MA?• What role has MIT played in its development – how has it shaped iCapacity and eCapacity?• What role does MIT play versus other key stakeholders? What are the causes of the tension between MIT and the local community, as well as the City of Cambridge government? How can these be avoided or is this sort of creative tension inevitable and productive?• What lessons does this case hold for other regions hoping to use the University stakeholder to drive and orchestrate the IDEA Ecosystem (e.g. Skoltech/Moscow; Masdar/Abu Dhabi) <p>Readings</p> <ul style="list-style-type: none">• Budden, Phil & Fiona Murray. 2013. MIT in Kendall Square Case Study [to be circulated]• MIT Vision for the East Campus (Report recently circulated by the Provost)• Graham, Ruth. 2014. Creating University-Based Entrepreneurial Ecosystems
November 27	No Class – Happy Thanksgiving!
December 11	Student Project Presentations (note that December 4 there is no class)!