The Massachusetts-Israel Economic Impact Study

2016 Edition: The Boston-Israel Power Partnership
An expanding relationship that generates revenue, jobs, and investment for the benefit of both economies

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Based on research by Stax, Inc.
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Executive Summary

**Israeli Innovation Is a Major Driver of the Massachusetts Economy**

An independent study by Stax, Inc., a global strategic consulting and research firm, has revealed that Israeli-founded businesses generate enormous revenue, jobs, and capital activity in greater Boston and Massachusetts, at an accelerating rate. This study, updating prior studies released in 2010 and 2013, identified:

» Over 200 Israeli-founded businesses called greater Boston their home in 2015...

» ... booking over $9 billion of revenue in the state that year...

» ... and generating over $18 billion in economic benefit to Massachusetts, inclusive of their own revenue, plus the multiplier effect of their spending in the local economy, for example, on office space and accounting, legal, marketing, healthcare, and other services.

» ... representing nearly 4% of the state’s GDP in 2015,

» ... while their revenue grew more than 2x faster than the state’s economy from 2013-2015, and faster than the state’s important life sciences and IT sectors.

» They directly employed about 9,000 people in the state...

» ... and supported over 27,000 jobs based on the multiplier effect of their demand for goods and services in support of their businesses...

» ... while their employee base grew 5x faster than the state’s economy from 2013-2015, and faster than the state’s important life sciences and IT sectors.

» They secured over $1.2 billion in venture capital from 2013-2015, representing 10% of all VC funds raised in the state...

» ... and returned nearly $10 billion to investors in M&A transactions from 1999-2015.

The high-level story of this whitepaper is as follows:

“Israel Entrepreneurs Choose Boston to Build Global Businesses” details the Stax findings regarding the economic impact of Israeli innovation on the Massachusetts economy. It describes how Israeli entrepreneurs, due to the limited size of their country’s local market, seek access to U.S. and global markets early in the life cycle of their companies, and the major reasons why they like Boston.

“Why Boston?” provides an overview of the rich Massachusetts tech and life sciences ecosystem in all its facets—capital, key sectors, leading companies, and other features.

“Why Israel?” delves into how this small OECD country has achieved an outsized global impact, driving world-changing innovation in almost every sector, while attracting a disproportionate share of global capital and M&A.

“Boston & Israel Together” addresses how the two geographies have each accelerated their economic growth by fostering deep and long-standing relationships.
“The Intense Competition Across the USA to Win Israeli Business” describes how Massachusetts faces significant competition from other states to attract Israeli-founded businesses, but has compelling advantages over the main challengers of NYC and Silicon Valley.

“Recommendations” offers specific ideas for business, government, and universities to expand the bilateral relationship, for the benefit of both.

About the Title of This Whitepaper

This whitepaper is the 2016 edition of “The Massachusetts-Israel Economic Impact Study.” Prior research was published in 2013 and 2010 editions.

This most recent installment carries the sub-title: “The Boston-Israel Power Partnership.”

While the series title refers to “Massachusetts,” why does the sub-title refer to “Boston,” the capital city? The reason is that outside the state, Boston is the brand of Massachusetts, especially for foreign audiences. Even for Massachusetts residents traveling abroad, when asked “Where are you from?,” the usual answer is “Boston.” (Similarly, residents of northern California will say they are from Silicon Valley or San Francisco, rather than use the name of their state. Similarly, residents of Redmond, WA, the suburban home of Microsoft, will say they are from Seattle.)

The author’s choice of giving emphasis to “Boston” is for the benefit of Israeli readers who may not be familiar with the state. For the purposes of this whitepaper, please consider “Boston” to be interchangeable with “Massachusetts,” in order make this study more widely understood and approachable.
The Boston-Israel Power Partnership

Israel has a small home market, with only about 8 million people, and not much of a regional market due to their neighbors’ struggling economies, civil wars, and animus to the Israeli state. While Israel’s small population is well suited to early-stage market testing, success and return on capital only come by tapping into America’s larger market and establishing partnerships that can help Israeli firms globalize.

Beyond access to foreign markets, Israelis also value Boston’s culture, and its geography too:

» Israeli entrepreneurs want to plant roots at the center of their industrial sectors. These founders like to establish U.S. headquarters early in their companies’ maturity to access a larger pool of talent, managerial expertise, channel partners, key prospects, and concentrations of venture capital in their specific areas of business focus. As the life sciences capital and a global tech hub, Boston meets these needs for Israeli entrepreneurs in many sectors of common strength.

» Boston and Israel share innovation-driven economies and similar cultures. With world-class universities at the center, Boston and Israel are both research-driven and commercially oriented economies that produce highly educated and motivated workers. Bostonians and Israelis are similarly inspired by challenges, excited by the opportunity to make the world better, and put a premium on ideas and ability over caste or pedigree.

» Boston has an East Coast geography and a nonstop flight to Tel Aviv. When picking a U.S. headquarters location, Israelis greatly prefer the benefits of an east coast time zone
for working with colleagues and family back home. Plus the BOS-TLV nonstop helps make Boston stand above the rest, with one of the few U.S. nonstops to Israel, saving time and money versus bouncing through connecting airports.

**Revenue:**
**Billions of Dollars & Growing Faster Than The Economy Overall**

Israeli-founded businesses have found enormous success in Boston, with benefits for the entrepreneurs and their companies, the Commonwealth of Massachusetts, and for the economy of Israel.

In 2015, these qualifying businesses:

» **Booked $9.3 billion of direct revenues in the state.** Using both public and private data, the study conservatively counted only sales originating from these businesses’ Massachusetts location(s). See figure 1, “Israeli-Founded Businesses Create Massachusetts Revenue.”

» **Generated a total of $18.1 billion in economic impact for Massachusetts.** Using standard U.S. Bureau of Economic Analysis multipliers, Israeli-founded businesses generated billions of dollars of revenue above their own economic activity, due to their purchase of office space, professional services, and other goods and services.

» **Represented 3.8% of the state’s overall GDP,** predominantly in the growth sectors of life sciences and information technology, and therefore comprising an even larger share of the state’s innovation economy.

» **Grew at more than 2X the rate of Massachusetts GDP growth.** Israeli-founded businesses tracked since 2012—with appropriate adjustments for new entrants, failures, and departures—saw their total revenue increase at a 9.4% compound annual growth rate (CAGR). Compared to the state economy’s GDP growth rate of 4.0% during this period, Israeli-founded businesses grew more than 2x faster. Even compared with the state’s high-growth tech and professional services sectors, qualifying businesses expanded more than 40% faster. See figure 2, “Revenue Growth: 2x Faster Than the State Overall.”

**FIGURE 1**

**Israeli-Founded Businesses Create Massachusetts Revenue**

$18.1b
2015 Revenue

$9.3b
Direct Impact

$8.8b
Multiplier Effect

Massachusetts-Israel business = 3.8% of Massachusetts GDP

**FIGURE 2**

Revenue Growth: 2x Faster Than the State Overall

2012-2015 ANNUAL REVENUE GROWTH (NOMINAL CAGR)

SOURCE: STAX, INC., MARCH 2016

SOURCE: STAX, INC. MARCH 2016; US BUREAU OF ECONOMIC ANALYSIS
Jobs: Employing Thousands & Growing Faster Than The Economy Overall

Israeli-founded businesses depend upon Boston talent to achieve their phenomenal record of growth. In 2015, these qualifying businesses:

» Employed 9,000 in the state. See figure 3: “Israeli-Founded Businesses Create Massachusetts Jobs”.

» Supported a total of 27,100 jobs in the state. Using standard U.S. Bureau of Labor Statistics multipliers, Israeli-founded businesses drove the employment of thousands more due to purchase of other goods and services to support their enterprises.

» Grew at 5x the rate of the state’s employment growth. Israeli-founded businesses tracked since 2012—with appropriate adjustments for new entrants, failures, and departures—saw their total employee bases increase at a 9.4% compound annual growth rate (CAGR). Compared to the state’s employment growth rate during this period of 1.8% overall, the Israeli-founded businesses’ employee growth was more than 5X faster. Even compared with the state’s high-growth sectors of information technology and life sciences sectors, the Israeli-founded business expanded much faster. See figure 4, “Jobs Growth: 5x Faster Than The State Overall.”

In addition to the revenue and jobs produced by the Israeli-founded businesses in the state, exports are another source of Massachusetts revenue derived from its relationship with Israel. Massachusetts businesses exported $197 million in goods and services to Israel in 2015, up 46% since 2005.²

Capital: Attracting Billions in Investments & Buyouts

Israeli-founded businesses in Massachusetts attracted significant venture capital investments in 2013 to 2015:

» 48 companies scored $1.2 billion in VC investments. Some VCs are serial investors in these Massachusetts-Israel companies. Battery Ventures, Bessemer Venture Partners,
Cedar Fund, Globespan Capital Partners, OurCrowd, and Pitango Venture Capital all made investments in three or four of these companies between 2013 and 2015. In addition, prominent VCs and corporates from Israel, Boston, Silicon Valley, and NYC, and around the world participated. See figure 5, “Top-Tier Investors”.3

» representing 10.0% of all venture investments raised in the Commonwealth, during 2013-2015.4

» 67% of the money came from out-of-state. Only about a quarter of the investors in these deals were located in the Boston area. Most investors were located in Israel, Silicon Valley, and elsewhere. The net result: Israeli-founded companies in Boston brought new capital into the state. See figure 6, “Venture Investments: Attracting New Money to Boston.”5

» and the pace is accelerating, with 2015 capital raised higher than any prior year. See figure 7, “Venture Investments: Significant and Accelerating.”

<table>
<thead>
<tr>
<th>Top-Tier Investors</th>
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<tbody>
<tr>
<td>Bessemer Venture Partners</td>
</tr>
<tr>
<td>Battery Ventures</td>
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<tr>
<td>Blumberg Capital</td>
</tr>
<tr>
<td>Cedar Fund</td>
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<tr>
<td>DFJ</td>
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<tr>
<td>FTV Capital</td>
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<tr>
<td>Globespan Capital Partners</td>
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<tr>
<td>Harmony Partners</td>
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<td>Intel Capital</td>
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<tr>
<td>magma</td>
</tr>
<tr>
<td>Mifos Global Investment</td>
</tr>
<tr>
<td>OurCrowd</td>
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<tr>
<td>Pitango Venture Capital</td>
</tr>
</tbody>
</table>

**SELECTED INVESTORS IN MASSACHUSETTS-ISRAEL COMPANIES**

**FIGURE 5**

**FIGURE 6**

**Venture Investments: Attracting New Money to Boston**

LOCATION OF INVESTING PARTNER IN 152 INVESTMENT TRANSACTIONS ACROSS 46 INVESTMENT ROUNDS IN 33 COMPANIES, FROM 2013-2015

**FIGURE 7**

**Venture Investments: Significant and Accelerating**

VENTURE CAPITAL FUNDS RAISED BY 104 ISRAELI-FOUNDED COMPANIES IN MASSACHUSETTS, ACROSS 156 TRANSACTIONS, 2010-2015.
Acquisitions:  
Over $10 billion Paid Back to Investors.

Massachusetts and Israeli-founded companies have been frequent acquirers of each other’s businesses, at values from millions to $1b+. Since the last tech boom in 1999, these acquisitions have totaled over $10b. Some of the most recent deals command eye-popping prices – and are among the largest ever for Israeli-founded companies. At the top of the Massachusetts-Israel acquisition hit parade are: Given Imaging (to Covidien for $860m in 2013), Trusteer (to IBM Security for $800m in 2013), and XtremIO (to EMC for $430m in 2012). See figure 8, “Over $10b in Acquisitions”.6

What’s driving these deals? Most often, acquirers want to tap outside innovation from start-ups to boost their product portfolios and accelerate growth. Serial acquirers—in both tech and life sciences—including Boston Scientific, EMC, IBM (led by divisions headquartered in Massachusetts), Medtronic (including Covidien), and Teva Pharmaceuticals.

Companies:  
Deep Tech Titans and a Strong Pipeline

The 216 Israeli-founded businesses in Massachusetts span the breadth of IT and life sciences sectors, two major industries of growth that both geographies have in common. For a list of the most notable companies, some large and some small (but with promising signs), see figure 9: “200+ Massachusetts Businesses with Israeli Founders.”

---

**Figure 8**

<table>
<thead>
<tr>
<th>Acquirer</th>
<th>Acquired (bold is &gt;$250m)</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Akamai</td>
<td>CONTENDO</td>
<td>$286M</td>
</tr>
<tr>
<td>Avid</td>
<td>IKNOWLEDGE • ORAD</td>
<td>$70M+</td>
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<td>Boston Scientific</td>
<td>LABCOAT • MVALUE • REMON MEDICAL • RHYTHMIA MEDICAL</td>
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<tr>
<td>Cyberark</td>
<td>CYBERINTEL • VIEWFINITY</td>
<td>$31M+</td>
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<tr>
<td>EMC²</td>
<td>CYOTA • ILLUMINATOR • KASHYA • MOREIT • NLAYERS • PROACTIVITY • RSA SCALEIO • XTREMO • ZETTAPoint</td>
<td>$3,615M+</td>
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<tr>
<td>Francisco Partners</td>
<td>CLICKSOFTWARE</td>
<td>$438M</td>
</tr>
<tr>
<td>IBM</td>
<td>BLUESNAP</td>
<td>$115M</td>
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<tr>
<td>Medtronic</td>
<td>DILIGENT • EMPTORS • GUARDIAN • IPHRASE • STORWIZE • TRUSTEER • WATCHFIRE</td>
<td>$1,965M+</td>
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<tr>
<td>Qeex1</td>
<td>GIVEN IMAGING • ORIDION • POLYTOUCH • SUPERDIMENSION</td>
<td>$1,520M</td>
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<td>PTC</td>
<td>TRIBE MEDITERRANEAN</td>
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<tr>
<td>TEVA</td>
<td>ENIGMA</td>
<td>$20M</td>
</tr>
<tr>
<td></td>
<td>COPLEYS PHARMACEUTICAL • GECKO HEALTH • IMMUNEERING</td>
<td>$280M+</td>
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SELECTED DEALS BETWEEN MASSACHUSETTS & ISRAELI-FOUNDED BUSINESSES—SELECTED ACQUISITIONS 1999-2015; COMPANY HQS OR DIVISION HQS ON BOTH SIDES OF THE DEAL WERE LOCATED IN MASSACHUSETTS OR ISRAEL AT THE TIME. ACQUISITION VALUE, WHEN KNOWN, IS FROM AMOUNTS REPORTED IN SEC FILINGS OR NEWS REPORTING.
IT businesses take the lead on all three measures of revenue, jobs, and capital, because of sustained growth over the past two decades in everything related to data, networking, and software. But over the past few years, life sciences has come on strong, with Israeli researchers tapping into Boston as a gateway to the U.S. and global markets, drawn by the state’s standing as the world’s leading life sciences cluster. For the share of revenue, jobs, and capital by major industry for the Israeli-founded businesses in Massachusetts, see figure 10, “IT and Life Sciences Lead.”

Here are the top sectors for Israeli-founded businesses in Massachusetts:

» App development & management. Improving the user experience, helping businesses test applications, and providing tools to manage performance, three companies are at the top of the list: Applause, Perfecto Mobile, and VMTurbo. Together, they have raised almost a quarter-billion-$ in total VC funding and employ about 500 in Massachusetts. And they have risen to the top of American tech, too, earning industry awards such as: Forbes “Fastest Growing Private Companies,” American Business Awards’ “Most Innovative,” Boston Business Journal’s “Best Places to Work,” and Mass TLC’s “Private Company of the Year,” among many other competitive recognitions.

» Cybersecurity. RSA, a division of EMC and the first major cybersecurity company worldwide, makes its home in Massachusetts and runs its global Anti-Fraud Command
The next generation of Israeli-founded security titans in the state is led by CyberArk, the category leader in privileged access management, which capped 2015 with $160m in annual revenue, on top of a successful IPO in 2014, and now sports a market capitalization of $1.3b. With global headquarters in Israel and U.S. headquarters in Massachusetts, it’s a great employer too. The company’s 400+ worldwide employees give their jobs a >97% approval rating in atmosphere, rewards, pride, and bosses – earning the business a top 10 ranking for “Best Workplace in Technology.”

Also driving the Massachusetts-Israel storage dominance is EMC’s acquisition of XtremIO. Purchased for $430m in cash in 2012, EMC quickly commercialized the company’s enterprise flash technology and scored over $1b in sales in the product’s first 18 months, blowing past the revenue of the next three competitors combined. How did it happen so fast? The tight working relationships, enterprise reach, and technical talent of the teams in Hopkinton and Herzliya.

Networking & data center. Co-founded by an Israeli PhD candidate at MIT, Akamai created the content-delivery network industry, today grossing more than $2b annually, while
The Boston-Israel Power Partnership

combined with the go-to-market aptitude of the Boston life sciences cluster is enabling these pioneers to tackle orphan diseases, diabetes and obesity, blood cancer, anti-tumor drug delivery, and neuro-degenerative illness.

Medical Devices. It’s a proven pathway: Tap into Boston’s ecosystem to take a startup through trial, FDA approval, and sales ramp-up. The most recent companies with Israeli founders to take this road – and who have each raised more than $50m in VC and IPO funds, include: Cheetah Medical with its real-time cardiac output monitor; Corindus with its coronary surgical robotics; EarlySense with its contact-free continuous patient monitoring system; OmniGuide with its minimally-invasive laser surgery system; Ornim with its bedside cerebral monitor; and ReWalk with its exoskeleton that enables paraplegics to walk.

eHealth, energy & water tech, 3D printing, and other sectors expand the envelope. Ventures in newer industries are taking root, especially when deep tech is involved. Especially notable is American Well, from the serial entrepreneur Schoenberg brothers, who are making telehealth a reality for the U.S. market, with $123m in funding (from Teva Pharmaceuticals of Israel, and others) and over 200 employees.

In other sectors, Formlabs—co-founded by an Israeli PhD candidate at the MIT Media Lab—is forging a new class of professional-grade desktop 3D printers, and scored a big series A round from a who’s who of U.S. and Israeli investors, including Eric Schmidt’s Innovation Endeavors, Pitango, DFJ, and others. Also, Israeli-founded Desalitech, which makes clean water from industrial wastewater, was the winner for the “Global Trade Award” from the Associated Industries of Massachusetts, and captured the coveted “Breakthrough Water Technology of 2016” by Global Water Intelligence.

Other companies shown in figure 9 have strong capitalization and bright prospects continuing to grow and dominate its sector almost two decades after its founding. Simplivity, “Boston’s Fastest-Growing Tech Firm,” is reimagining the data center and delivering extraordinary efficiencies with its OmniCube, winning $276m in venture funding and hiring over 350 in MetroWest Boston along the way. These are just two of the success stories that make network and data infrastructure hum, contributing to a sector that has long been a sweet spot of excellence between Boston and Israel.⁹

Software and all types of SaaS. From eCommerce back-office services to vertical enterprise software, this sector goes deep into how businesses operate. With three prior exits under his belt, Israeli and Technion alumnus Jonathan Yaron is going for four-of-a-kind with ZoomInfo, his B2B prospecting database. ClickSoftware, employing over 300 in Petach Tikvah and Burlington, scored a $438m buyout to take the company private, and attracted the former President of RSA to lead it to the next level in field service management software. BlueSnap, founded in Israel, which moved its U.S. HQ from San Jose to Boston, employs 100+ in Waltham and Herzliya Pituach, and is racking up global eCommerce payments with $183m in funding under its belt.

Bio-pharma. Two blockbuster drugs with over $1b in sales each, both based on Israeli intellectual property, are Velcade and Rebif. Respectively, they fight bone marrow cancer and multiple sclerosis, and were developed by Millennium Pharamaceuticals (Cambridge) and EMD Serono (Rockland), based on Nobel Prize winning research from Technion and licensed research from Weizmann.

Beyond these proven drugs, Israeli scientists are behind some of the most promising clinical-stage companies in the state: Chiasma, Gelesis, Karyopharm, Mersana, and NeuroPhage. In aggregate, these five companies have raised $875m in VC funds, private equity, and IPOs. Israeli research
across diverse engineering-oriented sectors. Whether they substantially lower energy consumption in building HVAC systems, or reinvent the wheel with electric hybrid bicycles, tech is thriving in all sectors of the Massachusetts-Israel relationship.

True, Boston doesn’t do burst-the-bubble games and frothy apps. And the social media frenzy has made its home on the west coast. But Boston is tops when it comes to “deep tech,” the real and enduring businesses that are built on algorithms, engineering, and even more importantly, solving the world’s more difficult problems through defensible IP, new technologies, and compelling customer propositions.

### World-Changing Innovations

Beyond the economic impact of Israeli innovation on the Massachusetts economy, the bilateral partnership is characterized by products that improve health, raise quality of life, or irrevocably change the nature of business. While many of the successes of this relationship would certainly qualify, figure 11, “World-Changing Innovations” identifies a few of the most meaningful examples.

#### SELECTED PRODUCTS FROM ISRAELI-FOUNDED BUSINESS IN MASSACHUSETTS—EARYSENSE, REWALK, & CYBERARK WERE FOUNDED IN ISRAEL AND CHOOSE MA FOR THEIR US HQS. GIVEN IMAGING WAS BOUGHT BY COVIDIEN (MA), WHICH WAS BOUGHT BY MEDTRONIC. REBIF, BY EMD SERONO (MA), IS BASED ON IP LICENSED FROM ISRAEL’S WEIZMANN INSTITUTE. VELCADE, BY MILLENNIUM PHARMACEUTICALS (MA) IS BASED ON NOBEL PRIZE-WINNING RESEARCH OF THREE PROFESSORS, INCLUDE TWO FROM TECHNION (ISRAEL). AKAMAI (MA) WAS CO-FOUNDED BY AN ISRAELI PHD CANDIDATE AT MIT. RSA (MA) WAS CO-FOUNDED BY AN ISRAELI RESEARCHER AT MIT, AND ACQUIRED BY EMC (MA). XTREMIO (ISRAEL) WAS ACQUIRED BY EMC (MA).

<table>
<thead>
<tr>
<th><strong>LIFE SCIENCES</strong></th>
<th><strong>IT</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>EarlySense System</strong>&lt;br&gt;Monitors heart, lung, sleep, &amp; motion activity, without physical contact, reducing falls, ulcers, cardiac and respiratory events, and hospital stays.</td>
<td><strong>Akamai’s Content Delivery Network</strong>&lt;br&gt;Delivers a fast, secure internet, based on 200,000 servers, 30 terabits of global capacity, and hundreds of patients.</td>
</tr>
<tr>
<td><strong>Given Imaging’s PillCam</strong>&lt;br&gt;Detects colon cancer and other gastrointestinal disorders via non-invasive capsule endoscopy.</td>
<td><strong>CyberArks’s Password Vault</strong>&lt;br&gt;Stops cyber threats inside the corporation, and is in use today by 40% of the Fortune 1,000.</td>
</tr>
<tr>
<td><strong>Rewalk ExoSkeleton</strong>&lt;br&gt;Enables paraplegics to walk.</td>
<td><strong>CYBERARK</strong></td>
</tr>
<tr>
<td><strong>EMD Serono’s Rebif</strong>&lt;br&gt;Reduces relapses and delays disability for people with multiple sclerosis, with over $2b in sales worldwide.</td>
<td><strong>RSA cryptography, authentication, &amp; global anti-fraud services</strong>&lt;br&gt;Protects 30,000 businesses worldwide from persistent fraudsters.</td>
</tr>
<tr>
<td><strong>Velcade</strong>&lt;br&gt;Fights multiple myeloma and lymph node cancer, and has been used by 550,000 patients worldwide.</td>
<td><strong>EMC’s XtremiIO All-Flash Array</strong>&lt;br&gt;Revolutionizes enterprise storage, and is deployed in 65% of the Fortune 100, earning $1b in sales in its first 18 months.</td>
</tr>
</tbody>
</table>
Five Routes From Israel to Boston

How do these Israeli entrepreneurs and innovations find their way to the Boston area? The research shows five main paths:

» **Launch a company in Israel, then expand into the U.S.** Originating at an Israeli university or incubator, and/or funded by Israeli angels or VCs, these businesses accomplish their initial R&D and commercial launch in Israel. Then they chose Boston as their “home away from home” to tackle the American market. This group follows a proven model of capitalizing on early-stage success in Israel before going abroad, while maintaining a core team in Israel of original employees, R&D, and other functions that sustains the vision and DNA of the company. Some of the most notable examples include BlueSnap, Chiasma, CyberArk, Cyberreason, EarlySense, Infinidat, and Zerto.

» **Go to university in Boston, then choose to grow the company here too.** Israeli alumni of Massachusetts colleges started 30% of the Israeli-founded companies in the state. Foreign students who come to Boston for study and research go on to develop connections and familiarity that result in lasting relationships. Sometimes they stay after graduation, but just as often, they return to Israel to work, create businesses, and when one of those ventures scores success, the entrepreneurs often chooses Boston for expansion because of prior connections, knowledge of the local ecosystem, and appreciation of the city’s vibe.\(^\text{10}\)

One of Israel’s earliest great tech companies illustrates this route to Boston-Israel success, and also the longevity of ties between the geographies. Efi Arazi graduated MIT in 1963 and got a job with Itek, a Massachusetts tech company. He later returned to Israel and founded his own business, Scitex—a pioneer in the digital revolution of the printing industry—which his former Massachusetts employer helped fund. When Scitex grew and became ready for the U.S. market, Arazi chose to setup shop in Bedford, MA. At its peak, Scitex America employed about 700, and had annual revenue of $300m. In the 2000s, Scitex sold its divisions to Creo, Kodak, and HP for a combined acquisition value of close to $1b, perhaps Israel’s first “unicorn.”\(^\text{11}\)

This pattern continues today of Israeli students and researchers at Massachusetts universities who subsequently becoming founders of Boston-Israel businesses. It’s also how the state’s Holy Grail of “student retention” is achieved. Some of today’s successful examples include Akamai, American Well, CloudLock, Formlabs, NeuroPhage, OmniGuide, and Simplivity.

» **Get acquired or be the acquirer.** Since 2000, more than 70 Israeli-founded businesses have been acquired by Massachusetts companies. The acquired Israeli company gains expanded market access and a return of invested capital, while the acquiring Boston company secures new technology or important talent to grow the business. Serial Boston acquirers of Israel firms include Avid, Boston Scientific, EMC, IBM’s divisions headquartered in Massachusetts, and Medtronic MITG (the former Covidien). See the earlier figure 8, “Over $10b in Acquisitions.”

As the Israeli tech and life sciences ecosystems have matured, some Israeli companies have become acquirers too, landing them on Massachusetts shores. Most notably, Teva Pharmaceuticals purchased three Boston firms (Copley Pharmaceuticals, Gecko Health, and Immuneering), Osem acquired hummus-maker Tribe Mediterranean, and Syneron purchased medical laser company Candela.\(^\text{12}\)

» **Win a Nobel, or create IP, that gets commercialized in Boston.** Although unusual, some of the greatest successes of the Boston-Israel business superhighway are Massachusetts firms that develop products...
based on research performed at Israeli institutions. The most notable examples are: Velcade, developed by Millennium (aka the Takeda Oncology Company) of Cambridge, based on Nobel Prize winning research by three professors, including Ciechanover and Hershko of Israel's Technion Institute; and Rebif, developed by EMD Serono of Rockland, which is based on research and intellectual property licensed from Israel's Weizmann Institute.

» Start a company in Boston (and do it again). Access to capital, talent, early customers, or proximity to family are other reasons why Israeli-founded businesses choose Boston to open their doors. Some of these founders are serial entrepreneurs, with multiple successful companies in both Boston and Israel. Quite often, after establishing the Boston headquarters, these Israeli entrepreneurs then open an Israeli office to tap R&D talent, sometimes even acquiring an Israeli company to tap their talent and technology.
Why Boston?

Why is Boston ranked among the best places in the world to grow a global technology or life sciences business?

It’s because Boston’s strengths closely align with an entrepreneur’s needs for a deep bench of well-educated and experienced talent, access to capital, a strong innovation ecosystem, and other factors. For Israeli-founded start-ups, Boston has become a preferred “home-away-from-home” as they look to launch or grow a business.

Perhaps one of the most widely regarded measures of the U.S. states, and their comparative strengths as hubs of innovation, is the Milken Institute’s “State Tech and Science Index.” In six consecutive surveys from 2002-2014, Massachusetts scored #1. Using dozens of indicators, the state has consistently posted the strongest results to keep it ahead of all U.S. competitors, including California and New York. See the “State Tech and Science Index” in the sidebar on the right.

A World-Leading Innovation Economy

Compared with other leading technology states, Massachusetts has unparalleled strengths, including:

» The top workforce in the United States. The state ranks #1 in awarding new college degrees per capita, a key indicator for satisfying the hiring needs of a dynamic tech sector. Focusing on science and math, the state remarkably outpaces all other states by 50% or more per capita in granting degrees in STEM fields.

Massachusetts ranks No. 1.
The state has a “near-perfect record” and “maintain its dominant position by ranking first” in 80% of the study’s composite indicators. “The state turned in an incredible performance, not only maintaining but improving” its score in “Human Capital Investment.”

California ranks No. 3.
Its “principal weakness remains human capital investment,” which “continues to be an area of relative mediocrity.” The state also “lags far behind Massachusetts” in graduate students in science disciplines, a direct indicator of a population prepared to work in the tech economy. Similarly, in the key category of “Industry R&D Dollars Per Capita,” the state also “trails national leader Massachusetts.”

New York ranks No. 11.
In the category of “Technology and Science Workforce,” NY placed in the bottom 50%.

SOURCE: THE 2014 STATE TECHNOLOGY AND SCIENCE INDEX, MILKEN INSTITUTE
The startup culture in Boston is “Astounding”
GE’s CEO Jeff Immelt

Looking to the future, Massachusetts placed #2 globally in the “Trends in International Math and Science Study” (TIMSS), which measures 8th grade education, pointing to a well-prepared future workforce for tech and life sciences companies.

Beyond new graduates, the state also boasts the most highly educated population of any state in the country, with a greater percentage of residents who earned bachelor’s or higher degrees. And the Boston-area scores three of the top ten cities in the entire country with the most highly educated residents (and two of them happen to be the most common addresses for Israelis living in the state, Brookline and Newton.)

Whether companies need experienced talent or fresh faces, Massachusetts demonstrably has a deep talent pool and the top workforce in the United States.

The top-ranked universities and #1 city for students in the USA. Boston and Massachusetts are widely recognized as the higher-education capital of America. In the City of Boston alone, 35 colleges enroll 152,000 students (not even including Harvard and MIT, which are located in next door Cambridge.) Not surprisingly, Boston is honored as the highest-ranked North American city in the “Best Student Cities” by the respected QS World University Rankings.

More degrees are conferred in Massachusetts per capita than any other state, which hosts close to 100 colleges in total. Over 100 additional colleges in New England bring a world of students to Boston as the region’s hub.

Of course, Harvard and MIT need no introduction, except to say that their impact on the global economy is each equal to the GDP of an OECD country. In combination, Harvard’s and MIT’s 500,000+ alumni have created organizations with $5.8 trillion in annual revenue and over 24 million jobs. Together, the economic impact of these two Massachusetts universities is equal to the fourth largest global economy—ahead of Japan, Germany, and the UK—and just behind the EU, USA, and China.

Beyond these two Cambridge educational exemplars, the long list of Boston-area schools ranking at the top of national or subject-specific rankings includes: Babson, Berklee, Boston College, Boston University, Brandeis, Clark, Northeastern, Olin, Tufts, UMass, Wellesley, and Worcester Polytech.

The combined power of these institutions produces a highly educated workforce, research-driven innovation, cultural diversity, and an enlightened population that drives the global economy.

R&D that’s more productive than any other state. The concentration of corporate and academic R&D in Massachusetts is unparalleled. Notable measures of success include:

- No. 1 in U.S. corporate and academic R&D per capita, and pulling farther ahead of all other states.
- No. 1 in U.S. production of science academic articles per capita.
- No. 1 in U.S. tech licensing overall, twice as much as any other state, demonstrating the commercial value of the state’s research productivity.
- No. 1 in Small Business Innovation Research (SBIR) and Small Business Tech Transfer (STTR) grants per dollar of GDP, twice as much as any other state’s federal grants.
- No. 1 in National Institute of Health (NIH) research funding per dollar of GDP, also twice as much as any other state.
These key indicators point to how tech and life sciences businesses thrive on innovation from the state’s pre-eminent position in U.S. R&D.18

» Top of the charts for VC and IPO funding. Venture capital investment in Massachusetts was $5.8b in 2015, which was 10% of all VC dollars deployed in the U.S., the same share as the entire State of New York. On a per capita basis, the state ranks #1 in placing venture investments, higher than California. The state even scored second in IPOs in 2012—behind California, but beating New York again.19

» Dozens of Fortune 1,000 firms and more than 80 with $1b+ revenue or valuations. At the head of the list are 27 Fortune 1,000 companies, including tech giants GE, EMC, and Raytheon, plus life sciences behemoths like Biogen Idec, Boston Scientific, and Thermo Fisher Scientific. Another 15 private companies escaped the scrutiny of the Fortune methodology, but ring up more than $1b in sales each, including Fidelity Investments, audio technology pioneer Bose Corporation, and workforce software leader Kronos. Plus scores more in tech and life sciences that have valuations at the unicorn level or much higher, like eHealth kingpin athenahealth, RNAi therapeutic company Alnylym, and speech recognition market-leader Nuance.

» Energized by world-class start-up resources. From Cambridge’s Kendall Square to Boston’s Innovation District, entrepreneurs and experienced hands gather together to network, learn, play, dream, mentor, and pitch at a daily smorgasbord of events and programs. A short list of these start-up turbochargers include:21
  • Incubators and accelerators like MassChallenge, TechStars, Bolt (for hardware), Cleantech Open Northeast and Greentown Labs (both for energy & water), LearnLaunch (for edTech), and many more.
  • Co-working spaces for tech and life sciences, such as Cambridge Innovation Center, CIC Boston, LabCentral (for biotech), WeWork, Workbar, and dozens more.
  • Start-up education from Intelligent.ly, General Assembly, and Startup Institute.
  • Networking events like Boston Innovators Group, Boston TechJam, New Tech Meetup, Lean Startup Circle, EmTech MIT, MIT Enterprise Forum, MIT Hackathon, Revolve Nation, TiE Boston, Venture Café, and countless more.
  • Student-focused and mentoring programs like Rough Draft VC, IDEA @ Northeastern, Harvard’s iLab, MassTech’s MTIP, and the MIT $100k Entrepreneurship Competition.

Global Epicenter of the Life Sciences Industry

The unparalleled depth and breadth of the life sciences sector makes greater Boston the undisputed center of the global industry, in every stage from basic research to large-scale success. For a list of major companies – from well-funded startups to major multinationals – see Appendix A: “Boston Tech & Life Sciences Ecosystems.”

Massachusetts is “The Most Innovative State in America”
2016 Bloomberg State Innovation Index

The state’s industry has four major categories of global leadership:

» The global hub of bio-pharma innovation. Nearly 1,500 drugs are in the pipeline, representing 11% of all American drug development. All of the world’s top 10 bio-pharma firms are present in the state, plus 500 other companies, who employ 60,000 people. Almost half of them work in R&D – more than any other state, including the much more populous California.20
Major bio-pharma companies headquartered in the state include Alnylym, Biogen Idec, EMD Millipore, EMD Serono, Genzyme, Hologic, Millennium, PAREXEL, Sunovion, and Vertex.

Looking at capital, VCs placed $2b in 2015 investments in the state’s bio-pharma industry, over 3x the amount of a decade before. The IPOs raked in $2.2b in 2014/15 for 21 companies. Additional government research funding of about $2b in 2014 was split evenly between hospitals (such as Massachusetts General Hospital and Brigham & Women’s) and non-profits such as the Harvard Medical School. Lab space is everywhere, with over 20 million square feet in service, equal to about 350 American football fields.

A top-tier medical device sector. The state is firmly rooted as one of the leading U.S. medical device industry clusters, with rankings that include:
- No. 1 in VC funding for medical device startups in the U.S. per capita;
- 12% of all American VC investments in medical devices; and
- Over $5b in exports, or about 12% of the entire U.S. industry;

Over 400 companies in the state are reinventing surgery, medical instruments, and therapeutic appliances, including the home of giants Boston Scientific, the Medtronic MITG division, and Philips Healthcare—plus 22 firms that have raised capital of at least $50m since 2010, along with the innovation factories of hundreds of others.

A commanding eHealth presence. Greater Boston is firmly in the winner’s circle of this rapidly growing industry, led by athenahealth, eClinicalWorks, and Meditech, who are a just a few of the 15 leading Massachusetts firms in the “Healthcare Informatics 100”. Capital is flowing too, with 72 companies receiving venture funding in just 2014 and 2015. Even the state’s primary and second care providers are committed to eHealth, with over 90% adoption of EHR in Massachusetts, according to MeHI, the state’s industry development initiative. Combined with the states position as the #1 bio-pharma sector, the strong medical devices cluster, and the country’s leading hospitals, the Boston area has been (and promises to be) fertile ground for eHealth industry growth.

The diagnostics & lab services industry titans. With such a density of bio-pharma, medical device, and eHealth companies, the demand for diagnostic gear, testing, analytics, and lab services drove the development of an industry sector to serve the home market and the world. From cord blood banking to PCR assays, the local industry has a preeminent global position in this multi-billion-$ industry, anchored by Alere, PerkinElmer, ThermoFisher, Waters, and many others.

Top Tech Clusters Driven by Algorithms and Engineers
Boston entrepreneurs choose hard problems to solve, and aren’t motivated to build the easy app. The remarkable Boston ecosystem of innovation industries draws start-ups and giants from around the world to tap the talent that defines technology revolutions. To identify the titans of the Boston tech economy, see Appendix A, “Boston’s Tech & Life Sciences Ecosystems,” a compilation of the largest and best capitalized companies in each sector.

Here’s a brief rundown of the many industries where Boston is a global haven for technology change-makers:

Cybersecurity that keeps scaling bigger. RSA—the cryptography and two-factor authentication groundbreaker co-founded by an Israeli—makes its home in the state. Akamai, also co-founded by an Israeli, is the go-to vendor for mitigating DDoS attacks for any corporation.

Coming up behind them are large or well-capitalized firms with hockey-stick growth including Black Duck Software, Carbon Black,
CounterTack, Digital Guardian, Mimecast, Rapid7, Veracode, the headquarters of IBM Security, and a major presence of Symantec – plus two more firms of Israeli origin, CyberArk and Cybereason.

» **Petabytes of data center success.** The data center and storage sector in Massachusetts is simultaneously at the forefront of its industry and decades-deep. Six of the most well-funded and largest firms have raised over $1b in total funding: Infinidat, Kaminario, Simplivity, Stratoscale, and Zerto – all founded by Israelis – plus Actifio and Nasuni. Also headquartered in Boston is Iron Mountain, the multi-billion-dollar data recovery company, which has 94% of the Fortune 1000 as clients.

Of course, the storage titan that defines the global industry is EMC, which is headquartered in Massachusetts and has spawned an enormously successful sector around it. EMC’s leadership traverses a multi-billion-dollar product line that pioneered scalable storage arrays and pushes the envelope with converged infrastructure, hybrid cloud architecture, virtualization, and data protection offerings. EMC’s latest advance, the flash array, leads the market with over $1b in global sales in its first 18 months on the market—and grew out of the company’s acquisition of Israel’s XtremIO. For more, see the sidebar “The EMC & Israel Special Relationship.”

» **Serious depth in app management and enterprise software.** The Boston industry has considerable coding ingenuity when it comes to building the latest tools – and more importantly, wildfire success at penetrating global IT. In addition, Boston software companies have achieved worldwide success in vertical applications to become the design or operational backbone of entire industries or business processes. The largest and best capitalized firms in this sector include:

- App management companies Acquia, Basho, Netscout, and Progress—plus three firms founded by Israelis—Applause, Perfecto Mobile, and VMWare;
- Industry- or application-specific software companies AspenTech, Cross Country Group, Fleetmatics, InterSystems, Kronos, LogMeln, Nuance, OnShape, Pegasystems, PTC, and the US HQ of Dassault Systems—plus another Israeli-founded firm, ClickSoftware;
- Multinationals with major software development centers of >250 employees in the Boston area (excluding sales personnel) of Adobe, Apple, Autodesk, CA, Google, HP, IBM, Microsoft, Oracle, Red Hat, Salesforce, DAP, and VMware.

Among the multinationals worthy of special note, IBM has its largest North American software lab in Massachusetts. Following IBM’s acquisitions of 23 Massachusetts companies—more than any other geography worldwide—the “IBM Mass Lab” today employs thousands who work on machine-learning, fraud detection, data analytics, supply management software, and other technology. Boston/Israel companies have been a big contributor to seeding IBM’s presence in the state, with seven of them accepting offers totaling about $2b to be acquired by Big Blue. The list includes one of Israel’s largest exits ever, Trusteer, as well Guardium, Emptoris, and others. Deep technical topics define the work of the IBM Mass Lab, as employees in the state have been awarded nearly 3,000 patents over the past 20 years.

» **Mathematicians who are the masters of marketing and ad tech.** Big data rules in the marketing world, which plays right into Boston’s strengths. The biggest and best capitalized firms in this sector include:

- Inbound, outbound, and website unicorns: Hubspot, Constant Contact, and Emptoris; and Endurance International cover the major bases;
- Marketing analytics get sliced and diced by DataXu, Localytics, and Visible Measures, who see patterns where others see none;
- Ad tech is lead by Brand Networks,
ChoiceStream, & Extreme Reach;
- And many others with a big lead in their domains, including BrightCove,
- Litmus, and Placester.27

» **Major eCommerce icons.** Category leaders that have billion or multi-billion-dollar valuations—and who make Boston home—include: travel titan Trip Advisor, furniture seller Wayfair, custom printer Vistaprint, and the eCommerce platform-of-choice for major retailers, Demandware.

Other well-capitalized and large firms include Care.com, CarGurus, DraftKings, Jana, and two Israeli-founded payment companies, BlueSnap and Credorax.

» **Leading the way on energy innovation.**
Massachusetts is quickly rising to the forefront of the global clean energy sector, with:
- Over 6,400 firms in the state;
- Nearly 100,000 jobs and 64% growth over the past five years;
- A workforce with the highest percent focused on R&D of any state; and
- More firms named to the 2015 Global Cleantech 100 than any other state.

Further, Boston continues to top the chart as the #1 most energy efficient city in the USA, beating out San Francisco and all others, underpinned by 1GW of installed renewable capacity statewide in solar, wind, and biomass. VCs voted with the checkbooks too, placing the state as the #1 destination per capita for early-stage energy tech investments, with even more funds deployed for project finance and growth equity.

To further propel this global center of energy innovation, the state has generous grant programs to help early-stage companies commercialize, offered by the Massachusetts Clean Energy Center.

The largest and best-capitalized firms in energy tech include:
- Battery tech pioneers Ambri, Boston Power, and VionX;
- Equipment provider Circor;
- Energy management firms Ameresco and EnerNoc;
- Renewable energy companies 1366, Cape Wind, Harvest Power, Joule Unlimited, and Mascoma; plus
- Multinationals GE Current and major outposts of Schneider and Veolia.

Regarding GE, in 2015 the industry titan chose Boston as the HQ of its new energy innovation business named Current. Starting with $1b in annual revenues, Current combines the company’s LED, solar, energy storage, and electric vehicles businesses in a new software-driven entity.

All this energy leadership makes Massachusetts a tech superstar in energy efficiency, innovator in energy generation and management, and driver of global deployments.28

» **Even a robust water tech sector.** Despite its abundant natural water sources, the state’s technology prowess has spawned a multi-billion-dollar water tech industry employing over 5,000 people. Strengths include desalination technology, treatment, energy efficiency, engineering, filters and membranes, valves and other hardware.

Research powerhouses MIT, UMass, Woods Hole, and Tufts graduate scores of master’s degree recipients in water disciplines, contributing to the state ranking #2 in water innovation patents per capita of all U.S. states. The Boston-area has also scored more EPA SBIR/STTR grants in water than any other U.S. metro area.

Led by the New England Water Innovation Network (NEWIN), dozens of venture-backed water tech start-ups call Boston home. Many find their footing by participating in incubator and accelerator programs at Greentown Labs (the country’s largest cleantech incubator), CleanTech Open Northeast, and MassChallenge, or winning awards like the
MIT $100k, GWI’s Global Water Awards, and the Artemis Top 50.

Among the largest and best-capitalized firms in water tech are: CDM Smith, Koch Membrane Systems, Watts Water, and a major outpost of AECOM.29

Boston is also a proven gateway for Israeli water innovation to reach world markets, including the:
- Invention and wide-commercialization of the sensor-activated faucet;
- Project finance for California’s $1b by IDE was raised in Boston;
- “Global Trade Award” for Massachusetts-Israel company Desalitech;
- And other examples noted in the footnote.30

» Plus robotics, fintech, semiconductors, and other brainy industries. Beyond the sectors above, there are even more big or well-funded companies, in a bevy of other math and science intensive industries:
- Robotics companies including Amazon (following its acquisition of Kiva), iRobot, Jibo, and ReThink;
- Fintech pioneers Circle Internet (bitcoin), Goji (insurance), and Kensho (analytics);
- Network hardware & telecom businesses including Affirmed, Altiostar, American Tower, Fuze, IPG Photonics, M/A Com, Seaborn Networks, a major hub of development for Cisco, and the Israeli founded company Xura (nee Comverse);
- Semiconductors and equipment firms including Analog Devices, Brooks Automation, Skyworks, and Teradyne; and
- Homeland security giants, including the global HQ of Raytheon (partner to Israeli defense firms on Iron Dome, David’s Sling, and Arrow 3), and major outposts of General Dynamics, Lockheed Martin, and QinetiQ.

The EMC & Israel Special Relationship

With $24 billion in revenue and a $50 billion market cap, EMC is the state’s largest tech giant, and one of its most successful companies. EMC’s long history with Israel traces back to when the company transformed from selling minicomputer memory boards to enterprise storage arrays. The makeover began when Moshe Yanai, an Israeli recruited to EMC, led a team in the 1980s and 1990s to create and develop Symmetrix, the company’s flagship product, which remains the world’s most successful computer storage system. In testament to the importance of his technology leadership, EMC named Yanai a “Founder” in 2001, more than twenty years after the company was first formed.31

Since 2005, EMC has acquired nine Israeli companies, as well as RSA, a company co-founded by Israeli cryptographer Adi Shamir (the “S” in RSA). See figure 8 for a complete list of EMC’s Israeli-founded acquisitions. The most notable recent acquisition is XtremIO for $430m in cash, even before the company had released a product. But the company’s technology was tailor-made for the needs of EMC’s corporate clientele. After being commercialized by EMC and rolled out to its sales force, the EMC XtremIO All-Flash Array racked up $1b in sales in its first 18 months, making it the fastest product launch in EMC’s history, and grabbing the #1 market share position versus competitive offerings.

Today, EMC employs over 1,000 people in Israel per LinkedIn. In addition, many Israeli-founded companies choose Massachusetts for their U.S. headquarters to be at the epicenter of the industry anchored by EMC, including EMC alumni who founded CloudLock, Infinidat, Kaminario, PeerApp, Simplivity, and Zerto.

Looking ahead, the next decade of EMC’s growth will take place as “Dell EMC,” following the implementation of the world’s largest tech deal ever, expected to be finalized in 2016.
Why Israel?

Israel is famously known as the “Start-Up Nation,” a term coined in the title of the Wall Street Journal best seller of the same name, now translated into 30 languages. Israel’s amazing tech success creates economic growth for itself and also for companies and nations worldwide that have embraced its entrepreneurship and innovations.

A Global Innovation Powerhouse

Highlights of the Israeli innovation economy include the following:

- **Inventions that have changed the world.** Countless Israeli advances have achieved enormous global market acceptance and reshaped business and saved lives. Some of the most notable include: the world’s leading network firewall that protect thousands of companies and millions from Internet fraud (Checkpoint); the world’s leading drug for multiple sclerosis (Copaxone); and the “bandage of choice for the U.S. Army and special forces” (Israeli Bandage). Less earth-shattering inventions, but no less popular, have come from Israel too, such as Google Map’s real-time traffic updates, Amazon Kindle’s Java platform, the memory chips used in Apple’s iPhone and iPad, Showtime’s Homeland, SodaStream, the USB flash memory drive, and Xbox Kinect.32
World-class start-up fundraising, especially from foreign capital. 2013 to 2015 were record-setters for venture investment in Israel. Each year established a new high in total amount invested, with more money being put to work in more deals and larger rounds.

In 2015, $4.4b was invested in almost 700 Israeli companies. This figure topped the amount invested in startups in Canada, France, and Germany, as well as the major clusters of London, Beijing, or Shanghai. No other geographic ecosystem—other than the big three of Silicon Valley, Boston, and NYC—scored as much funding.

About 80% of the funding in Israeli companies is foreign capital, demonstrating the magnetism of Israeli innovation for foreign funds and corporates. Among the best known of foreign investors is Li Ka-shing, Asia’s richest man, and his Horizons Ventures, which has made an equal number of investments—28 each since 2006—in U.S. and Israeli companies.

Huge M&A from across the world, getting even bigger. Even though Israel’s home market is small—with only ten companies on the Forbes Global 2,000—Israeli start-ups have attracted whopper-sized buyouts from abroad. Some of the most notable purchases include: Berkshire Hathaway’s acquisition of tool-maker Iscar for $6b total; Cisco’s embrace of cable encryption inventor NDS for $5 billion; SanDisk’s purchase of USB flash drive inventor M-Systems for $1.6b; and Google’s gobble-up of real-time traffic mapmaker Waze for about $1b.

In total, M&A of Israeli-founded companies during 2013 to 2015 ran at the highest pace ever, over $11b per year. Average deal size in 2015 was more than $150m across 70 deals, about 300% of the average acquisition price of five years earlier.

IPOs that impress. Israel has the third-largest number of companies listed on NASDAQ, following the U.S. and China, most impressive for a small country. But it’s the ongoing quality and quantity of the IPOs that really impress. 2014 saw 18 deals, which raised $9.8b. Among the brightest lights in public offerings over the past three years are CyberArk (of Israel and Massachusetts), MobilEye, and Varonis, who together still tally about $3b in market capitalization.

A white-hot cybersecurity sector. Israel is grabbing attention as the world’s innovation and growth leader in cybersecurity, with $6b in 2014 exports, double the year before. That’s about 10% of the global market—impressive for a country with just 0.1% of the world’s population. And the future promises even more growth, with a full pipeline of Israel cyber startups that are getting funded. In 2015 alone, 78 of them attracted over $500m in VC funding, representing about a sixth of all venture funding of Israeli companies, up about 10x versus five years ago.

Some are getting big too, while others are scoring exits for their investors on their way to scaling-up through an acquirer. 19 Israeli cyber firms are public today, including global segment leaders Checkpoint and CyberArk. 18 were acquired in 2015 for $1.5b in total, usually by foreign tech firms like Cisco, EMC and its subsidiary RSA, Intel, Microsoft, and Paypal, who expand their Israeli presence,
Serial acquirers include Boston Scientific, Medtronic / Covidien, and J&J. Over 700 companies comprise the Israeli medical device industry, of whom 89 attracted $410m in VC funding in 2014, with recent concentrations in fields such as imaging, neuroscience, and surgical robots.

eHealth is ramping up too, due to Israeli’s globally leading position of 100% EHR penetration (electronic health records), 96% use of electronic prescriptions, and 60% of care providers that are part of a healthcare information exchange. Almost 300 Israeli eHealth companies are pushing the envelope of innovation, about half of whom have been established since 2010, with the greatest concentration in big data analytics, personal health, and provider administration.

The technology Israel brings to the world also helps the country keep its healthcare costs low and outcomes high. Israeli health care expenses run at about 7% of GDP and are decreasing, compared to more than double that rate in the U.S. in 2007 and increasing – even while Israel maintains a higher life expectancy rate.

In bio-pharma, more than 50 Israeli companies raised private funding in 2014, totaling close to $300m. Seven more had IPOs in 2014 – about 10% of all bio-pharma companies that went public that year – attracting an additional $1.4b in capital. Some of the world’s top 100 commercialized drugs have come from Israeli R&D, including Azilect, Copaxone, Rebif, and Velcade. Promising drugs are in the pipeline too, such as NurOwn, which has been shown in phase 2 trials—at Massachusetts General Hospital for example—to moderate the effects and inhibit the progression of ALS disease.

More than 40 acquisitions of Israeli medical device companies over the past decade illustrate the success of this sub-sector, led by the purchase of Given Imaging, maker of the PillCam, to Covidien (of Massachusetts, now part of Medtronic) for $970m.

New tech sectors – like IoT, water tech, and energy tech – are coming on strong. The VC firm of Google Chairman Eric Schmidt, Innovation Endeavors, counted over 300 Israeli IoT startups, and wrote this about the industry: “If Israeli entrepreneurs can capitalize on their existing IoT-related proficiencies, they can dominate in this space.”

In water tech, Israel is fast-becoming acknowledged as the global innovation leader, based on its unparalleled success turning a parched, arid country towards water abundance—due to innovations in desalination, recycling, drip irrigation, and big data. This triumph has been compellingly told in The New York Times bestseller, Let There Be Water: Israel’s Solution for a Water Starved World.
In energy, Israeli was ranked #1 out of 40 countries in the Global Cleantech Innovation Index as having the greatest potential to commercialize energy innovation. In solar, Israeli companies BrightSource, Energiya, and SolarEdge are achieving new efficiencies and ramping up deployments around the globe, while in geothermal, Ormat has captured the position as the world’s leading power producer. In auto tech, food tech, and neuroscience, Israeli companies are similarly attracting global capital and producing new solutions to world challenges.39

» **300 multinationals doing R&D in Israel.**

Even with all the startup activity, about 2/3 of all R&D employees in Israel are employed by over 300 multinationals there. The list is a who’s who of the Fortune 1,000. Top employers in Israel include Intel with 10,000 in research and manufacturing, where the company’s first microprocessor (the 8088) and the first laptop processor with Wi-Fi (Centrino) were developed.

IBM has 1,000 employees in Israel—following its 13 acquisitions there—who file an average of over 100 U.S. patents per year. HP has 6,000 Israeli employees; Cisco has 1,800; Apple has 1,000 following its acquisitions of Anobit and PrimeSense; Microsoft has 1,000 at its first R&D center outside the U.S.; and Google has about 500 after it bought Waze for $1.3b. And after Stratasys (U.S.) acquired Objet (Israel), the company established both locations as equal global headquarters, and became the world’s largest 3D printing company. Plus GE, GM, Philips, Samsung, and more.

As an EMC Senior VP puts it, “In Israel, multinational acquirers have found high-performing teams solving complicated problems in sophisticated ways... [We have...] also found teams that share our most fundamental corporate mandates (integrity, absolute attention to customer needs, ability to execute, etc.)”40

» **Grounded by research and academia.** Israeli civilian R&D expenditure is more than 4% of the country’s GDP, higher than all 34 OECD nations other than South Korea. Israel has the highest percentage of college graduates other than Canada. The Nobel Prize has been awarded to twelve Israelis, an impressive number considering the country’s size, and that the prize has been awarded for almost 50 years before modern Israel was founded. And R&D doesn’t just stay in the lab. For example, the Weizmann Institute of Science records among the highest tech transfer revenue of any academic center worldwide, based on commercialization of research in areas such as multiple sclerosis treatments (Teva’s Copaxone and EMD Serono’s Rebif), chemotherapy (Lilly’s Erbitux), and cable set-top box encryption (Cisco’s VideoGuard).41

» **And a government that pushes innovation towards commercialization.** The Israeli government has an enlightened (and successful) policy for tech sector economic development through the Office of Chief Scientist (OCS) at the Ministry of Economy. For example, the government’s R&D Fund and the Technological Incubators programs support dozens of pre-commercial companies and 20 business start-up hubs, focused on verticals such as medical devices, water tech, new media, or neuroscience innovations. These programs invest in commercialization, help launch products, and attract foreign capital to co-invest alongside OCS programs from companies like J&J, Nielsen, Philips Healthcare, and Takeda.
The impressive characteristics of Massachusetts (and its capital Boston) make it attractive to entrepreneurs from all over the world. But especially for Israeli founders, Massachusetts has special advantages and connections that meet their needs and interests and that are often superior to what other geographies can offer.

### The Specific Advantages of Massachusetts for Israeli Founders

For a snapshot view comparing Boston to other major U.S. startup ecosystems, see figure 12, “Boston vs. NYC vs. Silicon Valley.” Here are a few of Boston’s highlights specific to the needs of Israeli entrepreneurs:

- **Massachusetts deeply undercuts California and NY on costs of business, living, and taxes.** Which states are among the worst taxers in the nation? New York at 49th and California at 48th. By comparison, Massachusetts is in the middle of the pack at 25th. According to the annual analysis of the Tax Foundation, the combined burden of corporate, individual, sales, and property taxes is what sank the other states compared to Massachusetts.

  Taxation matters for startups if they have a longer term view to scaling up. Ask GE, who moved its corporate HQ from Connecticut (44th in taxation) to Boston in 2016, prompted by excessive government levies.

  When it comes to cost of living, NYC comes in almost 20% higher, even accounting for those who live in the suburbs of NJ or Connecticut.

  The 2016 update from the Silicon Valley Competitiveness and Innovation Project said that the cost of doing business and home values are in “critical need of attention, trending down.” And The Wall Street Journal reported, “Americans are starting to leave the techie hub [of Silicon Valley] faster than they’re arriving” due to cost and quality of life issues.

  When a new venture starts raking in the revenue, the Big Apple and the Bay Area will keep a much bigger bite. Better to make the right choice to slow the burn rate, get to profit sooner, and avoid relocating later.

- **Boston beats NY hands-down for size of the start-up community.** For U.S. residents, Boston is understood to be the superior startup ecosystem to NY in general, and in most sectors. Some key stats:

  - Boston has about 40% more VC-backed startups than NYC.
  - Boston has almost twice as many IPOs in the past three years versus NYC.
  - Boston has twice as many companies that succeeded after an IPO, measuring these “scale-ups” as companies that have achieved at least $100m in sales.
  - Massachusetts and NY run neck-and-neck in venture capital, with a quarterly variation of plus-or-minus 10% between them.

  The widely watched Bloomberg State Innovation Index sums up the advantages: Massachusetts is ranked “The Most Innovative State in America.”

- **Boston is a lot easier (and cheaper) to reach than the West Coast.** Silicon Valley has its attractions, but one of them is not distance or cost to reach Israel. Even the new TLV-
### Boston vs NYC vs Silicon Valley—Boston comes in 1st or 2nd in every measure

<table>
<thead>
<tr>
<th>COMPARISON</th>
<th>BOSTON &amp; MA</th>
<th>NYC &amp; NY</th>
<th>Silicon Valley &amp; CA</th>
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<tbody>
<tr>
<td><strong>COSTS</strong></td>
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<tr>
<td>Cost of Living</td>
<td>134 #1</td>
<td>159 #3</td>
<td>153 #2</td>
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<tr>
<td>Cost of Business</td>
<td>101 #1</td>
<td>106 #3</td>
<td>105 #2</td>
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<td>Taxes</td>
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<td>#48 #2</td>
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<td>$4,024 #2</td>
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<tr>
<td><strong>STARTUPS</strong></td>
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<tr>
<td>Number of Startups</td>
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<td>1,367 #3</td>
<td>3,859 #1</td>
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<tr>
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<td>10% #2</td>
<td>47% #1</td>
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<tr>
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<td>5% #3</td>
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<td>Education &amp; Workforce</td>
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<td>27 #2</td>
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<td>4 $71m #2</td>
<td>2 $206m #2</td>
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<td>6 hrs, 37 min #3</td>
<td>4 hrs, 55 min #1</td>
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</tbody>
</table>

Comparisons are among MSAs when possible (Boston, NYC, and the combined San Francisco & San Jose), else among the states of MA, NY, and CA. Sources: See Endnote 42.
SFO nonstop is three hours longer each way. Plus, a one-week trip, inclusive of all travel expenses to the super-expensive locale of San Jose, is about $1,800 more per trip than comparable travel to Boston.

For companies with dozens of trips per year, an extra $1,800+ per trip adds up fast. Choosing Silicon Valley is a great way to burn through cash for travel expenses, and throws away valuable time with employees, customers, and family.

Plus, EL AL’s Boston nonstop and its Sunday / Tuesday / Thursday nighttime flying schedule in each direction makes the trip easy.

» **Boston has an outstanding quality of life that bests NYC in every consumer survey.** Greater Boston routinely places at the top of the charts for best places to live in America. For example, the Pew Research Center tells that 43% of adults who are college graduates want to live in Boston, but only 28% would choose NYC.

Similarly, Mercer’s global study ranks Boston ahead of NYC at #34 to #44.

Another study on the “Best Cities for Quality of Life”—which measures income, affordability, health benefits, the local economy, and work-life balance—places Boston at #18, well ahead of NYC at #92.

Looking at specific suburbs favored by tech executives to buy a home, Livability.com puts the Boston town of Newton, MA ahead of White Plains, NY at #42 to #57.

Why the buzz about greater Boston? A lot of reasons in combination: Superior K-12 education, outstanding healthcare, abundant cultural institutions, manageable size, the sports-crazy culture, and the state’s history as the “Birthplace of the American Revolution.”

For those who need to choose a “home away from home,” Massachusetts is considered one of the most desirable locations in America. And really, the snow isn’t so bad, especially for those who might enjoy building a snowman with their kids, or taking up skiing or snowboarding.  

**A “One-Degree of Separation” Relationship**

Boston is more than an attractive place to grow a business for Israeli entrepreneurs—and Israel is more than a nice place for Bostonians to visit or do business. The decades of connection, diverse institutional partnerships, and special ties between the residents make for a relationship that can best be characterized as “one degree of separation.” Specifically,

» **An established Israeli community of 20,000 makes Boston especially comfortable.** Decades of Israeli entrepreneurship in Massachusetts have resulted in a well-established community of Israeli expatriates, who now number over 20,000 living in towns such as Brookline, Lexington, and Newton. These bi-nationals enjoy helping their visiting friends and colleagues figure out the best places to live, where their kids can get a great education in English and Hebrew, perhaps taking them to a Celtics game, or putting their names on the guest list for the Israel Independence Day / יום העצמאות party.

Dozens of organizations in greater Boston cater to the interests of its Israeli residents in feeling at home and forming business, academic, cultural, and community connections. For a complete list, see Appendix B, “Israel-Related Organizations in Massachusetts.”

» **Massachusetts universities serve as the first calling card for many Israelis.** The initial exposure for many future Israeli founders of Boston businesses is higher education. Nearly 300 Israelis are studying or doing research in undergraduate through post-doc programs, most often at Harvard, MIT, Brandeis, Berklee, or Boston University.
Israeli students who attend college in Massachusetts usually leave the state after graduation. But tellingly, if they start or expand a business, they often chose Massachusetts for their U.S. HQ, leveraging the ties they developed previously. MIT has notably deep and fruitful connections to Israel, as described in the sidebar “The MIT & Israel Special Relationship.”

New partnerships continue to arise, like MassChallenge Israel. In 2016, the world’s “most startup-friendly accelerator” opened its Israeli branch, to bring its unique brand of “no strings attached” participation and global access to the Israeli market. In just its first year of operation, this Boston export has vaulted to the top of the Israeli market, becoming the largest of all incubators and accelerators there by the number of teams accepted to the program, in a country that reportedly already has 100 of them operating. Plus, MC-IL is bringing the world to Israel, with the presence of foreign finalists, bridge programs, and corporate sponsors from the U.S., Germany, Australia and elsewhere.

The Massachusetts governor and state government are active partners with Israel. The most recent former governor, Deval Patrick, led two trade missions to Israel that set the bar for state outreach to an economic partner. Many real outcomes came from these trips, such as the initiation of nonstop flights. State Senate President Stan Rosenberg and Speaker of the House Robert DeLeo have also led their colleagues on Israel study tours, and have promoted bills in their legislatures to tighten ties.

The Israeli government prioritizes Boston
& New England relationships. Boston is one of only a handful of U.S. cities that have merited Israeli Consulates, which brings extra attention to local opportunities. (For example, cities with more than double the population of Boston, such as Dallas, Phoenix, and San Diego, haven’t yet earned that level of attention, and Philadelphia lost its Consulate in 2015, despite the presence of Teva in the state.)

Notably, the New England office was the first Consulate worldwide to establish a full-time economic affairs office in 2011, recognizing the enormous opportunity for Israeli-founded business in the greater Boston area. It organizes an endless stream of events, such as the CEO Forum series and the annual mega-sized Israel Independence Day Party. And Israeli Chief Scientist Avi Hasson landed Massachusetts as the first U.S. state for its cooperative R&D grant program backed by real financial resources.

In addition, BIRD—the U.S-Israel Binational Industrial Research and Development Fund—provides grants for promising commercial R&D opportunities between the U.S. and Israel. A notable success story
is ReWalk, which secured BIRD support for product development, subsequently leading to FDA approval of an exoskeleton walking device for paraplegics, and the company’s successful growth in Israel and Massachusetts. Since 2007, Massachusetts’ businesses have received 13 BIRD grants, placing it in the top 5 recipient states. Some of the other companies that have benefited from BIRD grants and anchored new Massachusetts-Israel partnerships include BigBand, Desalitech, enVerid, EMC, and Houghton Mifflin.47

» **Boston professional service firms have built Israeli practice areas.** Helping U.S.-Israel businesses succeed is a specialty that requires knowledge of cross-border transactions, international IP, taxation, employment agreements, and cultural differences. Boston law firms recognized for their U.S.-Israel acumen include Goodwin Procter, Foley Hoag, Mintz Levin, and others—as well as Israeli firms with Boston offices like Pearl Cohen and the joint-venture ZAG/S&W.

Beyond law firms, many other Boston professional services firms specialize in helping Israeli startups enter the U.S. market, such as media relations experts Rainier Communications and Northwind Strategies, as well as the medical device gurus at Boston MedTech Advisors.

» **Non-profits create lasting connections.** Dozens of NGOs in Massachusetts count “building relationships with Israel” as a core part of their missions. Among the most notable:
  - The New England-Israel Business Council sponsors a steady stream of networking events and seminars that attract hundreds of participants throughout the year, in sectors as diverse as cybersecurity, water tech, and life sciences.
  - CJP, which fosters relationships with Israel through expert speakers, missions, and celebrations, supports an astonishing number of ongoing programs and special events for Boston-based residents. A brief list of its many successes includes the Boston-Haifa Connection, the Boston Cybersecurity Mission to Israel, and the Harvard Dean’s Academic Mission to Israel.
    - American Technion Society, which brings world-renowned academicians to the Bay State throughout the year for public presentations in fields such as robotics, stem cells, and tech transfer.
    - Jewish National Fund, which connects Massachusetts residents to the land, water, environment, and communities of Israel through briefings and travel.
    - The Jewish Community Relations Council runs annual Beacon Hill legislators’ missions, as well as clergy tours, to connect non-Jewish leaders to Israel in areas of their interest, such as innovation in environmental policy, social service, and Christian heritage.
    - Additionally, many other organizations operate annual missions between Boston and Israel to train and connect dozens of leaders, such as the MAOZ-Seal Leadership Program, Our Generation Speaks, the Wexner Israel Fellowship at Harvard University, and the Ruderman Fellows.

» **A robust Jewish community cherishes its**
deeply connected to Israel. The state’s Jewish community is over 200,000 in population and growing, representing more than 9% of the greater Boston population. The majority of households are engaged in Jewish life—in all major categories of affiliation—including synagogue membership, Jewish learning, communal service, and philanthropy. And the connection to Israel is strong, with 95% report “feeling attachment to Israel.” Local community leaders observe that Jewish life in Boston, one of the oldest Jewish communities in America, is experiencing a renaissance that has been on a steady uptrend for thirty years. Some of the earliest connections for Israeli-founded businesses were established with the help of the Jewish community, and continue to find fertile ground for new ventures with the help of their Boston brethren.48

Something unfamiliar to most people: The first-known prototype of Israel’s flag was designed and displayed in Boston in 1891, more than 50 years before the State of Israel was formed. The Boston prototype included the core elements of today’s flag, with a white background, two horizontal blue bars, and a blue Star of David. Even before Israel’s modern founders established the State in 1948, Boston’s Jews were connected to them and planning for their future.49

» Israelis are invested in the lives of Bostonians. Whether studying or building businesses in Massachusetts, visiting family, or engaging with co-religionists, the people of Massachusetts and the people of Israel have ties that go beyond transactional relationships. For a particularly meaningful example, see the sidebar “A Friend in Tough Times.”
The MIT & Israel Special Relationship

Israel students and researchers at MIT have been a plentiful source of founders for Massachusetts-Israel companies, including Akamai, Formlabs, OmniGuide, Rhythmia Medical, RSA, Scitex, Superpedestrian, and others. Other famous MIT alumni from Israel include current Prime Minister Benjamin Netanyahu and the former Governor of the Bank of Israel Stanley Fischer. Today, over 500 MIT alumni live in Israel. These prodigious examples point to the long-standing and deep ties between MIT and Israel.

Here are some of the MIT programs that help foster this deep relationship:

The MISTI MIT-Israel program sends more than 60 students each year to Israel for an all-expenses paid internship. About 500 students to date have participated, from undergraduate through doctorate levels, worked on projects such as synthetic drug development at Teva, 3D image processing at Google Israel, robotic vision at Technion, and computational biology at Weizmann.

The MIT-Israel Seed Fund supports collaborations between MIT faculty and researchers and their counterparts in Israel. Now in its first year, six projects were chosen from 35 applicants, with funding awarded to undertake projects in hydropower, STEM education, pseudo-random functions, and other diverse fields. A separate Seed Fund supports additional collaborations between researchers at MIT and the Ben-Gurion University.

In the reverse direction, a post-doctoral stipend program funds six Technion PhDs to take up fellowships at MIT each year. In Jerusalem, MEET—Middle East Education through Technology—uses technology and business to create bonds among Israeli and Palestinian students, based on an intensive three-year program in Jerusalem taught by instructors from MIT.

MIT coursework also integrates travel to Israel to learn about the country’s technology and economy. On-the-ground curricular study has included visits to: the Red Sea to learn about reverse osmosis; Kiryat Gat to learn about city planning; and an entrepreneurial consulting class called Israel Lab. MIT Hillel’s ConnecTech is a year-long fellowship for MIT students at the Technion, to learn and create person-to-person bridges between the two communities.

Extra-curricular travel includes the annual iTrek, organized by MIT Sloan students for their peers to meet with senior government makers, tap into the Israel tech ecosystem, and gain a deeper understanding of Israeli society – with 140 students participating in 2016 – as well as a Security Seminar in Israel for ROTC students.

On-campus, MIT organizes a three-day class on “Startup Nation” for Sloan students, and multiple programs are offered year-round by the Sloan Israel Business Club, the MIT Israel Students Association, and the MIT Friends of Israel.
A Friend In Tough Times

April 15, 2013 was a dark day in Boston’s history. Two bombs at the Boston Marathon finish line killed three and injured 264. Like other moments in history, however, terrible events can bring out the best in human spirit.

First-responders rushed selflessly to help victims, despite the possibility of secondary blasts, and Boston’s finest medical professionals saved every injured victim’s life, many of whom were critically hurt.

When asked what experience helped them during the tragedy and chaos, many of these professionals identified their prior training from Israeli experts. Dr. Alasdair Conn, chief of emergency services at Mass. General Hospital, explained why he and his team were so well prepared: “About two years ago... we asked the Israelis to come across, and they helped us set up our disaster team so that we could respond in this kind of manner.” Beth Israel Medical Deaconess Center, which treated 24 of the injured, was also heavily influenced by Israel. The hospital’s CEO, Kevin Tabb, served and trained as a medic in the Israeli Defense Forces and dealt with numerous terrorist attacks and bombings during his residency at Israel’s Hadassah Hospital.

In the immediate aftermath of the bombing, MBTA Transit Police Superintendent Joseph O’Connor and Deputy Lewis Best credited their training in Israel with heightened performance on that April day. Kurt Schwartz, director of the Massachusetts Emergency Management Agency, had similar praise, explaining that he learned in Israel about managing mass casualty events and providing immediate response to address post-traumatic stress. Schwartz quoted Boston Police Commissioner Ed Davis as saying “I learned in Israel that now is the time to show strength and talk about resilience and the importance of moving on with the business of Boston.” It is clear that within moments of the Marathon Bombings and hours after, many Boston officials tapped into their professional experiences in Israel.

The partnership with Israel was essential to recovery efforts as well, when six experts from the Israel Trauma Coalition for Response and Preparedness came to Boston in May, providing 20 crisis response workshops for the professional community in Watertown where one of the perpetrators was apprehended in a street shootout, and at Beth Israel Deaconess Medical Center, with support from CJP of Greater Boston. Jason Del Porto, Vice Principal of Watertown Middle School, leveraged the team’s expertise to create a “coping and recovering process that [was] open to the entire community.” He added that the Israelis “brought it to a new level.”

Finally, in the immediate aftermath of the bombing, the FBI and Joint Terrorism Task Force deployed analytical tools from an Israeli company to help them identify the still-at-large criminals. That company, BriefCam, developed a unique technology for video synopsis, which was able to analyze the thousands of videos recorded that day and distinguish the suspects’ faces conclusively, providing crucial information in the manhunt.

Other Israeli organizations that had provided or sponsored emergency response training and/or immediate counsel to city and state officials included the Israel Center for Emergency Preparedness, the Israel National Police, Magen David Adom, Natal, AIPAC’s Israel office, and Anti-Defamation League’s Israel office.

All of the organizations noted above were
awarded a special citation of appreciation by Massachusetts Governor Deval Patrick at a special recognition ceremony in their honor, at the Yitzhak Rabin Center in Tel Aviv in May 2014.

The long-standing friendship—and mutual support—among Massachusetts and Israeli emergency response professionals exemplifies the depth of connections between the two geographies. In Kurt Schwartz’s words, “On Marathon Monday, Israel was a true friend.”

Massachusetts Governor Deval Patrick awarding a citation of appreciation to executives from Briefcam, with Mayor Setti Warren of Newton, at the Yitzhak Rabin Center, Tel Aviv, May 2014.
The U.S. competition at the state level to attract immigrant entrepreneurs—and Israelis in particular—is aggressive and quickening. Why? Foreign expatriates who build or expand businesses in the U.S. are a significant driver of the American economy. According to a study by the Kauffman Foundation, 24% of American businesses founded since 2006 in technology or engineering sectors were created by foreign-born executives.

The Kauffman report also performed a state-by-state comparison based on a study of over 100,000 businesses. This survey found that Massachusetts has the top position with Israeli entrepreneurs, who formed a greater percentage of expatriate-founded business in the Boston area versus California, New York, or any other state.

The frequency of Israeli-founders in Massachusetts tech companies is especially impressive when noting that Israel, with a population of only 8 million, is the second-most prevalent population of all immigrant entrepreneurs in the state, topped only by India, a country with a population of 1.2 billion. (See figure 14, “Country of Origin for Tech Company Immigrant Founders”).

To boost their attractiveness, many states are assertively and increasingly marketing themselves to Israeli-founded businesses:

» Governors have taken 30 trade missions to Israel since 2010. Virginia’s Terry McAuliffe, Wisconsin’s Scott Walker, and others make these trips to establish government-to-government agreements, promote business relationships, and create academic partnerships. The former Massachusetts Governor Deval Patrick led two missions, which included the largest business delegation of any state and a long list of substantive outcomes. See figure 15, “Governors Took 30 Trade Missions to Israel.”
Follow-up agreements put skin in the game. Some state economic development agencies match Israeli government funds to support R&D projects between local and Israeli firms. For example, Florida’s grant program focuses on aerospace opportunities, while Colorado’s defines six specific industries. Other states focus on state university collaborations. In NY for example, SUNY and an Israeli consortium are jointly putting up almost $3m to develop the latest silicon wafer technology, while Texas A&M is opening up a $5m marine research center in Haifa.55

States and metro areas have trade offices in Israel to funnel business their way. Almost two dozen areas—like New York, Pennsylvania, and Fairfax County, Virginia—have representatives in Israel to talk up the benefits of their states and cities.56

New VC funds in NY and Silicon Valley specifically aim to invest in Israeli start-ups. Across the USA, new VC funds are popping up to provide a vehicle for investors to bet on Israeli start-ups and help their portfolio companies grow in the U.S. market. Blumberg Capital of San Francisco and NY is completing the fundraising of its fourth fund at $200m with a special interest and track record in Israeli opportunities. UpWest Labs has invested seed funds in about 50 Israeli-founded companies that have set up offices in Silicon Valley or NYC. Marker LLC has placed bets on about 70 startup-rounds to accelerate Israeli companies’ entry to the U.S. market. Some of the other U.S.-based VC funds actively recruiting Israeli startups to their geographies include Pereg Ventures (NY), LionBird (Chicago), and YL Ventures (San Francisco). Even a local trade association—the Maryland-Israel Development Council—co-manages a fund with Israeli incubator Trendlines, focused on medical device companies destined for the mid-Atlantic.

Conferences promoting U.S.-Israeli business are popping up all across the America. The Israel Dealmakers Summit is a who’s who of tech investors and major CEOs—like Vinod Khosla, Jeffrey Immelt, and Shari Redstone—shuttling between NY and Silicon Value conference locations. And for eight years, the godfather of Israel tech, Yossi Vardi, has co-chaired a two-day “shmoozefest” at the Israel Conference in Los Angeles, to divine the future of technology and U.S.-Israel business. The list of Israeli tech networking events in the U.S. is long, the focus areas are diverse, and the number of American cities hosting them is growing rapidly.
Recommendations: Opportunities to Seed the Future

To accelerate the mutual business benefits between Boston and Israel, and to stay ahead of competitive geographies, new initiatives can concentrate on expanding current opportunities and identifying new areas of mutual growth.

Universities: Increase The Flow of Students & Faculty in Both Directions

» Babson, tops in entrepreneurship, can leverage closer ties with the Start-Up Nation. U.S. News & World Reports has ranked the Babson MBA program #1 for entrepreneurs for 23 consecutive years, but it lacks programmatic offerings in the world’s leading entrepreneurship country. The college offers 122 foreign study options in places such as Argentina, Botswana, and the Czech Republic – but none of any type in Israel.\(^57\) To give students a flavor of why Israel is widely-recognized as one of the world’s most successful entrepreneurial clusters, Babson can add the Start-Up Nation to its roster of educational and internship opportunities—like neighbors BU, Harvard, MIT, and others do—commensurate with the school’s well-deserved standing as the global entrepreneurship education leader.

» Brandeis can extend its leadership in Israel studies and innovation. The school’s Schusterman Center broke new ground establishing Israel studies as a worthy academic endeavor. The program to train scholars worldwide can be extended to disciplines beyond the liberal arts to include the sciences and business, in order to explore and connect with this country’s accelerating history of global impact. Similarly, the successful collaboration with Ben Gurion University for student study abroad can be widened to include other post-secondary institutions, for example, with the Weizmann Institute in basic sciences, Hebrew University in biology, or IDC in international business. Or, the Brandeis Heller school can tap into Israel’s advanced state of healthcare IT to develop case studies or practicums for the school’s Master’s in Health and Medical Informatics.

» UMass has an opportunity to enrich the student body and invigorate the faculty. The UMass system, with 5 campuses and over 70,000 students, enrolls over 2,500 international students, but few from Israel, as shown in the preceding figure 13. Israeli students come to American universities with more experience than the average co-ed, having completed national military service and often some work experience before embarking on college. Quality and cost matter to them, and the UMass system can infuse a well-prepared, globally focused contingent from Israel into the student body by recruiting Israeli grad students to the university’s most important disciplines for growth, such as earth sciences and engineering.

Similarly, faculty partnerships with Israeli peers – by tapping U.S.-Israel Binational Science Foundation (BSF) grants for example – can expand research horizons around business, environment, and the hard sciences.

» WPI can take its Global Projects Program to Israel for water tech and biomed. Worcester
Polytech’s strengths in applied science correspond closely to fields of expertise at Israeli academia. The Institute sends about 50% of its science and engineering students to 40 project centers around in 25 countries, but not yet to Israel. To enable its students to plug into the world leader in water tech and medical device start-ups, WPI can ramp up affiliations with peers at Technion, Ben Gurion, or other institutions recognized as leaders in these fields.

Northeastern can add Israel to its MBA Corporate Residency and Field Study programs. Northeastern’s program aims to teach students about globalization by offering students a chance to work or study abroad with focus areas in entrepreneurship, healthcare management, and other fields. As the largest startup capital outside the U.S., Israel seems like a natural fit.

Similarly, with 8,500 international students at NEU, the university can aim to place in the top 5 of Massachusetts schools that Israeli grad students also find attractive. Northeastern’s special brand of business and co-op education are a perfect fit for future Israeli entrepreneurs looking to understand the path to U.S. and global business success.

Israel can turn the tables on faculty “brain drain”. Israeli society is rightly concerned with the loss of brainpower when its academics take positions abroad. But imploring academics to stay put ignores the necessary free flow of ideas and talent, which is a key underpinning of the research discipline. Instead of counting only Israelis who hold research positions and professorships in Israel, universities can create “brain gain” programs to attract foreign academics to work in Israel, especially in fields with Israeli strength or investment. In particular:

- Tel Aviv University or Technion – in partnership with Babson College or Northeastern—are obvious pairings for business faculty exchange or sabbatical years where American professors can learn first-hand about the Start-Up Nation, and share their expertise about cracking the U.S. market with future Israeli entrepreneurs.
- IDC’s Lauder School, which organizes the Herzliya Conference—perhaps the world’s leading security symposium—is a natural fit with the security and Middle East concentrations at Harvard’s Kennedy School, the MIT’s Security Studies Program, or Tufts’ Fletcher School.
- The Arava Institute, Ben Gurion University, and Technion’s Grand Institute would gain a global focus in alliance with Worcester Polytech’s or UMass’s leadership in energy, water, and environmental sciences.

MASA can use Boston as a test-bed to ramp up its approach to recruiting foreign students. The public service organization of the Prime Minister’s Office and the Jewish Agency, Masa Israel, is tasked with providing educational opportunities to foreigners in Israel. But its pitch to participants is about “2,000 years of history” and “unforgettable sights,” plus a financial grant for everyone, regardless of need. This approach is well suited to prospects who already have a connection to Israel. To reach those who are clamoring for the best education in their chosen fields—especially those without prior connection to Israel—the message can be reoriented to students who want to be at the center of cybersecurity innovation, startup education, the hotbed of IoT, or other current disciplines.

Northeastern can add Israel to its MBA Corporate Residency and Field Study programs. Northeastern’s program aims to teach students about globalization by offering students a chance to work or study abroad with focus areas in entrepreneurship, healthcare management, and other fields. As the largest startup capital outside the U.S., Israel seems like a natural fit.

Similarly, with 8,500 international students at NEU, the university can aim to place in the top 5 of Massachusetts schools that Israeli grad students also find attractive. Northeastern’s special brand of business and co-op education are a perfect fit for future Israeli entrepreneurs looking to understand the path to U.S. and global business success.

Israel can turn the tables on faculty “brain drain”. Israeli society is rightly concerned with the loss of brainpower when its academics take positions abroad. But imploring academics to stay put ignores the necessary free flow of ideas and talent, which is a key underpinning of the research discipline. Instead of counting only Israelis who hold research positions and professorships in Israel, universities can create “brain gain” programs to attract foreign academics to work in Israel, especially in fields with Israeli strength or investment. In particular:

- Tel Aviv University or Technion – in partnership with Babson College or Northeastern—are obvious pairings for business faculty exchange or sabbatical years where American professors can learn first-hand about the Start-Up Nation, and share their expertise about cracking the U.S. market with future Israeli entrepreneurs.
- IDC’s Lauder School, which organizes the Herzliya Conference—perhaps the world’s leading security symposium—is a natural fit with the security and Middle East concentrations at Harvard’s Kennedy School, the MIT’s Security Studies Program, or Tufts’ Fletcher School.
- The Arava Institute, Ben Gurion University, and Technion’s Grand Institute would gain a global focus in alliance with Worcester Polytech’s or UMass’s leadership in energy, water, and environmental sciences.

» MASA can use Boston as a test-bed to ramp up its approach to recruiting foreign students. The public service organization of the Prime Minister’s Office and the Jewish Agency, Masa Israel, is tasked with providing educational opportunities to foreigners in Israel. But its pitch to participants is about “2,000 years of history” and “unforgettable sights,” plus a financial grant for everyone, regardless of need. This approach is well suited to prospects who already have a connection to Israel. To reach those who are clamoring for the best education in their chosen fields—especially those without prior connection to Israel—the message can be reoriented to students who want to be at the center of cybersecurity innovation, startup education, the hotbed of IoT, or other current disciplines.

The Recanati School at IDC Herzliya proves it can be done, with about 25% of its student body attending from 80 countries. Foreign students not only bring higher enrollment and diversity, but often also come at a full-pay rate. Yet, they won’t come knocking on Israel’s door all by themselves—they need to be recruited. With over 100,000 bachelor’s recipients graduating colleges in Massachusetts and New England each year, this population is geographically concentrated to make for a rich recruiting
government, especially for Israeli graduate degree programs."

» TAMID can recruit college alumni to serve on advisory boards. The Israel business clubs on campus have tapped a fertile ground of student interest. To assist with making business connections and to ensure organizational sustainability beyond this year’s leadership, TAMID clubs at Harvard, Brandeis, BU, and Northeastern may want to recruit alumni of their universities who share their interests to serve on advisory boards that provide professional counsel to students on campus, to ensure sustainability year after year, and to support the TAMID mission with their time and perhaps even funds.

**Government: Pump-Prim ing Makes a Difference**

» Task the MCCA to bring the RSA Conference and Israel Dealmakers Summit to Boston. Winning the RSA Conference would be a big win for the Massachusetts Convention Center Authority (MCCA). The world’s largest cyber security confab is the preeminent gathering of industry professionals with over 40,000 attendees, taking place in San Francisco. What’s the benefit to Dell-EMC of bringing the RSA conference to Boston, perhaps biannually? 1) To deepen attendance from the U.S. east coast and European-centered businesses, where more of the Forbes Global 2,000 are located than the west coast; 2) To advance the diversification of the U.S. cybersecurity industry beyond its Silicon Valley-first mentality; and 3) Because RSA’s headquarters is in greater Boston, to strengthen the local ecosystem as an essential cyber hub. The Conference even hosts an Israeli Entrepreneur’s Breakfast, so moving to a biannual Boston presence would further strengthen Boston-Israel ties for the benefit of the industry overall and these two economies where RSA has larger operations than in Silicon Valley.

Similarly, the Israel Dealmakers Summit is a popular gathering of the U.S. and Israeli ecosystem around startups and innovation. But it is seeking new audiences, and this year’s conference moved from NYC to San Francisco. To gin up new audiences from across the U.S., Boston can be a lucrative location for 2017, considering the 200+ Israeli founded businesses here, the 9,000 people directly employed in those companies, the deep bench of partners to Israel companies (like GE, IBM, Philips, and others), its closer proximity to Israel, and easier reach for east coast companies.

» Tap Israel to help Massachusetts drive to 100% adoption of EHR and health information exchange. Israel’s success in adopting eHealth is world-class: 100% electronic health records, 96% electronic prescriptions, and 60% participation in a healthcare information exchange, plus 300 Israeli eHealth startups and established companies. Its exportable technology is robust, but the Israeli industry would relish increased U.S. market experience.

Massachusetts—as the world’s largest life sciences cluster, with the top hospitals, and leading eHealth companies like athenahealth, eClinicalWorks, Meditech, and IBM Watson Health—is a natural candidate to lead American health care IT. The benefits of improved patient care and reduced costs statewide are a compelling goal by themselves, but the opportunity to also be the showcase for adoption will put the state in the leading position to establish U.S. dominance in the sector as well. Israel has the experience to help the state get there.

» MLSC and industry can collaborate to brand the state as the “global translational hub.” Shepherding a promising molecule from research to commercial drug has lots of speed bumps along the way. Scientists often don’t have the experience to jump these translational hurdles, so their innovations frequently never have the chance see the
light of day. Israeli biological discoveries are plentiful – from Hebrew University, Tel Aviv University, Technion, Weizmann, and others – but remain trapped in labs and constrained TTOs, without partners to help steer them.

Massachusetts can be that partner. The state has the full range of capabilities, although they have not been coalesced and marketed as such. Specialized translational capabilities are abundant and offered by research institutions (like Boston University, Dana Farber, Harvard, Tufts, and UMass), hospitals (like Boston Children and Mass. General), and industry (like Charles River Labs, PAREXEL, ThermoFisher, life sciences incubators, and hundreds of CROs).

These Massachusetts experts touch all phases of translational work, from study design through stakeholder engagement – tapping experts in biostatistics, population research, regulatory matters, and other fields. Combined with the presence of all the major pharma companies in the state and the abundant talent in this center of the life sciences industries, all the go-to-market pieces are in place for promising drug candidates to make the translational hurdle.

The Massachusetts Life Sciences Center (MLSC), MassBio, and other organizations are well positioned to collaborate on promoting the state as a one-stop-shop for all translational phases. Israel brings a rich pipeline of drug candidates, and could be the ideal test market for such a program, helping their research find commercial success.

MassVentures can connect with Israeli startups that are scouting Massachusetts. This quasi-public corporation, formed by the state legislature, selectively funds new startups with a local presence, and has already made minority investments in two companies founded or co-founded by Israelis in Massachusetts (Applause and Inside Tracker). Dozens more Israeli-companies consider where to place their U.S. HQ each year. MassVentures can raise the state’s profile among Israeli-founded businesses to fund the pick of the litter, and cement their relationship to Massachusetts.

MOTT can promote Massachusetts tourism in Israel. Israelis are global vacationers, but the Commonwealth is not high on their destination list. This high-income, frequent flyer population could be attracted to the many cultural destinations and recreational opportunities in Massachusetts and New England if they knew about them. The Massachusetts Office of Travel & Tourism (MOTT) can engage in a targeted campaign that directly reports to the agency, to promote the Bay State’s sites, culture, and natural attractions to prime tourism dollars, helping to push EL AL’s nonstop route to great frequency or upgrade to the 787, and further connect Israelis to the local business community.
The legislature can scale-up the proven Global Entrepreneur-in-Residence program. Massachusetts pioneered a new approach to securing visas for foreign entrepreneurs, which are limited by an annual H1-B visa cap of 85,000 and was oversubscribed by about 3x in 2015. By contributing their knowledge and experience part-time in a Massachusetts university setting, a foreign entrepreneur may then work on their company in Boston and receive a visa as a “Global Entrepreneur-in-Residence” (GEIR). In its first year of operation, the program received a pilot amount of $160,000 in funding from the state and matching corporate funds, to support ten GEIRs. Payback has already been achieved many times over, with 150 people employed and $50m capital raised by the GEIRs’ companies.

With about 25% of tech startups in Massachusetts founded by immigrants, yet visas to attract them scarce, the GEIR program is a proven path for creating knowledge-worker jobs and attracting capital investment to the state – and worthy of additional state funding.\(^6\)

Business & Industry Associations: Build on Existing Successes

With Israel citizens representing the second most common origin of foreign founders in Massachusetts tech businesses (see figure 14), they represent a natural constituency to engage more deeply to build on the successes of the past, in some of the following possible ways:

» Create a World Cybersecurity Forum event for VIPs. The World Economic Forum and its annual meeting at Davos define a global business agenda through the weight of its programs and caliber of participants. In cybersecurity, there are important events like the RSA Conference, Cybertech, and DEF CON, but the industry lacks a forum for the most senior executives to tackle this vexing challenge by aligning interests, away from product pitches and hackathons. By bringing together senior executives from around the world—such as Fortune 1,000 CEOs, prize-winning researchers, and top-tier financiers—to define key shared priorities, together they can propel the industry forward through industry conversation around collaboration.

Many of the best and brightest in cybersecurity already take-up residence in Boston and/or Israel – at Akamai, CyberArk, Check Point, MIT, RSA, Team 8, and Veracode, plus key users like Fidelity, the Federal Reserve Bank of Boston, GE, Raytheon, and TJX. It would be natural for this “World Cyber Forum”—an invitation-only VIP event—to hold its annual meeting alternating between Boston and Israel, these two capitals of the global industry.

» The state’s financial services giants can take a page from Citi and Barclays. To stay on top of the rapid pace change in fintech, Citicorp opened a Technology Innovation Lab in Israel to encourage fresh ideas and startups, with special emphasis on customer-facing apps, data analysis, risk management software, and automated trading. Similarly, Barclays joined forces with TechStars to open a startup accelerator in Israel.

Massachusetts financial powerhouses—Fidelity, Liberty Mutual, MFS, Putnam, State Street, and others—representing a $36 billion industry in the state, can tap into the latest fintech advances by making regular visits to Israeli startups to source innovation, or perhaps even following Citi’s and Barclay’s strategy by hanging out a shingle to open up an Israeli innovation lab.\(^6\)

Massachusetts industry associations can tap new membership. The alphabet soup of the state’s best trade associations—AIM, MassBio, MassMEDIC, MassTLC, MHTC, MITX, and NECEC—can target Israeli-founded businesses in Massachusetts as potential new members, helping them to succeed in
Many government and business leaders have given significant, serious time to marketing the local economy. Indeed, their efforts have been well appreciated both inside and outside the state. But the perception gap remains wide, partly because of the Silicon Valley hype machine, the centrality of NYC to business, and because other geographies are not standing still.

To break from the pack, industry and government can embark on specific objectives to deliver sustained messaging out-of-state—via business missions, trade show participation (in established and newer industries), seed programs, marketing activities, trade reps abroad, and most importantly, organized follow-up.

Developing a brand for the Boston-centered innovation-economy—like “Silicon Valley” or Israel’s “Start-Up Nation”—would also help communicate the state’s depth and diversity in idea-generation, commercialization, talent, and capital. From being the cradle of the American Revolution to the home of DNA decoding, perhaps Massachusetts is “Brain Town” or the “Revolutionary Republic” (or insert your best idea here).

» **Massachusetts industry associations can open doors to students while they’re here.**

With their proven record of starting or expanding businesses into Massachusetts, foreign students are eager to soak up all the connections they can while staying in the Bay State. To grab this opportunity, the industry associations listed above can organize networking events or a business fair to educate Israelis (and other visiting foreign students) about the riches of the Bay State and help them to engage with successful entrepreneurs, community-minded VCs, senior business leaders, and government officials.

» **Co-working spaces & tech community hubs can sponsor global entrepreneur nights.** By inviting Israeli and other foreign students at Harvard, MIT, and elsewhere studying in Massachusetts to network with accomplished Bostonians, co-working spaces and tech community hubs—like CIC, cove, Greentown Labs, Idea Space, Koa Labs, LabCentral, NGIN, WeWork, and Workbar—can bring the Bay State ecosystem alive for these future founders. In turn, these organizations may become preferred destinations for Israeli alumni of Massachusetts when they’re ready to expand their businesses into the U.S.

» **Brand the Boston ecosystem and raise the perception of Massachusetts up to the reality.** Despite Massachusetts earning top-tier global rankings as an innovation economy, Boston is often perceived as a second-class city, well behind Silicon Valley and NYC. As a TechStars investor explains, “Boston appears undifferentiated only because it is not the consumer Internet leader, [and] therefore not top of mind in the popular press. The diversity of ... clusters in Boston ... make the storytelling diffuse and more difficult.”

» **IAC can create a welcoming committee for Israelis getting started in Boston.** The Israeli American Council has done wonders helping Israelis feel like Boston is a treasured home-away-from-home. But for new arrivals, finding community is daunting at first. To help the newest Massachusetts residents make friends, find out where their kids can study Hebrew or where to buy the best challah, or provide advice about cultural differences, the IAC can offer welcome sessions and online information that give a leg-up to their fellow countrymen—whether they are college students, academics, businesspeople, or a family member along for the ride.

» **El Al can step up its game to capture more share.** Establishing the BOS-TLV nonstop
service in 2015 was a winning move—for EL AL, for Boston, and for Israel, with high load factors appearing almost overnight. Despite full planes on many days, the Israeli carrier is still missing significant share—and more profit—from the Boston and U.S. connecting market through its code-share agreement with JetBlue. How can the flag carrier sell more seats?

- **Aggressively court business deals.** To win frequent flyers and late-bookers, EL AL can incent its sales reps and agents to sign-up qualifying businesses, universities, and non-profits to volume agreements. Customer feedback about the current corporate program is that it is needlessly restrictive. To win those high-volume bookings, EL AL can count all LY flights as qualifying towards agreement minimums and thresholds, regardless of the continent of origination, the same as U.S. nonstop competitors Delta and United.

- **Leverage the easier experience of Logan to get started with the Dreamliner.** EL AL has announced equipment and leasing agreements to put the ultra-comfortable, energy efficient Boeing 787 (“Dreamliner”) into service throughout North America, with deliveries expected to start in late 2017. Which market first? Boston’s Logan Airport was the first to service Dreamliner flights worldwide—and especially compared with JFK, EWR, or LAX—has a strong track record that demonstrates its ability to help EL AL get started faster and more efficiently than other aviation authorities.

- **Add more days.** A significant percentage of the flyers lost to other airlines is due to the 3-day/week schedule of the BOS-TLV nonstop. An early Friday morning departure from TLV would allow business people another workday in Israel to culminate a weeklong trip. Similarly, a Saturday night departure from Logan would enable an additional workday at the start of the week in Israel.
Conclusion: Emerging Technologies Will Multiply the Mutual Gain

In summary and looking forward,

» **The Massachusetts-Israel economic relationship is healthy and growing rapidly.** With billions in revenue, thousands of jobs, and billions in capital transactions—growing faster than the overall economy—the Massachusetts-Israel partnership is robust, and its benefits accrue to both sides.

» **But competition is crowding out the Boston story, and warrants response.** As more attention is being paid across the USA to building relationships with Israeli business and academia, other geographies are gaining ground over Massachusetts. To claim the status of preeminent partner, Massachusetts and its senior executives in business, government, and academia can seek opportunities to tell the state’s story on-the-ground in Israel, via trade missions, industry conferences, academic symposia, one-on-one meetings, marketing campaigns, and other vehicles.

» **Business, government, and academia each have significant growth opportunities.** The recommendations in the preceding section describe a few ideas for creating new economic benefits for specific organizations. Each organization of course is best served by charting its own path, based upon its own needs, interests, and capacities. Those interested in developing access to Israeli innovation and entrepreneurship will find willing partners in NEIBC, CJP, the Israeli Consulate, the Israeli Ministry of Economy, and others, who can assist with defining an approach and making valuable connections.

» **New industries are the pathway to accelerating the pace of growth.** Beyond the impressive measures of the current relationship, the future opportunity is even greater. As knowledge-based economies, both Israel and Boston ride the wave of technology progress. In addition to paying attention to ongoing opportunities in today’s core disciplines of life sciences and IT, newer sectors with grounding in both geographies are also worthy of emphasis today, such as IoT, 3D printing, eHealth, energy and water, fintech, neuroscience, orphan diseases, drones, and robotics.

Together, the two geographies will continue to grow faster together by leveraging the ideas, talent, capital, and market access of the other.
Appendix A: Boston’s Tech & Life Sciences Ecosystems

The Boston area is long recognized as one of the world’s leading innovation ecosystems in multiple sectors. But who are the top companies, measured by capital or employees? This analysis aims to answer this question for the benefit of Israeli and other global entrepreneurs considering where to setup shop in the U.S., to help them understand the depth and breadth of the Boston ecosystem.

Successful business clusters are defined by the concentration of companies in a particular industry, in all stages of formation. Together, these companies anchor the ecosystem and attract even more talent, capital, growth, and innovation. The Boston area is fortunate to be the home of multiple industry clusters in biotech, medical devices, cybersecurity, data storage, robotics, and other sectors. For this analysis, all companies are grouped into either “tech” or “life sciences”.

Introducing the Boston PUPs

To convey the size and promise of the companies presented here, they’re categorized into one of three tiers: Pillars, Unicorns, and Platforms, which are commonly-used terms for describing the maturity of a company. Collectively, they’ll go by the acronym “Boston PUPs.” There are hundreds of technology and life sciences companies that do not make the cut of the Boston PUPs, even though they may demonstrate great success, momentum, and promise. Because this analysis focuses on a minimum amount of capital raised, valuation, and/or employee size, smaller ventures don’t qualify. The purpose for drawing this line is to identify only those firms who already have or will likely have the greatest role in the local ecosystem. Here are the Boston PUPs groupings:

» Pillars
Pillars are defined as locally-headquartered companies that have:
- Raised public or private capital of at least $50m in the past 3 years,
- Or raised public or private capital of at least $100m since inception,
- Or have a valuation of $500m-$1b.

They are usually focused in a single new product area, and demonstrate meaningful traction and momentum. They tend to be the first or among the first to define a sub-sector, and therefore have potential to seed a wider ecosystem around their niche.

» Unicorns
Unicorns are locally-headquartered companies with a private or public valuation of $1b-$5b.

Usually still focused in a single area, but with category-defining success and momentum, unicorns often define a category that they pioneer, and draw further investment into the ecosystem around them.

» Platforms
Platform companies are:
- Locally-headquartered companies with a valuation of >$5b,
- Or multinationals headquartered elsewhere, with >5,000 employees globally, and >250 employees locally (other than sales employees).

With even broader influence, the locally-
headed Platform companies have hit stride, with wide market recognition of their success and the ability to lead their sectors for years to come. The multinational Platform companies that have established a major presence in the Boston area recognize the enormous resources that the geography has to offer. And by investing in Boston, they attract even more resources to the ecosystem.

Boston PUPs & Israeli-Founded Businesses

24 of the Boston PUPs are business with an Israeli-founder. They not only bring jobs, revenue, and capital to Massachusetts, these companies have the potential to be anchor tenants in the Boston ecosystem because they have met the criteria to be a Pillar, Unicorn, or Platform company. The Israeli-founded Boston PUPs are noted in blue in the listing that follows.

Notes to Creating the Boston PUPs

Sources used to identify potential Boston PUPs include Boston Business Journal, Crunchbase, com, the Hitchhiker’s Guide to Boston Tech, data available on the MassBio website, and Jeff Bussgang’s annual review of the Boston startup scene. For public companies, valuations were used from March and April 2016. For private companies, valuation is based on media-reported estimates, or the author’s estimates based on comparable multiples for private companies.

For employee counts, a LinkedIn advanced search was used to identify the number of current employees at a company and all its subsidiaries, for just the greater Boston area, then multiplying x 1.1 to account for employees who do not have a profile. For Platform companies that are headquartered elsewhere, but have a major presence in greater Boston, employees with a “sales” function (as categorized by LinkedIn) are subtracted before making the qualification decision.

The Boston PUPs listing begins on the next page,
### Boston’s Tech Ecosystem: Pillars

Pillars are locally-headquartered companies that have:

- raised capital of at least $50m in the past 5 years;
- or raised capital of at least $100m since inception;
- or have a valuation of $500m-$1b.

**Blue:** Companies highlighted in blue have one or more Israeli-founders.

**Italics:** Companies with a major product based on Israeli IP, or have invested in or acquired Israeli-founded companies, or have a significant Israeli R&D presence.

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Boston’s Tech Ecosystem: Unicorns

Unicorns are locally-headquartered companies with a private or public valuation of $1b-$5b.

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<tr>
<td>Infinidat</td>
<td>data storage</td>
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</table>

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>INDUSTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPG Photonics</td>
<td>fiber lasers</td>
</tr>
<tr>
<td>iRobot</td>
<td>robotics</td>
</tr>
<tr>
<td>LogMeIn</td>
<td>remote access mgt</td>
</tr>
<tr>
<td>MathWorks</td>
<td>math software</td>
</tr>
<tr>
<td>M/A-COM</td>
<td>telecom equipment</td>
</tr>
<tr>
<td>MKS Instruments</td>
<td>measurement &amp; control</td>
</tr>
<tr>
<td>NetScout</td>
<td>app management</td>
</tr>
<tr>
<td>OnShape</td>
<td>3D design software</td>
</tr>
<tr>
<td>Pegasystems</td>
<td>CRM software</td>
</tr>
<tr>
<td>Progress Software</td>
<td>app development s/w</td>
</tr>
<tr>
<td>PTC</td>
<td>IoT software</td>
</tr>
<tr>
<td>RSA</td>
<td>cybersecurity</td>
</tr>
<tr>
<td>Simplivity</td>
<td>data center systems</td>
</tr>
<tr>
<td>Veracode</td>
<td>cybersecurity</td>
</tr>
<tr>
<td>Vistaprint</td>
<td>eCommerce</td>
</tr>
<tr>
<td>Watts Water</td>
<td>water tech</td>
</tr>
<tr>
<td>Wayfair</td>
<td>eCommerce</td>
</tr>
<tr>
<td>Zipcar</td>
<td>car sharing</td>
</tr>
</tbody>
</table>
Boston’s Tech Ecosystem: Platforms

» Locally-headquartered companies with a valuation of >$5b,
   or
» Multinationals headquartered elsewhere, with >5,000 employees globally, and >250 employees locally (other than sales).

### LOCAL HQ COMPANY

<table>
<thead>
<tr>
<th>Company</th>
<th>industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akamai</td>
<td>content delivery ntwk</td>
</tr>
<tr>
<td>American Tower</td>
<td>telecom</td>
</tr>
<tr>
<td>Analog Devices</td>
<td>semiconductors</td>
</tr>
<tr>
<td>Bose</td>
<td>audio technology</td>
</tr>
<tr>
<td>CDM Smith</td>
<td>water tech engineering</td>
</tr>
<tr>
<td><strong>EMC</strong></td>
<td>data storage &amp; mgmt</td>
</tr>
<tr>
<td><strong>GE</strong></td>
<td>diversified</td>
</tr>
<tr>
<td>IDG</td>
<td>tech media &amp; research</td>
</tr>
<tr>
<td>Iron Mountain</td>
<td>information mgmt</td>
</tr>
<tr>
<td>Kronos</td>
<td>workforce mgmt systems</td>
</tr>
<tr>
<td><strong>Nuance</strong></td>
<td>speech recognition</td>
</tr>
<tr>
<td><strong>Raytheon</strong></td>
<td>defense</td>
</tr>
<tr>
<td>Skyworks</td>
<td>semiconductors</td>
</tr>
<tr>
<td>TripAdvisor</td>
<td>travel eCommerce</td>
</tr>
</tbody>
</table>

### MAJOR PRESENCE

<table>
<thead>
<tr>
<th>Companies with a major product based on Israeli IP, or have invested in or acquired Israeli-founded companies, or have a significant Israeli R&amp;D presence.</th>
</tr>
</thead>
</table>

Blue: Companies highlighted in blue have one or more Israeli-founders.

Italics: Companies with a major product based on Israeli IP, or have invested in or acquired Israeli-founded companies, or have a significant Israeli R&D presence.
### Boston’s Life Sciences Ecosystem: Pillars

Pillars are locally-headquartered companies that have:

- raised capital of at least $50m in the past 5 years;
- or raised capital of at least $100m since inception;
- or have a valuation of $500m-$1b.

**Blue:** Companies highlighted in blue have one or more Israeli-founders.

**Italics:** Companies with a major product based on Israeli IP, or have invested in or acquired Israeli-founded companies, or have a significant Israeli R&D presence.

#### BIOPHARMA

<table>
<thead>
<tr>
<th>Company</th>
<th>BIOPHARMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akebia</td>
<td>Constellation Pharma</td>
</tr>
<tr>
<td>Allena</td>
<td>CRISPR Therapeutics</td>
</tr>
<tr>
<td>AMAG</td>
<td>Decibel Therapeutics</td>
</tr>
<tr>
<td>Anika Therapeutics</td>
<td>Deciphera</td>
</tr>
<tr>
<td>Arsenal Medical</td>
<td>Dicerna</td>
</tr>
<tr>
<td>Bind Biosciences</td>
<td>Dimension Therapeutics</td>
</tr>
<tr>
<td>bluebird bio</td>
<td>Eleven Biotherapeutics</td>
</tr>
<tr>
<td>Blueprint Medicines</td>
<td>Enanta</td>
</tr>
<tr>
<td>C4 Therapeutics</td>
<td>Entasis Therapeutics</td>
</tr>
<tr>
<td>Catabasis</td>
<td>Epizyme</td>
</tr>
<tr>
<td>Cerulean Pharma</td>
<td>Flexion</td>
</tr>
<tr>
<td>Codiak BioSciences</td>
<td>FlexPharma</td>
</tr>
<tr>
<td>CoLucid</td>
<td>Genocea</td>
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<td>CoNCERT</td>
<td>Histogenics</td>
</tr>
<tr>
<td>Constellation Pharma</td>
<td>ImmunoGen</td>
</tr>
<tr>
<td>Infinity Pharmaceuticals</td>
<td>Intellia</td>
</tr>
<tr>
<td>Jounce</td>
<td>Karyopharm</td>
</tr>
<tr>
<td>Lantheus Medical</td>
<td>Momenta Pharma</td>
</tr>
<tr>
<td>Mersana</td>
<td>Navitor Pharmaceuticals</td>
</tr>
<tr>
<td>Neon Therapeutics</td>
<td>Ocular</td>
</tr>
<tr>
<td>OvaScience</td>
<td>Pronutra</td>
</tr>
<tr>
<td>Proteon</td>
<td>Ra Pharma</td>
</tr>
<tr>
<td>Radius</td>
<td>RaNA Therapeutics</td>
</tr>
<tr>
<td>Repligen</td>
<td>Sage Therapeutics</td>
</tr>
<tr>
<td>Sarepta Therapeutics</td>
<td>Scholar Rock</td>
</tr>
<tr>
<td>Selecta Biosciences</td>
<td>Seres</td>
</tr>
<tr>
<td>Synergeyes</td>
<td>Synergeyes</td>
</tr>
<tr>
<td>Taris</td>
<td>Tetraphase</td>
</tr>
<tr>
<td>Tokai</td>
<td>Unum</td>
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<tr>
<td>Voyager Therapeutics</td>
<td>WaVe Life Sciences</td>
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<td>Zafgen</td>
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#### MEDICAL DEVICES

<table>
<thead>
<tr>
<th>Company</th>
<th>MEDICAL DEVICES</th>
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</thead>
<tbody>
<tr>
<td>Analogic</td>
<td>Cynosure</td>
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<tr>
<td>Auris Surgical Robots</td>
<td>EarlySense</td>
</tr>
<tr>
<td>BionX</td>
<td>Fractyl Labs</td>
</tr>
<tr>
<td>Cheetah Medical</td>
<td>GSI Group</td>
</tr>
<tr>
<td>ConforMIS</td>
<td>HeartWare</td>
</tr>
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<td>Corindus</td>
<td>Insulet</td>
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<tr>
<td>Cynosure</td>
<td>MC10</td>
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<td>Medrobotics</td>
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<td>Mevion</td>
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<td>GSI Group</td>
<td>Ninepoint Medical</td>
</tr>
<tr>
<td>HeartWare</td>
<td>NxStage</td>
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<td>Insulet</td>
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<td>Cynosure</td>
<td>OmniGuide</td>
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<td>EarlySense</td>
<td>Ornim</td>
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<tr>
<td>Fractyl Labs</td>
<td>ReWalk</td>
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<td>GSI Group</td>
<td>Tecomet</td>
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<tr>
<td>HeartWare</td>
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<tr>
<td>Insulet</td>
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#### EHEALTH

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<tr>
<th>Company</th>
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</thead>
<tbody>
<tr>
<td>American Well</td>
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</tr>
<tr>
<td>Care.com</td>
<td>Kyrus</td>
</tr>
<tr>
<td>Pillpack</td>
<td>Virgin Pulse</td>
</tr>
</tbody>
</table>

#### DIAGNOSTICS, LAB, & OTHER

<table>
<thead>
<tr>
<th>Company</th>
<th>DIAGNOSTICS, LAB, &amp; OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Medicine</td>
<td>Haemonetics</td>
</tr>
<tr>
<td>Ginkgo Bioworks</td>
<td>PillPack</td>
</tr>
<tr>
<td>Quanterix</td>
<td>Rapid Micro Biosystems</td>
</tr>
<tr>
<td>T2 Biosystems</td>
<td></td>
</tr>
</tbody>
</table>

The Boston-Israel Power Partnership
## Boston’s Life Sciences Ecosystem: Unicorns

Unicorns are **locally-headquartered companies with a private or public valuation of $1b-$5b.**

**Blue:** Companies highlighted in **blue** have one or more Israeli-founders.

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<table>
<thead>
<tr>
<th>COMPANY</th>
<th>INDUSTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abiomed</td>
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</tr>
<tr>
<td>Acceleron Pharma</td>
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</tr>
<tr>
<td>Agios</td>
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</tr>
<tr>
<td>Alere</td>
<td>diagnostics</td>
</tr>
<tr>
<td>ARIAD Pharmaceuticals</td>
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<tr>
<td>BG Medicine</td>
<td>diagnostics</td>
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<td><strong>Bruker Corporation</strong></td>
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</tr>
<tr>
<td>Charles River Labs</td>
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<td>eClinicalWorks</td>
<td>eHealth</td>
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<tr>
<td>Editas Medicine</td>
<td>biopharma</td>
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<td>Intarcia Therapeutics</td>
<td>biopharma</td>
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<td>Ironwood</td>
<td>biopharma</td>
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<tr>
<td>Meditech</td>
<td>eHealth</td>
</tr>
<tr>
<td>Merrimack Pharma</td>
<td>biopharma</td>
</tr>
<tr>
<td>Moderna Therapeutics</td>
<td>biopharma</td>
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<tr>
<td>Nimbus Therapeutics</td>
<td>biopharma</td>
</tr>
<tr>
<td>Tesaro</td>
<td>biopharma</td>
</tr>
<tr>
<td>Zoll Medical</td>
<td>medical devices</td>
</tr>
</tbody>
</table>
Boston’s Life Sciences Ecosystem: Platforms

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» Multinationals headquartered elsewhere, with >5,000 employees globally, and >250 employees locally (other than sales).

**LOCAL HQ COMPANY**

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
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</thead>
<tbody>
<tr>
<td>Alnylam</td>
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<tr>
<td>athenahealth</td>
<td>eHealth</td>
</tr>
<tr>
<td>Biogen Idec</td>
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</tr>
<tr>
<td><strong>Boston Scientific</strong></td>
<td><strong>medical devices</strong></td>
</tr>
<tr>
<td>Dyax</td>
<td>biopharma</td>
</tr>
<tr>
<td>EMD Millipore</td>
<td>biopharma</td>
</tr>
<tr>
<td><strong>EMD Serono</strong></td>
<td><strong>biopharma</strong></td>
</tr>
<tr>
<td>Genzyme</td>
<td>biopharma</td>
</tr>
<tr>
<td>Hologic</td>
<td>biopharma</td>
</tr>
<tr>
<td><strong>Medtronic MITG</strong></td>
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</tr>
<tr>
<td>Millennium (Takeda)</td>
<td><strong>biopharma</strong></td>
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<tr>
<td>PAREXEL</td>
<td>biopharma</td>
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<tr>
<td>Perkin Elmer</td>
<td>lab equipment</td>
</tr>
<tr>
<td><strong>Philips Healthcare</strong></td>
<td><strong>medical devices</strong></td>
</tr>
<tr>
<td>Shire</td>
<td>biopharma</td>
</tr>
<tr>
<td>Sunovion</td>
<td>biopharma</td>
</tr>
<tr>
<td>ThermoFisher</td>
<td>analytical instruments</td>
</tr>
<tr>
<td>Vertex</td>
<td>biopharma</td>
</tr>
<tr>
<td>Waters</td>
<td>lab equipment</td>
</tr>
</tbody>
</table>

**MAJOR PRESENCE**

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>AbbVie</td>
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</tr>
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<td>Amgen</td>
<td>biopharma</td>
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<td>AstraZeneca</td>
<td>biopharma</td>
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<td>Bristol-Myers Squibb</td>
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</tr>
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<td>GE Healthcare</td>
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</tr>
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<td>IBM Healthcare</td>
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<td>Johnson &amp; Johnson</td>
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<tr>
<td>Merck</td>
<td>biopharma</td>
</tr>
<tr>
<td>Novartis</td>
<td>biopharma</td>
</tr>
<tr>
<td>Olympus</td>
<td>medical devices</td>
</tr>
<tr>
<td>Optum</td>
<td>eHealth</td>
</tr>
<tr>
<td>Pfizer</td>
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</tr>
<tr>
<td>Quest Diagnostics</td>
<td>diagnostics</td>
</tr>
<tr>
<td>Roche</td>
<td>biopharma</td>
</tr>
<tr>
<td>Siemens HealthCare</td>
<td>medical devices</td>
</tr>
<tr>
<td>Smith &amp; Nephew</td>
<td>medical devices</td>
</tr>
</tbody>
</table>

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Appendix B: Israel-Related Organizations in Massachusetts

The following organizations in Massachusetts offers Israel-related programs or include Israel as an part of their mission, in the following categories:

» Academic & Campus
» Business & Professional
» Community & Family
» Culture
» Government
» Philanthropic

Beyond the 36 organizations listed here, there are dozens of student clubs as well as organizations that focus on advocacy, both of which are beyond the scope of this whitepaper.

Academic & Campus

Brandeis University / Schusterman Center for Israel Studies
The Center is dedicated to promoting exemplary teaching and scholarship in Israeli history, politics, culture, and society at Brandeis University and beyond. [http://www.brandeis.edu/israelcenter/](http://www.brandeis.edu/israelcenter/)

Harvard Kennedy School / Wexner Israel Fellowship

MIT / MISTI MIT-Israel
MIT-Israel program, part of the Institute’s MISTI program, matches students with internships and research at leading companies, research labs, and universities in Israel. [http://misti.mit.edu/student-programs/location/israel](http://misti.mit.edu/student-programs/location/israel)

TAMID Group
The TAMID Group develops the professional skills of undergraduate students through hands-on interaction with the Israeli economy.

- Boston University: [https://www.facebook.com/butamid/](https://www.facebook.com/butamid/)
- Brandeis University: [https://www.facebook.com/TamidAtBrandeis/](https://www.facebook.com/TamidAtBrandeis/)
- Northeastern University: [https://www.facebook.com/TAMIDatNU](https://www.facebook.com/TAMIDatNU)

Business & Professional

BioAbroad
BioAbroad is a non-profit organization for helping Israeli scientists, physicians, and entrepreneurs abroad return to Israel and keep in touch with Israel while they are abroad. [www.bioabroad.org.il](http://www.bioabroad.org.il)

New England-Israel Business Council (NEIBC)
NEIBC helps New England and Israeli businesses succeed together. [www.neibc.org](http://www.neibc.org)

Boston-Israel Network
A LinkedIn group for the purpose of deepening the relationships in business, academia,
government, and non-profits between these two great innovative economies.  
https://www.linkedin.com/groups/4695570

Community & Family

Boston's Amazing Israel Race
The Amazing Israel Race is a fun-filled day racing around Boston in teams of four led by clues, tasks, and obstacles in search of sites related to Israeli culture and history. 
http://www.israelcampusroundtable.org/air.html

Boston-Haifa Connection
This CJP program creates personal connections among residents of Boston and its sister city of Haifa. Programs and partnerships foster Jewish identity, empower at-risk families in Haifa, connect youth in Boston and Haifa, and more. 
http://www.cjp.org/our-work/israel-overseas/the-boston-haifa-connection

Boston Israel Group (BIG)
The mission of BIG is to connect Jewish, Israeli, and American young adults and to facilitate an awareness of Israel in the greater Boston area. 

Hebrew Play
This organization offers Hebrew immersion playgroups. www.hebrewplay.net

Israel Scouts Boston
Tzofim (Israeli Scouts) offers programs for Israeli youth in greater Boston. 
www.israelscouts.org

Israeli-American Council
The mission of the Israeli-American Council (IAC) is to build an engaged and united Israeli-American community that strengthens the Israeli and Jewish identity of our next generations, the American Jewish community, and the bond between the peoples of the United States and the State of Israel. 
www.israeliamerican.org/boston

Israel Complimentary School
ICS is a nonprofit afterschool program for Hebrew-speaking students ages 3 to 13. Classes take place biweekly in the afternoon. While away from Israel, kids keep up with Hebrew reading and writing, Bible, holidays, and community. 
www.boston-ics.org

Israeli House Boston
Israeli House provides the Israeli community with cultural events, children's activities and holiday celebrations, all in Hebrew. 
http://embassies.gov.il/boston/Departments/Pages/Israeli-House.aspx

Israeli School in Lexington
The Israeli School in Lexington is a nonprofit educational organization that teaches and reinforces the Hebrew language through reading and writing studies, Jewish history, and Israeli culture, through Bible stories, civic education, and learning about Jewish and Israeli holidays. 
http://israelischooloflexington.org

Jewish Community Relations Council
JCRC engages people from diverse backgrounds to foster civil dialogue and build support for Israel through community education, cultivating relationships, leading Study Tours to Israel with community leaders, and supporting national efforts through the Jewish Council for Public Affairs. 
https://www.jcrcboston.org/our-programs/israel-engagement/

Women's Gathering
Women's Gathering is a group of Israeli women who live in the Boston area, offering social, educational, and cultural events to support and enrich each other with a variety of lectures, workshops, and discussions. 
www.womensgathering.net

Culture

Boston Jewish Film Festival
BJFF celebrates the richness of the Jewish and Israeli experience through film and media. 
http://www bjff.org/

Boston Reads Hebrew
The Boston-Israel Power Partnership helps the university to recruit and retain outstanding faculty, build teaching and research facilities, provide scholarships and fellowships, and advance basic and applied research in myriad vital fields.

American Friends of Tel Aviv University
AFTAU serves as a dynamic bridge between American and Israeli leaders dedicated to excellence in scholarship and to strengthening the State of Israel.

American Healthcare Professionals and Friends for Medicine in Israel
APF is an organization of physicians and health care professionals committed to advancing the state of medical education, research, and care in Israel by assisting in the training of young Israeli physicians and healthcare professionals, and in fostering ties between the North American health care community and Israel’s health care community.

American Society of the University of Haifa
The American Society of the University of Haifa (ASUH) increases visibility and financial support for the University of Haifa to ensure its continued excellence in academic research, education, and communal activities. ASUH cultivates relationships and serves as a vital connection between the University and its friends, alumni, and partner institutions in the United States.

American Technion Society of New England
ATS provides critical support to the Technion-Israel Institute of Technology, ranked among the world’s leading science and technology universities. ATS provides funds for scholarships, fellowships, faculty recruitment and chairs, research, buildings, laboratories, classrooms and dormitories, and more. Its mission is to enable the Technion to be among the world’s leading institutions improving the well being of Israel and all humanity through leadership in science and technology.
CJP / Israel & Overseas
http://www.cjp.org/about-us/our-mission
CJP and its Israel & Overseas Initiative creates strong connections with Israel and offers educational programs about the close economic, cultural, and strategic ties we share; establishes aid and relief programs in struggling communities; responds to crises; and empowers people to advocate for Israel.
http://www.cjp.org/our-work/israel-overseas

Friends of the Arava Institute
The Friends’ mission is to support the critical work of the Arava Institute for Environmental Studies through public awareness, student recruitment, and fundraising campaigns. http://arava.org/about-our-community/contact/

Friends of the Israel Defense Forces
The Friends mission is to offer educational, cultural, recreational, and social services programs and facilities that provide hope, purpose, and life-changing support for the soldiers who protect Israel and Jews worldwide. fidf.org/page.aspx?pid=315

Israel Ride
The Israel Ride is the premier cycling experience in Israel. Enjoy five glorious days of biking, with route options for recreational riders and experienced cyclists. The Israel Ride is a fundraising event benefiting two innovative organizations: The Arava Institute for Environmental Studies and Hazon. https://israelride.org

JNF
Over the past 113 years, JNF has evolved into a global environmental leader by planting more than 250 million trees, building over 240 reservoirs and dams, developing over 250,000 acres of land, creating more than 2,000 parks, providing the infrastructure for over 1,000 communities, and connecting thousands of children and young adults to Israel and their heritage http://www.jnf.org/about-jnf/in-your-area/
The Stax, Inc. research on which this whitepaper is based measures the economic impact of company founders. The methodology of this type of analysis was first performed and later updated at MIT\textsuperscript{66}, and also at Stanford University, Technion (Israel), and Tsinghua (China).

The research for this edition was performed in 2016, and for prior editions in 2013 and 2010.

**Period of Study**

Revenue and employee information for this study was collected for the year 2015. Capital activity information was collected for 2013, 2014, and 2015.

In addition, data previously collected for the 2013 edition was updated to account for more recently available information regarding that period, and to apply stricter inclusion criteria.

**Inclusion Criteria**

A company or division was considered to be an “Israeli-founded business” and qualified for inclusion in the study if it met one or more of the following criteria:

1. A company founded in Israel, which opened an office in Massachusetts.
2. A company founded in Israel, which relocated to Massachusetts.
3. A company founded in Massachusetts by an Israeli.\textsuperscript{67}
4. A company founded in Israel, or in Massachusetts by an Israeli, which was later acquired by a Massachusetts company or a Massachusetts divisional headquarters of a company.\textsuperscript{68}
5. A company in Massachusetts that was acquired by an Israeli company.
6. A company in Massachusetts that has an identifiable product based on Israeli-intellectual property.\textsuperscript{69}

**Research Sources**

Stax, Inc. employed primary and secondary data sources in the three editions of this research to:

- discover a list of potential companies for inclusion;
- determine which companies met the inclusion criteria;
- gather revenue, employee counts, and capital activity for each qualified company;
- calculate key ratios, such as industry multipliers, and percentages of Massachusetts GDP, employment, and capital transactions;

Primary sources of company data, which were considered to be authoritative sources, included:

- interviews with founders and management of qualifying firms;
- SEC filings;
- Company annual reports, press releases, and websites;

Secondary sources of company data, which were corroborated with other sources whenever possible, included:

- News stories from business and industry publications, including Bloomberg, Boston Business Journal, Boston Globe, Forbes, Globes (Israel), Israel21C, TechCrunch, Times of Israel, Xconomy, and others.
- LinkedIn;
The Boston-Israel Power Partnership

The Boston-Israel Power Partnership

an acquirer with no continuing product revenue stream, were deleted from 2015, so that the compound annual growth rate (CAGR) as reported reflects true net growth.

Accounting for Employees

Employment was counted as of year-end 2015. When specific year-end 2015 data was unavailable, for example, due to differences between fiscal and calendar years, an approximation was used.

For the comparison between 2015 and 2012 employee counts, the cohort of companies identified in the earlier study by Stax, Inc. was used as the basis of comparison. Employment figures for 2012 were updated if better information was available. To determine jobs growth between 2012 and 2015, new companies that met the study's inclusion criteria were added. Also, companies that left Massachusetts, or failed, or were absorbed by an acquirer with no continuing product workgroup, were deleted from 2015, so that the compound annual growth rate (CAGR) as reported reflects true net growth.

Accounting for Capital

Capital activity was counted for the period January 1st, 2013 through December 31st, 2015.

Venture capital (including convertible notes) and growth equity investments were counted, but not grants, debt, or public offerings.

For companies with offices both inside and outside Massachusetts, capital activity was adjusted based on the following criteria:

1. For firms with only a Massachusetts location, all capital was counted.
2. For firms globally headquartered in Massachusetts, all capital was counted.
3. For firms with U.S. headquarters in Massachusetts but global headquarters outside the U.S., only U.S. capital was counted.
4. For firms with a Massachusetts office, but not the U.S. or global headquarters, no capital was counted.

For the comparison between 2015 and 2012 capital, the cohort of companies identified in the earlier study by Stax, Inc. was used as the basis of comparison. Capital activity figures for 2012 were updated if better information was available. To determine capital growth between 2012 and 2015, new companies that met the study's inclusion criteria were added. Also, companies that left Massachusetts, or failed, or were absorbed by an acquirer with no continuing product workgroup, were deleted from 2015, so that the compound annual growth rate (CAGR) as reported reflects true net growth.

Accounting for Revenue

Revenue information was collected for calendar year 2015. When specific calendar year 2015 data was unavailable, for example, due to differences between fiscal and calendar years, an approximation was used.

Revenue was included in the study based on the following criteria:

1. For firms with only a Massachusetts location, all revenue was counted.
2. For firms globally headquartered in Massachusetts, all revenue was counted.
3. For firms with U.S. headquarters in Massachusetts but global headquarters outside the U.S., only U.S. revenue was counted.
4. For firms with a Massachusetts office, but not the U.S. or global headquarters, no revenue was counted.

For the comparison between 2015 and 2012 revenue, the cohort of companies identified in the earlier study by Stax, Inc. was used as the basis of comparison. Revenue figures for 2012 were updated if better information was available. To determine revenue growth between 2012 and 2015, new companies that met the study's inclusion criteria were added. Also, companies that left Massachusetts, or failed, or were absorbed by an acquirer with no continuing product revenue stream, were deleted from 2015, so that the compound annual growth rate (CAGR) as reported reflects true net growth.

To calculate key ratios, Stax, Inc. employed data from:

- RIMS II (Regional Input-Output Modeling System), as provided by the U.S. Bureau of Economic Analysis, applying to each company the best fit of different Massachusetts- and industry-specific multipliers;
- U.S. Bureau of Labor Statistics;
- U.S. Census Bureau; and
- “Venture Capital & Entrepreneurship in Massachusetts” published by the National Venture Capital Association.

» Industry reports;
» Online databases (PitchBook, CrunchBase, and others).
the U.S. or global headquarters, no capital was counted.

Regarding M&A, the value of a transaction was counted:

» Only if the acquired company had its U.S. or global headquarters or relevant divisional HQ in Massachusetts.

» At the reported market total value of the transaction, regardless of the structure of the deal, e.g. percentage of equity or cash.
The research project and production of this whitepaper was funded by CJP of Greater Boston, Terrie & Brad Bloom, and additional donors. The author is most appreciative for their support.

All errors, omissions, and opinions expressed in this whitepaper are solely the responsibility of the author.

Stax, Inc., a global strategic consulting and research firm, conducted the primary research described in this whitepaper in 2016, 2013, and 2010. Specifically, data presented in the section titled “Israelis Entrepreneurs Choose Boston To Build Global Businesses” is based on Stax’s research. For their diligent work and insights, the author whole-heartedly thanks the Stax team for the 2016 edition—Rafi Musher, Paul Edwards, Eran Meron, Jaymie Testa, and Yevgeniy Volodin—as well as the team members who performed the research of the prior editions, on which the current edition stands.

The author is indebted to TAMID @ Boston University, a pro-bono consulting group promoting ties to Israeli business, for performing additional research, analysis, and writing. Specific contributions by the TAMID team are noted in the footnotes. Many thanks to Sarah Eskreis, Jess Goldberg, Miriam Lelah, and Danielle Simpson.

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My apologies for any omissions in the list above. Be assured, your efforts were greatly appreciated.

To reach the author of this whitepaper, please connect via LinkedIn: www.linkedin.com/in/dgoodtree
Endnotes

3. Jess Goldberg of TAMID @ Boston University contributed research and analysis to this section about capital.
4. Although the capital attracted by these companies can be deployed in any of their locations – Massachusetts, Israel, or elsewhere – to estimate their impact on the Commonwealth, transaction value is allocated based on the methodology described in Appendix C.
5. 152 investments transactions of qualifying companies were researched to determine the name of the investor, across 46 investments rounds (seed through series E) in 33 companies in the period 2013 to 2015. If the investor was a firm with only one location, that location was used in the analysis.
6. Research assistance about acquisitions between Massachusetts and Israeli-founded business was provided by Jess Goldberg of TAMID @ Boston University.
10. Of 152 founders for whom post-secondary information is available, 45 attended a Massachusetts college as an undergrad, graduate student, or post-doc. This analysis of founders’ post-secondary education was performed by Andrew Savage of Brandeis University in 2012.
11. Thanks to Dan Trajman for the information about Scitex.
12. Some of the acquirers are Massachusetts-headquartered businesses like Boston Scientific, and sometimes the acquirer is a divisional headquarters based in Massachusetts, such as IBM Security.
13. Contributing to the research on acquisitions were Jeff Goldberg of TAMID @ Boston University and Andrew Savage of Brandeis University.
15. For the 100 most educated places in America, see https://www.nerdwallet.com/blog/cities/most-educated-top-cities-2015/ Beyond Brookline (#2) and Newton (#7), other Massachusetts cities placing in the top 100 include Lexington (#8), Cambridge (#11), Arlington (#30), Northampton (#71), and Watertown (#84).
17. Sources used for this section: QS World University Rankings, www.topuniversities.com
21. Sources used for this section include:
For a list of incubators & accelerators, see http://bostonstartupsguide.com/guide/every-boston-startup-accelerator-incubator.
For a list of co-working spaces, see http://bostonstartupsguide.com/guide/boston-coworking-spaces-roundup/.
To stay on top of Boston-area start-up news and resources, some of the many sources available include:
BostonInno -- boston.streetwise.co
Xconomy – www.xconomy.com/boston/

22. Sources used for this section on the state’s bio-pharma industry:
Massachusetts Life Sciences Center, http://www.masslifesciences.com/why-massachusetts

23. Sources used for this section on the state’s medical device industry:
MassMedic, www.massmedic.org

24. Sources used for this section about the state’s eHealth industry:
For more about MeHI, the Massachusetts eHealth Institute, see http://massdigitalhealth.org/ehealth-cluster/initiative/“Insights Annual Report” (for 2014 and 2015), StartUp Health, https://www.startuphealth.com/page/reports

25. For information about on IBM’s hiring push in Massachusetts, the opening of the IBM Mass Lab, and IBM’s acquisitions in Massachusetts, see:

26. Sources used for this section about the state’s marketing & adtech industry:

27. Sources used for this section about the state’s energy tech industry:

28. Sources used for this section about the state’s water tech industry:
“Massachusetts Water Technology Industry Roadmap” by the Massachusetts Clean Energy Center (MassCEC), http://www.masscec.com/studies-and-research/massachusetts-water-technology-industry-roadmap
Massachusetts Water Industry Market Map, a 2 x 3’ poster representation of the state’s water industry, at http://www.slideshare.net/dgoodtree/ma-water-industry-market-map

29. Sources used for this section about the state’s medical device industry:
Massachusetts Life Sciences Center, http://www.masslifesciences.com/why-massachusetts/industry:
The SELro product of Koch Membrane Systems (Massachusetts) is based on technology licensed from Israeli researcher at MIT, Natan Parsons, whose technology achieved broad market acceptance in partnership with Sloan Valve. http://65.166.89.34/About_Us/Natan_Parsons.aspx
The project finance for the $1b California desal plant by IDE (formerly known as Israel Desalination Enterprises) was raised by Boston’s Poseidon Water. http://poseidonwater.com/our-projects/all-projects/carlsbad_project/
In addition:
The intellectual property behind Oasys Water (of Boston) was created by a Hebrew University-educated professor, Yale’s Menachem Elimelech. https://yalealumnimagazine.com/articles/3664?page=3

30. The widely used sensor-activated faucet was invented by an Israeli researcher at MIT, Natan Parsons, whose technology achieved broad market acceptance in partnership with Sloan Valve. http://65.166.89.34/About_Us/Natan_Parsons.aspx
The project finance for the $1b California desal plant by IDE (formerly known as Israel Desalination Enterprises) was raised by Boston’s Poseidon Water. http://poseidonwater.com/our-projects/all-projects/carlsbad_project/
In addition:
The intellectual property behind Oasys Water (of Boston) was created by a Hebrew University-educated professor, Yale’s Menachem Elimelech. https://yalealumnimagazine.com/articles/3664?page=3


32. The Emergency Bandage is manufactured by First Care Company was first formed.
WileyTitle/productCd-3527313168.html

33. To stay on top of Boston-area start-up news and resources, some of the many sources available include:


35. The PwC 2015 High-Tech Exit Report. Ibid.


38. Israeli Life Sciences – all sectors:


47. A description of the government of Israel’s “Technological Incubators Program” and a list of licensed incubators can be found at: http://www.incubators.org.il.

For more about all the programs of the Israeli Office of Chief Scientist, see: http://economy.gov.il/Publications/Publications/DocLib/RnP_IncentivePrograms_English.pdf.

For BIRD’s annual report, see: http://www.birdf.com/?CategoryID=370.

The state-by-state analysis of BIRD recipients was performed with research assistance by Miriam Lelah, of TAMID @ Boston University.


Credit to Michael Bohnen for calling this information to the author’s attention.

50. Appreciation to David Dolev, Managing Director, MIST MIT-Israel for his valuable contributions to this section.

51. Sources for this section include:

• Comments delivered by Kurt Schwartz, director of the Massachusetts Emergency Management Agency, at a private recognition ceremony titled “Boston Thanks Israel,” hosted by Massachusetts Governor Deval Patrick on May 28, 2014 at the Yitzhak Rabin Center in Tel Aviv. At that ceremony, executives of the organizations mentioned were all awarded proclamations of appreciation by the Governor. In addition to members of the Governor’s delegation who were attendance, special presenters included Peter Slavin, President of Massachusetts General Hospital, and Barry Shrage, President of CJP of Greater Boston.


http://www.youtube.com/


54. Research on Governors trade missions to Israel was aided by Miriam Lelah of TAMID @ Boston University.


59. Technion’s “Technological Entrepreneurship” class, taught by Nobel Prize winner Dan Shechtman and business school professor / innovation expert Shlomo Maital, is the most heavily enrolled class at the institute.

Technion alumni generated $21 billion and 78,000 jobs in Israel’s high-tech annual revenue in 2011, or some 20% of the annual output of Israel’s most important sector. See http://www.timesofisrael.com/nobel-winner-has-tips-on-how-to-succeed-as-a-start-up/ and http://www.nytimes.com/2013/04/14/education/edlife/inside-the-technion-israels-premier-technical-institute-and-cornells-global-partner.html?

and and http://pard.technion.ac.il/technion-nation-statistics-the-creative-power-of-technion-graduates/ and Frenkel, Amnon, and Shlomo Maital, Technion Nation: Technion’s Contribution to Israel and the World, Samuel Neaman Institute for Advanced Studies in Science and Technology, 2012. Tel Aviv University alumni are CEOs of more start-ups worldwide than other Israeli institution. See ibid, Woolf, Max, Which Universities Produce the Most Start-Up Founders?

60. For more information about Masa, see http://studyabroad.masaisrael.org/.

For information about Israel’s college enrollment, see: http://www.jpost.com/Israel-News/Over-300000-students-kick-off-new-academic-year-at-Israelis-colleges-universities-379857.

For degrees granted by state, see: http://highereddatastories.blogspot.com/2012/12/degrees-awarded-by-state-2012.html

61. For details on the Global Entrepreneur-in-Residence program at the University of Massachusetts / Boston, see http://vdc.umb.edu/geir/.

For an editorial co-authored by GEIR co-founder Jeff Bussgang of Flybridge Capital, see www.bostonglobe.com/opinion/2016/04/04/don-send-foreign-entrepreneurs-packing/Rlyeo0L6sDhYtcKi8UM/story.html.

For details on the state’s program, see http://massotech.org/innovation-institute/projects-and-initiatives/global-entrepreneur-residence-pilot-program.


For Meetup events run’s by Citi Lab in Israel, see http://www.meetup.com/Citi-Accelerator/.


About Israel’s fintech sector: http://techcrunch.com/2015/12/19/israels-flourishing-fintech-has-many-fathers/.


65. For research for this section was partly performed by Danielle Simpson of TAMID @ Boston University.


67. This individual must be identified in company materials as having been one of the founders. The definition of a qualifying Israeli founder is: a current Israeli citizen and resident; or

having been one of the founders. The definition of a qualifying

individual must be identified in company materials as having been one of the founders.

68. The acquired company’s technology must continue as part of the acquiring company’s product portfolio, and be clearly identifiable in the company’s product literature.

69. The Israeli intellectual property must continue as part of the acquiring company’s product portfolio, and be clearly identifiable in the company’s product literature.