

Ronen Weinberg

EcoMotion: Smart Transportation Community or How the Government Paid for Entrepreneurs' Beers

Boaz Mamo, co-founder and the Executive Director of EcoMotion, a smart transportation community was about to meet with EcoMotion's steering committee on June 2016 to discuss the future of EcoMotion. Government officials were also expected to attend the meeting to see how EcoMotion's success could be duplicated in other fields.

Mamo was prepared for the meeting. He remembered the hurdles facing him from the start when he and his colleagues, Meir Arnon and Dr. Leonid Bakman began to develop an efficient entrepreneurial ecosystem for the transportation sector that associated government, industry and academia with no strings attached. He was considering adapting the model to other fields but knew it would be hard to accomplish.

In addition, the world of transportation has been changing dramatically, as a result of increased digitalization. EcoMotion was growing rapidly in all areas, but Mamo and its steering committee felt that this rapid continuous spurt might soon slow down. They wanted to be prepared for this. The time had perhaps come to update EcoMotion's vision.

It was no secret that EcoMotion had accomplished a great deal with a relatively low budget and a small number of employees. Changing EcoMotion's trajectory might require abandoning several lines of activities or even increasing the budget. A brain-storming session with EcoMotion's team members had given Mamo a few ideas which he thought were promising to drive EcoMotion to the next level. He thought that the transportation community he had dreamed about and had turned into a reality still had much to offer.

Israeli Automotive Industry Background ^{1,2}

There have only been two serious attempts to develop a local vehicle production base in Israel. Israel's involvement in the automotive business began in Haifa in 1951, when Kaiser-Frazer opened a major assembly line; the factory built Kaiser-Frazer cars and Mack trucks under license. In 1968 Kaiser-Frazer was sold to Autocars Ltd. The company manufactured Sussita, Carmel, Gilboa and Sabra models in the 1960s. Their car bodies were made of fiberglass. Autocars was bought by Rom Carmel Industries in 1974 and the last full year of production was 1980. (See **Exhibit 1** for car models produced in Israel).

In 1990 there were roughly 60 companies working on conventional mechanical automotive technologies such as transmission parts or air filters. The last decade of the millennium saw rapid growth in the number of firms, with the technology focus of new companies more on electric and autonomous mobility (See **Exhibit 2** for the evolution of the Israeli automotive and mobility startups and their financing).

Prior to 2000, only a small number of companies relied on seed funding. Driven by the Internet bubble around the turn of the millennium, more and more business founders began searching for seed funding, and many still rely on it today. The Israeli government fostered this process by enacting the Angel's Law in 2011, updated in 2016 to reduce bureaucracy. In essence, this law provides tax benefits to investors who invest in

companies still in their early R&D stage. Foreign investors can even enjoy a tax write-off option and exemption from Israeli capital gains tax.

In 2016, the Israeli automotive and smart industry was home to more than 500 companies ranging from well-established businesses to young startups still in their founding phase. This variety can be structured in five major content clusters: electric mobility, autonomous mobility, smart mobility, conventional vehicle technology, and other topics. The electric mobility cluster comprised about 15 percent of all industry sector businesses whose activities ranged from the production of smaller full electric vehicles and electric powertrain components to charging infrastructure solutions. The autonomous mobility cluster accounted for about 17 percent, and includes companies that developed products such as fully autonomous vehicles for urban use, drones, and advanced driver assistance systems (ADAS) based on sensor technologies often derived from defense applications. The smart mobility business sector (about 40 percent) was highly fragmented with a wide variety of unique service offers ranging from infotainment and connectivity solutions, shared mobility applications and smart navigation and transportation systems to parking and Big Data solutions. The conventional vehicle technology cluster (about 25 percent) covered areas such as engine development, while the final cluster included other fields such as alternative fuels. Spillover effects from successful companies, such as Waze or Mobileye prompted the growth of further startups in the same area (See **Exhibit 3** for the structure of the Israeli automotive and smart mobility industry).

At the same time, new business sectors arose and grew quickly in Israel and provided new opportunities for both the traditional players as well as the startups in the automotive industry. Developing innovative software in the rigid, traditional ecosystem of an automotive company was challenging for startups without a strong partnership network. For traditional automotive players it was vitally important to establish strategic cooperation to acquire both the know-how and the characteristically effective functioning of a startup culture. Simultaneously, young entrepreneurs became increasingly excited about being part of a big success story if companies like Google, Apple, BMW, GM or Ford invest in their ideas. (See **Exhibit 4** for an overview of selected OEM/OES activities in Israel in 2016)

EcoMotion's Background

EcoMotion was established as a brand: a joint venture of the Fuel Choices and Smart Mobility Initiative of the Prime's Minister's office, the Israel Innovation Institute, the Ministry of Science and Keren Hayesod – United Israel Appeal (several years later, Keren Hayesod – UIA left EcoMotion and the Ministry of Economy and Industry replaced the Ministry of Science). These entities were EcoMotion's key players. EcoMotion created non-profit activity in the smart transportation sector that brought together young and experienced entrepreneurs, market leaders, international and local industry companies, technology-oriented people, policy makers, academic researchers and investors.

EcoMotion was designed to be a building block for a broader strategy. As Eyal Rosner, the Chairman and Director of Administration of Fuel Choices Initiative in 2012-2016 explained, "The government mandated us to build an ecosystem for transportation and energy, with quantitative targets concerning the number of start-ups, research groups, and external investments in this sector".

Fuel Choices and Smart Mobility Initiative

On July 2, 2010 the government of Israel passed a resolution stating that it "sees research, development and implementation of technologies that reduce global oil use in transport as a national mission that requires harnessing national resources and sets this goal as a top priority in light of strategic national interest, environmental considerations, and economic potential"³. The Fuel Choices initiative (later to become the Fuel Choices and Smart Mobility Initiative), Israel's program for fuel's alternatives and smart mobility was launched the following year as a joint effort of ten government ministries: Energy, Transportation, Economy,

Environmental Protection, Science, Finance, Defense, Agriculture, Foreign affairs and finally, the Prime Minister's office which led the initiative. Its mission was to serve as a catalyst for the reduction of global dependence on crude oil by establishing Israel as a center of knowledge and industry in the area of fuel's alternatives and smart transportation. It was multidisciplinary in its nature and international in scope.

As Rosner stated, "The initiative derives from Israel's strategic need and consequently, its ambitious goal to dramatically decrease the reliance on oil in transportation. Moreover, Israel aims to serve as a showcase for the world in ways to restrict the strategic power of oil by providing fuel choices that increase economic efficiency and drastically reduce air pollution and global warming".

Israel Innovation Institute

The Israel Innovation Institute, a non-profit organization, was founded in 2010 by Dr. Bakman. The Israel Innovation Institute encourages the development and implementation of cutting-edge solutions to promote a quantum leap in the public sector. The Institute supported the socioeconomic development of Israel and its positioning as a driver of innovation. Its mission had two key pillars: transforming innovation to serve society and establishing Israel as a center for innovating solutions to global challenges⁴.

The Israel Innovation Institute focuses on three circles of influence: public sector employees by empowering them and upgrading their work environment; entrepreneurs and hi-tech companies that can provide groundbreaking solutions for global challenges and finally decision and policy makers who can promote regulations and intervention policies.

As change, even "good" change is threatening, the Israel Innovation Institute has adopted and designed methods to facilitate radical (disruptive) change in fields of national importance with two main tools: (1) an innovation community which reached across sectors and is designed to develop human capital, a common language and trust between public sector professionals, companies, entrepreneurs and policymakers. It has facilitated opportunities to meet, learn and work together, and develop social capital and domain ecosystems to reinforce continued collaboration; (2) Living Labs, which supports projects in specific fields that promote and guide the introduction of technology and groundbreaking solutions to enable industry and public sector leaders to work together in "real-world" settings. Living Labs worked to define market needs, support development processes, experiment and demonstrate value, implementation and scaling-up.

Keren Hayesod- United Israel Appeal

Keren Hayesod - United Israel Appeal, has been at the forefront of Israel's growth and progress for over nine decades. Founded in 1920 as the fundraising arm of the Zionist movement, Keren Hayesod played a decisive role in marshalling the resources needed to establish an independent, sovereign state and helped lay the foundation for the new state. With the help of donations from throughout the world, Keren Hayesod brought tens of thousands of Jews fleeing Europe to Israel, helped absorb them and started over 900 urban and rural settlements. It provided the newcomers with homes and jobs, and developed the economic, educational, and cultural framework of Israel. After Israel's independence, Keren Hayesod-UIA became one of the country's national institutions; the 1956 "Keren Hayesod Law" recognized the organization's unique status.

Today Keren Hayesod-UIA is registered in Israel as a public benefit company, and is a non-profit organization. In partnership with the global Jewish community and Friends of Israel in over 45 countries worldwide, Keren Hayesod-UIA helps further the national priorities of the State of Israel. Foremost is rescuing Jews from places where their lives are in peril, encouraging aliyah and absorbing new immigrants. In addition, scores of projects and initiatives are designed to strengthen weaker populations in Israel, to provide opportunity for disadvantaged youth, and to connect young Diaspora Jews to Israel and to Jewish life.⁵

The Beginning (2012-2013)

Sagi Dagan, the Acting Director of the Fuel Choices Initiative (2011-2013) who wrote the government resolution was appointed by the government to make it happen. Dagan understood that in order to create start-ups, an entrepreneurial ecosystem was required to provide innovative solutions. This ecosystem would have to enable the flow of knowledge between ecosystem members and focus on the different needs and solutions. Furthermore, entrepreneurs had to be a part of industry in order to make it innovative. The main question was how to bring these entrepreneurs in: "We understood that entrepreneurs are not only attracted by high salaries, otherwise they would have worked in R&D, in fact, they come where there are challenges, interest and fun", Dagan said.

Based on such initiatives as Kiner.net and Mahanet - a military event designed to encourage creativity and thinking out of the box, whose purpose is to bring together and connect creative people from different development departments in the defense system, Dagan decided that this type of community had to be set up. He thought that if people are invited to an event where they have a good time networking would be a natural outcome. Dagan contacted Bakman, an old acquaintance, and Mamo who worked at the Israel Innovation Institute and asked them to lay the groundwork for such a community.

At the same time, Bakman was interested in clusters and ecosystems development. He was reading the works of Prof. Woody Powell (one of the world's greatest sociologists currently at Stanford University) on the Network Theory. Powell's theory posits that although the development of individual ecosystems are unique there are three parameters that can be found in all clusters: (1) There is always a champion – an agent who is in charge of the flow of knowledge whose goal was to "make it work". He integrated by pushing and pulling the ecosystem parts together; (2) Each cluster has a diversity of organizational entities, not only startups but also universities, regulatory bodies, policy makers, and others ; (3) Cluster members consistently engage in an efficient flow of knowledge. It was clear to Bakman that for an ecosystem to work, evolve and be sustainable with socio-economic value all the puzzle pieces should be in place. Dagan's call came at the right time.

In 2010-2012 global trends such as clean energy, connected and autonomous cars, drones and aviation, smart city and shared economy were barely on the radar if at all. The Fuel Choices initiative and Israel Innovation Institute members clearly identified the many problems related to private cars such as accidents, loss of life, injury, health costs, congested roadways, air pollution, economic loss due to heavy traffic, etc. They predicted that these trends would become widespread in the coming years and would last for more than 15-20 years thus generating huge markets. As an advisory board member said "It was the right wave to ride on then, today everybody is excited about smart mobility".

After further investigation based on meetings with the relevant stakeholders (startups, industry companies, universities, municipalities, public entities, etc. – see **Exhibit 5** for EcoMotion types of stakeholders) it was understood that "What is interesting in Israel is smart transportation, the transition from the digital world to the world of transportation" said Mamo. They realized that they should not pursue traditional companies such as fuel substitution or engine companies but should focus on those sectors where Israeli industry had a relative advantage in terms of innovation, know-how and capabilities. Public transportation and "smart mobility" were seen as good solutions to attract venture capital, angels and other investments parties.

In 2012, Arnon (later to become EcoMotion's advisory board's Chairman) was looking for something meaningful to do that would contribute to Israel. Arnon had founded the Focus Capital Group (FCG), an investment boutique based in Israel in 1988 and had initiated and concluded various transactions, some by encouraging Fortune 100 companies to buy companies in Israel and some by acquiring troubled publically traded industrial companies. Because he had the right experience in smart mobility transportation, was highly familiar with the global and local industry and was worldwide networking player, Mamo and Bakman

realized that Arnon was the right man at the right time to help them found EcoMotion. When they met at a beachside restaurant Arnon found their enthusiasm infectious and EcoMotion was born.

All of them realized very quickly that to stay "neutral, attract entrepreneurs and avoid unnecessary bureaucracy" EcoMotion should generate non-profit activity. This helped to convince others to volunteer and offer their services without pay and spared the team many ego battles between the different stakeholders. As one of EcoMotion members explained, "The beauty of what we do is that when I meet someone, I tell him- 'my purpose is to listen to your requirements and to try and help you achieve them', I'm not trying to change what he wants, or what he needs to succeed, I try to hook him up with someone who can help him. This is priceless".

The core mandate of EcoMotion was and had been maintained to support the Israeli Smart Transportation sector, and simultaneously to position Israel as a global innovation center for Smart Transportation. EcoMotion's vision was "To position Israel as a significant factor in the smart transportation field, while attracting new and innovative entrepreneurs into the field. The penetration of the "Digital World" in transportation can promote Israel's position as a leading player in the field. This positioning is expected to contribute to reducing the use of oil for transportation, transitioning to green and more effective transportation solutions and improving the quality of life of the population"⁶.

A major part of EcoMotion's activity is funded by the government. The remainder came from the Israel Innovation Institute and later from sponsorships for main events. EcoMotion signed an annual contract with the government. The approval of these activities was granted by the steering committee (Fuel Choices Initiative, Israel Institute of Innovation and the Ministry of Science) but the main activities and strategies were defined in an open dialogue with EcoMotion's executives, its advisory board and the later on, its steering committee. This contract was renewed each year with the existing players.

EcoMotion's advisory board in 2012 was led by Meir Arnon and was made up of the Fuel Choices Initiative, the Israel Innovation Institute, the Chief Scientist of the Israel Ministry of Transportation and Road Safety, EcoMotion's Executive Director and others experts such as Yoav Chelouche, Arie Zaban and others . It was a successful, varied and diverse board with a strong business background and technical expertise in the automotive industry where each member played a defined role.

Expanding the Community (2013 - 2016)

The mission was assigned to Mamo. At first it was a "one man show" with Bakman, Arnon and the advisory board's assistance "For things to happen, someone has to do them," said Bakman. Mamo knew that it was no easy task to convince entrepreneurs and other stakeholders to be part of a government - related community with such a low working budget. He described EcoMotion as similar to the founding of a start-up: a lot of work to do with a limited budget. You are selling something that doesn't have a market yet. The end product was "Israel is a leader in transportation" and the networking itself.

"It's all about people", explained Mamo, "A very powerful core has to be created that works together and should include the start-ups, academia, government and industry. Start-ups always have the spotlight on them, but there are other no less important players who create a powerful network effect. This network creativity brings people together and lets them communicate, consult and hear one another".

It was hard to convince people that Israel could become a leader in the smart transportation market, "When you talk with people about "transportation" and "Israel" the first thing that came to mind was "Sussita" (the car manufacturer). That was not our intention", explained Mamo. His management method focused on providing the community members all the help they needed all the time, being stubborn enough with unique ideas to make it happen, constantly fine-tuning the big picture while going into details at the same time, having both the "top down" and "bottom up" approaches.

Additional support came from the Fuel Choices Initiative. As one of the start-up executives stated, "In addition to EcoMotion, the Fuel Choices Initiative should also receive a citation for EcoMotion. Their vision and support oriented the government in the right direction". Through its efforts Israel's entire arsenal of diplomatic relations was at the disposal of EcoMotion's members and played a significant part in "opening doors" for EcoMotion and its members.

The next step was to build the right team, by finding the people who had the appropriate capabilities for the community to succeed. It was clear to Mamo, Bakman and Arnon that as in all start-ups, individual contributions are crucial. Not only was the background of each of the team members important but also their personality, motivations, sensitiveness, openness, emotional intelligence and capabilities. They looked for people who could bridge between the different entities, establish credibility with entrepreneurs and had marketing skills along with deep understanding of the field. Mamo realized that he could not afford to have a large team because of budget restrictions - although a team of 8-10 people would have been more appropriate for the tasks ahead he could recruit only 2-3 people and provide backup from the support system of the board and the steering committee. He recruited Lior Zeno-Zamanski who replaced him later as EcoMotion's executive director.

Mamo grasped the fact that the EcoMotion market was all about digitization, a digital market that was ready for new technologies and innovation. In order to expand the community, a national and international buzz had to be created. At first, the main idea was to hold just one annual event, but EcoMotion's team realized that for efficient networking, many events had to be scheduled throughout the year. Mamo developed and implemented a work process which he ameliorated every year. EcoMotion also used social networks in a fast, clever and dynamic way.

At that time, EcoMotion organized several events per year tailored to specific sectors in smart Transportation including workshops, investor events, challenge competitions, hackathons, exhibitions and meetups along with mentoring services, networking and even financial support through start-up competitions. These meetings culminated in the annual event featuring presentations, workshops, and networking opportunities for entrepreneurs, industry leaders, researchers and investors. Zeno-Zamanski noted that "The whole idea is based on networking. We bring people together, in certain atmosphere that encourages collaboration and innovation. Bring content, bring people and create value. We want to give added value to the community members".

Because entrepreneurs are typically more free-spirited, Mamo didn't want to associate EcoMotion directly with the government, and instead tried to create a friendly environment. "A real exchange of social capital exists where the social capital is high. Places where there is trust and interactions between the different members. Through dialogue, a common language is created, whereas through trust you create the willingness to use the common language. Together an effective interaction is created", explained Bakman, "Add beer to the equation, makes the whole process and the interaction much faster. EcoMotion essence was to create this social capital".

EcoMotion's Annual Main Event

Prior to the annual main event, the EcoMotion team had thought of several "out of the box" events including a convoy of cars running on fuel's alternatives from the Golan to Eilat, a non-fuel golf-car competition, a race from the Dead Sea to Sde-Boker, a race downhill the Manara cliff. There was a consensus that these events would not produce enough networking and would not attract start-ups to the community.

The main anchor for EcoMotion activities is the annual main event which takes place in May. In the spring of 2013 the first main event took place at Kibbutz Sdot-Yam. Mamo insisted that for good networking during the building period it should last for two days with overnight accommodation, joint activities in the evening such as car dismantling, and be fully paid for by EcoMotion.

Mamo argued that to attract entrepreneurs and increase their networking, low entrance fees should be charged (in contrast to conference entrance fees worldwide, which can be as much as thousands of dollars). EcoMotion spent about 0.5 Million - 1 Million NIS on each main event.

"It was great", said a community member, "It was new and innovative we stayed for both days". In 2013, a successful event meant "That next year another event will take place", said Dagan. The program itself was finalized the morning of the event, "There was an empty board with a few pivotal presentations scheduled, and people could come and schedule their presentations", said Dr. Anat Bonshtien (currently the acting Chairman and Director of the Fuel Choices and Smart Mobility Initiative). For the first event the focus was on the Israel market, with no international partners. The event was attended by 250 participants thanks to the hard work by Mamo, his team, the EcoMotion advisory board and the Fuel Choices Initiative. Arnon recalled that "we "forced" people to come. I called them and said "you must come". For the second event early registration was closed before the event started. For the most recent event there was a waiting list of a few hundred people". People suddenly realized that they are not alone, there are many stakeholders in the smart mobility field, "It empowered people". The excitement was enormous.

The preparations for a main event take about 6 months. During the early years these main events were at an "impossibly low budget" It was one of EcoMotion's main tools to analyze its progress and measure its success (see **Exhibit 6 – Exhibit 8** for the number of known start-ups, participants in main events, and start-up presenters at the main events from 2013 to 2016), "I believe that there are many start-ups who would not have been founded if EcoMotion and the Fuel Choices initiative had not been there for them, they gave us a huge boost", one entrepreneur commented. However, as good as it sounded, not everyone was satisfied after the first event, "I remember that I was depressed after the first event" Bakman said. "There were only a handful of companies that specialized in digitalization. We understood that we had to work hard to connect the hi-tech and the transportation world. We understood we needed to focus on areas such as cyber, car connectivity, autonomous driving and the like". Mamo started to visit cyber and IT companies around the world, giving them lectures on car connectivity, car cyber, digitalization in the automobile industry and the related technologies that existed in Israel.

Over the years, a significant number of local industry players have made their public debut through EcoMotion. Unknown companies and technologies entered the arena. Executives from the international automotive industry and investment entities became familiar with EcoMotion and attended its events. Local venture capital also became interested as years went by. Initially there were no venture capital representatives at EcoMotion events, but as the buzz around EcoMotion increased and the number of international executives and participants startups began to rise, VC became more interested and started to go to EcoMotion events and eventually invested in smart transportation start-ups.

In 2015 and 2016, the EcoMotion annual events were so big that they were held at the "Perez Center for Peace" on the Jaffa beachfront. With beer in plastic caps, parasols and overseas guests roasting in the Tel-Aviv sun, the event looked like a beach party, and turned the gathering into a bouncy fun-filled experience, thus helping to create a strong network. In 2016, there were +1000 people registered, 200 startups, 60 startups in the exhibition, 40 international companies and 400 liters of beers.

Entrepreneurs' Exhibitions, Investors' Events, Challenge Competitions and Hackathons

The EcoMotion team constantly searches for transportation niches where there was little activity and then decided to target them. It arranges exhibitions and conferences dedicated to specific issues and identified trends before they occurred. For example, in 2013, EcoMotion held a conference on cyber secured cars which many people felt was too early at this stage, "Who will be interested in this conference? There will be no more than 30 or 50 participants", was the response they received. However, the event was very successful and was attended by 300 people who were treated to a car hacking demonstration. This event helped people realize the importance of cyber secured cars and the need to create cyber secured start-ups. On

another occasion, the EcoMotion team realized that there were many drone companies in the community and arranged a drone exhibition to increase their networking power.

EcoMotion has organized additional events that focused on other fields such as urban mobility, connected cars and others. It also arranged many biz-dev workshops and training seminars to help entrepreneurs build up their presentations, prepare a business plan, create a pitch and related skills.

The number of events has increased. In 2013 there were few meetups, May's main event, the investors' event and the "smart cities" event along with the Fuel Choices Initiative's annual event which took place in November. "Since then activity greatly increased", recalled Zeno-Zamanski, "Now, we are doing at least one event per month, probably two, in addition to EcoMotion's annual main event and Fuel Choices and smart mobility initiative's annual event which hosts the EcoMotion exhibition. There is also a major annual investor event every January which gets bigger each year: there are dozens of startups that pitch their projects. At the last event there were about 100 investors as compared to the tiny number of investors at the first investors' event".

EcoMotion also arranged hackathons in cooperation with different municipalities. Additional hackathons were organized with App4cars, app2go, Toyota, Ford and others. At the last event there were about 200 participants, 40 new projects and 5 finalists. There have been many EcoMotion events such as an event with the Metropolin in Motion forum that enabled the leading entrepreneurs in the field of transportation to meet key municipal officials and discuss transportation challenges and innovative solutions, participation in TAU's entrepreneurship's week and a workshop on the Chinese market and related investors.

International Relations

Although Israel can be a valid beta-site to evaluate products and technologies, it was realized that it is a very small market for EcoMotion's community members. The main transportation market was overseas. There was a special interest bringing international players - especially enterprises, OEMs and Tier 1 companies - to EcoMotion events. Arnon was well suited for this task since he had a close relationship with major stakeholders such as GM, Delphi, Ford Motor executives and others. With Arnon's guidance Mamo started visiting global OEMs and Tier 1 companies, discussing their needs and promoting Israel's innovation and technology. A critical mass of interested overseas companies coalesced. He reached them with a simple statement: "Tell us your needs and we will find you the solution". "The ability to find new technologies in Israel and collaborate with them was a win-win situation for both the Israeli companies and the foreign ones", a foreign M&A executive stated.

There was no overseas presence at the first main event. A year later the overseas visitors started to attend. Since then, attendance by international companies has rapidly increased (see **Exhibit 9** for international executives at the EcoMotion main event from 2013 to 2016). Large delegations came from the USA, China, Germany, France, and other parts of the world. As one international executive noted, "two years ago, there were very few people in the main event from outside Israel. Now, there are a lot of people from major foreign companies. Today a lot of OEMs think about either opening R&D centers or at least having a strong position in Israel".

Another executive noted "I'm here not only to meet people but also to see what is going on. It is a great networking opportunity. This is an advantage and a very good chance for companies outside Israel to get a first impression of what is going on in Israel's smart mobility ecosystem". He emphasized Israel's role in this industry "Technology plays a big role in the automotive industry. Obviously, Israel plays in major role in what I call deep-tech - the combination of hardware, semiconductors, sensors, software technology, Artificial Intelligence, etc."

As more and more international executives began to attend EcoMotion events, Israeli "huzpa" and the good relationships that EcoMotion team and its advisory board cultivate with international executives enable entrepreneurs to reach them directly, in real time - Mamo, Zeno-Zamanski, Arnon, Rosner and the others

literally take the entrepreneurs by the hand during the events, propel them up to international executives and tell them "now give your pitch", thus increasing the startups' exposure by directly connecting them to the decision makers, and avoiding the complex organizational hierarchy an entrepreneur normally needs to go through. Overseas delegations arrive on a weekly basis to meet with Israel start-ups with the assistance of EcoMotion's "match-making" that pairs overseas delegations to likely partners start-ups in Israel.

"Start-up Nation"⁷ did a tremendous job for Israel's reputation. This book, along with extensive networking by Mamo, Rosner, Arnon and Zeno-Zamanski helped to bring overseas executives to Israel. As a government entity, the Fuel Choices Initiative used its full force in EcoMotion's favor in that Israel's commercial attachés and diplomatic relations were harnessed to bring interested parties to EcoMotion events, many one-on-one preparation meetings organized by Rosner and the commercial attaché were fruitful and encouraged overseas executives to participate in EcoMotion events.

In addition to overseas delegations coming to Israel, Israeli delegations go abroad. Mamo and his team, along with the Fuel Choices Initiative arrange the visits. Each delegation includes several start-ups that go overseas and visit targeted companies at their facilities in Germany, China and other countries.

EcoMotion has also had several collaborations with overseas organizations such as MassChallenge (MC), a non-profit organization started in Boston which gives out over \$2M in equity-free cash prizes globally every year. Since 2010, MC had accelerated 1,211 startups that have collectively raised \$1.8B in funding, \$700M in revenue, and created 60,000 jobs in five markets (Boston, Israel, Mexico, Switzerland, and the UK).

These activities had considerable impact on the companies' internationalization in that thinking globally while understanding international cultures, behavior, values, beliefs and business strategies helped the companies to internationalize successfully. Furthermore, since 2016, many foreign automotive companies such as Renault-Nissan, Daimler, Qoros, Bosch have opened R&D centers in Israel and OEMs; Tier 1s and other investors have spent more than \$586 million investing in Israel autotech startups⁸.

Capsula

"What does any startup need? The holy trinity of money, networking and exposure", an entrepreneur noted. "Everything is personal, people will not fund people they are not acquainted with". Because start-ups mainly need money and networking, the idea to establish an accelerator was a natural conclusion. Because Mamo knew the ecosystem better than anyone, he was chosen to initiate and manage the accelerator with support from the Fuel Choices Initiative, the Israel Innovation Institute and Tel-Aviv University. This accelerator was dubbed "Capsula" and later became an entity of its own. The idea behind the Capsula was MIT Meida lab⁹ that brought innovation from academia and the startups together. To do so, the Fuel Choices Initiative (which fully funded the Capsula) contacted Tel Aviv University and set up the Institute of Transportation (known as Capsula @ TAU).

Capsula gives grants to researchers in the smart mobility field and operates the first ever government support accelerator. It helps them increase their network potential. It offers Smart Mobility startups a three months' residency focused on mentored customer validation. Twice a year, it provides them with the opportunity to practice intensive customer validation in the global market. Since customer-product fit presents the greatest risk to startups, customer validation has become the norm at leading entrepreneurship programs in Silicon Valley and beyond. Practiced diligently and intensively, it allows startups to gain market traction prior to product launch, develop a product suited to market needs and wants, and accelerate market penetration at greater capital efficiency. The Capsula program has helped startups overcome their first significant hurdles to funding and traction, by preparing their MVP (Minimum Viable Product) quickly and thus getting customer validation before starting to spend resources on R&D, "If you fail, fail fast" said a startup executive, and member of EcoMotion community.¹⁰

Capsula offers smart mobility startups deep, broad expertise in Smart Mobility and startup challenges, expert training and coaching in customer validation methodology, twinning with experienced mentors including investors, entrepreneurs and experts, an extensive reach into the Smart Mobility global value network, a grant of NIS 100,000 (~\$ 25,000) to cover customer validation expenses, a fabulous workspace at Tel Aviv University's iconic Porter Building and coaching on post-residency fundraising. In addition, Capsula's start-ups receive the commercial attaché's backup and support along with the ability to present at EcoMotion's main event and Fuel Choices and the smart mobility annual summit. Furthermore, overseas executives who come to Israel are given a tour of Capsula and meet its startups. In the first accelerator there were few competing companies, whereas in the most recent accelerator there were about 100 companies who competed to participate in the accelerator. Capsula is one of hundreds of accelerators in Israel of which only very few are focused on smart transportation. These accelerators usually supply startup tools by providing space, leads and connections while offering paid mentoring, training and coaching services for a program lasting several months.

Cultural Factors

The cultural factors that motivate Israelis to start a new business can be summed up in the claim: "It is the Israeli dream to open a startup." The business culture is direct and somewhat confrontational; people are trained in out-of-the-box thinking during their military service and develop a robust attitude towards failure and risk-taking. This combination of characteristics results in a fast speed of business. Global venture capitalists have become aware of the potential of Israel's technology and IT startup scene and are increasingly investing in the region. The dense business network culture within the country allows easy access to investors, thus speeding up company development¹¹.

Although there are technical research center worldwide established by different governments (Finland's VTT with 400 researchers, the Catapult transport system in the United Kingdom and others) there are no similar communities abroad despite the fact that budget was less of an issue abroad, and that the critical mass of stakeholders could have been reached easier. One foreign executive explained, "I don't think there is an equivalent of EcoMotion. I would say the difference is that in Israel there is greater density especially on areas that combine technical know-how such as Physics, Mathematics, Engineering, information and as a whole". Some said it had to do with Israeli's mentality, openness, willingness to share and help and the Israeli vibe and "loose tie" method along with the "Start-up nation" branding.

Mamo recalled that all the ecosystem's entities he contacted were ready to sign up immediately. Everyone was willing to spend some time to help entrepreneurs. "In Israel it was easy for me", commented Mamo, "I don't think there was anyone who gave me a negative reply, everybody in Israel is very helpful, they want to contribute and be a part of that, it's amazing. Even if at first they didn't fully understand EcoMotion, they understood that there was something interesting going on and they wanted to be a part of it. Perhaps it is because of the unique culture, everyone understands that there are risks".

EcoMotion's Future

Mamo and his team have also dealt with what EcoMotion's next steps should be. As the community has grown rapidly in the last few years "like a snowball", said Mamo, there is no longer a need to convince people to attend EcoMotion events. EcoMotion is now well-known in the smart transportation community, "You have a start-up in transportation, go and talk with EcoMotion". As the community has grown there is still much work to do to maintain all the activities and prepare all the events. The events have become larger, more frequent, with more overseas executives presenting and attending, all of which require an additional effort. EcoMotion's budget is too low for this increase. The main event itself was under-budget. There are many options and challenges such as producing hackathons all over the world along with global sponsorship, increasing the number of attendees and delegations at EcoMotion's events, selecting companies

and funding them, creating research centers, etc.. All of these required more money. Private funding could be asked for, but that would cause numerous problems and limit the community's activities since EcoMotion would then no longer produce non-profit activity.

Mamo recalled that when EcoMotion was founded an important part of its vision was to improve citizens' quality of life. As the public transportation system was lagging behind the West due to delays, inefficiency and a lack of infrastructure, the time had come to assimilate these technologies into Israel's public service with appropriate regulations based on municipal requirements and involvement. The Israel Ministry of Transport and Road Safety along with The Fuel Choices and Smart Mobility Initiative would play a major part in that as well. He recalled how companies such as Mooveit and HopOn which started as part of the community were assimilated into the public sector. He knew that the implementation of a product depended on its technology. While apps implementation (such as HopOn and Moovit) took several months, technologies such as MobileEye took a few years and systems such as ESP (Electronic Stabilization Program) took even longer to implement and receive the regulator's approval. A decision had to be made regarding the future - prioritizing the different alternatives and their resources.

Innovation Arena

The Israel Innovation Institute developed what is known as the "Innovation arena". Based on brainstorming sessions with the stakeholders' (public servants, decision makers, universities and entrepreneurs) the requirements and needs are defined for each arena, and the industry provides the solutions with pilots and beta-sites that take place at the arena itself (located in Israel).

One innovation arena is focused on preventing and reducing the numbers of accidents. Other innovation arenas might focus on reducing traffic bottlenecks, CO2 emission, etc. "The innovation arena makes adaptation of solutions in certain environments possible", explained Bakman. Building the whole process in a certain location helps move from requirement stage, via the proof of concept phase to the assimilation stage. The innovation arena has to be located in a specific geographic area to speed things up.

A Different Ecosystem

In 2016, the smart transportation community had thousands of members. The EcoMotion platform has created a unique environment which attracts people from many fields, industries and backgrounds to collaborate in solving transportation problems through an interdisciplinary approach and using creative and out-of-the-box thinking. Mamo knows that it is hard to fully identify the reasons for its success: was it due to the success of companies such as Waze, MobilEye, Gett, VIA, Argus, Innoviz and others (see **Exhibit 10** for examples of Israeli smart transportation companies), EcoMotion activities, or a combination of both? "The proof is in the pudding", said Bakman as regards the rapid increase in the automotive industry companies.

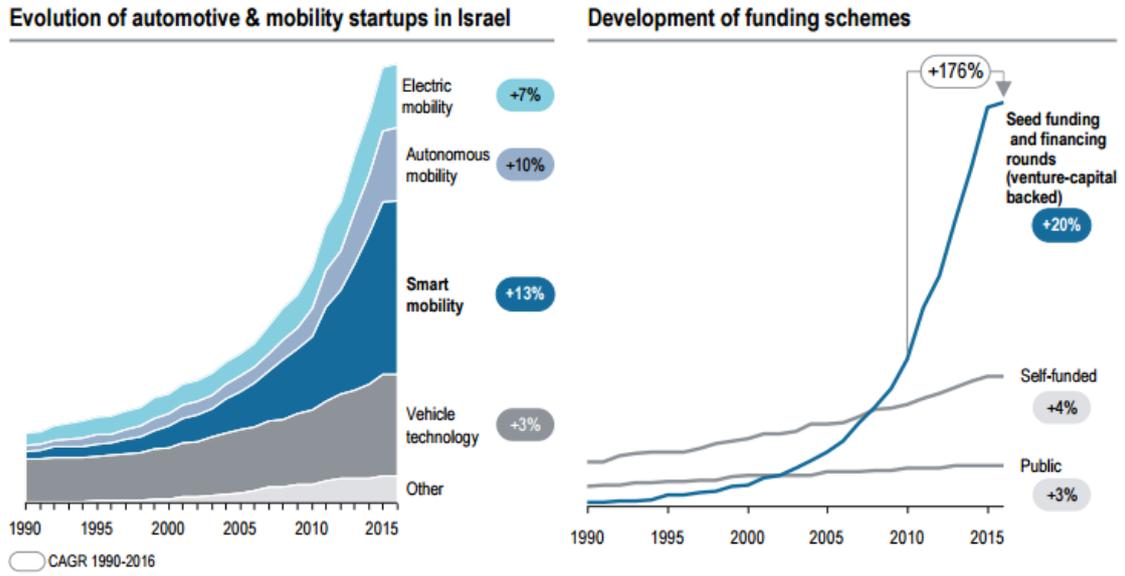
The government hopes to duplicate EcoMotion's success in other sectors. A check-list and "what to do" guide would have been helpful. Mamo knew that there were many uncertainties and questions regarding the creation and implementation of efficient entrepreneurial ecosystems. They might not work in every sector, and different environments and infrastructures might be required for the community to expand. He noted a fast growing realm with higher innovation but also the higher likelihood of failure might produce a different result than other realms. Budget was an issue as well. Other obstacles came to mind such as attracting relevant stakeholders and especially entrepreneurs, matching the requirements to the potential solutions and others. Mamo noted that it's all about people and that the networking is the most important part.

Mamo was confident that this meeting would be fruitful as usual. Entering the meeting room he remembered the hard work he and his colleagues had done from 2012, to fulfill their vision and their insights on Israel's digital advantage in the transportation sector.

Exhibit 1: Car models produced in Israel

Source: The Israel Export & International Cooperation Institute presentation, "israelautomotiveindustry-March2013-arial"

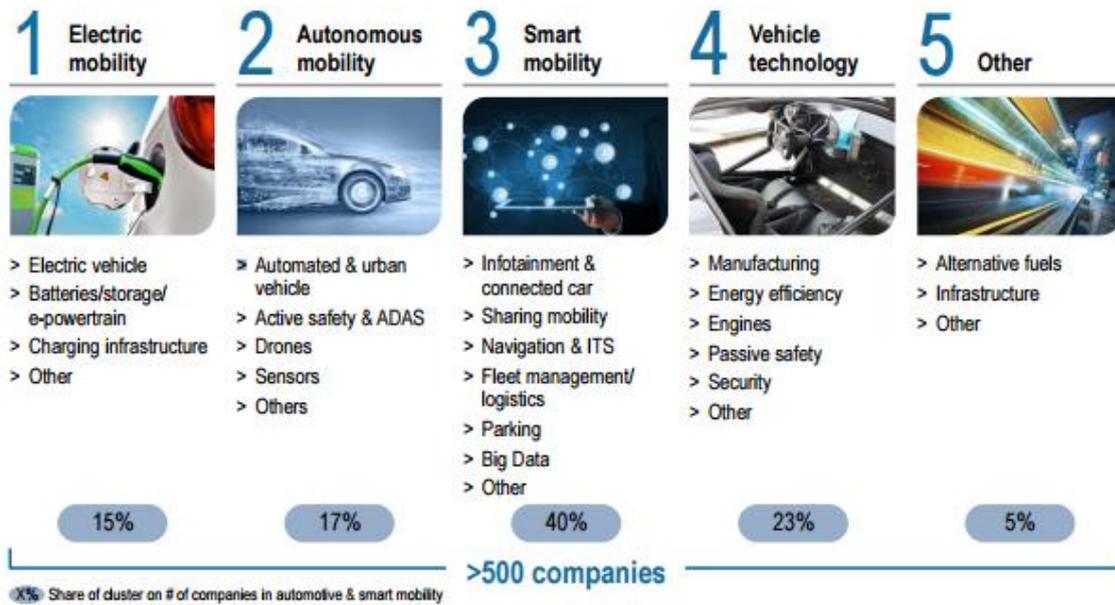
Exhibit 2: Evolution of Israeli automotive and mobility startups and their financing



Source: Israel Export Institute, Fuel Choices Initiative, Roland Berger

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Exhibit 3: Structure of the Israeli automotive and smart mobility industry in 2016



Source: Roland Berger

Exhibit 4: Overview of selected OEM/OES activities in Israel in 2016

		Technology scouting	Local investment	Local R&D center	Comments
OEM	BMW	■	■	□	> Several investments, e.g. Moovit
	Daimler	■	■	■	> R&D center to be opened in Q1/2017
	Fiat	■	■	■	> Several collaborations with startups & regional dev.
	Ford	■	■	□	> Invested in SAIPS, before tech. scouting activities
	GM	■	■	■	> R&D center, founded 2008, today > 250 employees
	Renault	■	■	□	> Intention to participate in R&D activities
	VW Group	■	■	□	> Invested in cyber security solutions & Gett
OES	Bosch	■	■	■	> Recently opened R&D center after VC activities
	Faurecia	■	□	□	> Mainly technology scouting activities
	LG	■	■	■	> R&D for IoT, wellness devices, entertainment.
	Plastic Omnium	■	■	□	> Investment in Elbit Energy
	Samsung / Harman	■	■	■	> Harman acquired Red Bend and TowerSec

Other OEM: Honda, Hyundai, Toyota, Volvo; Other OES: Delphi, Magna

Source: Israel Export Institute, Fuel Choice Initiative, Roland Berger

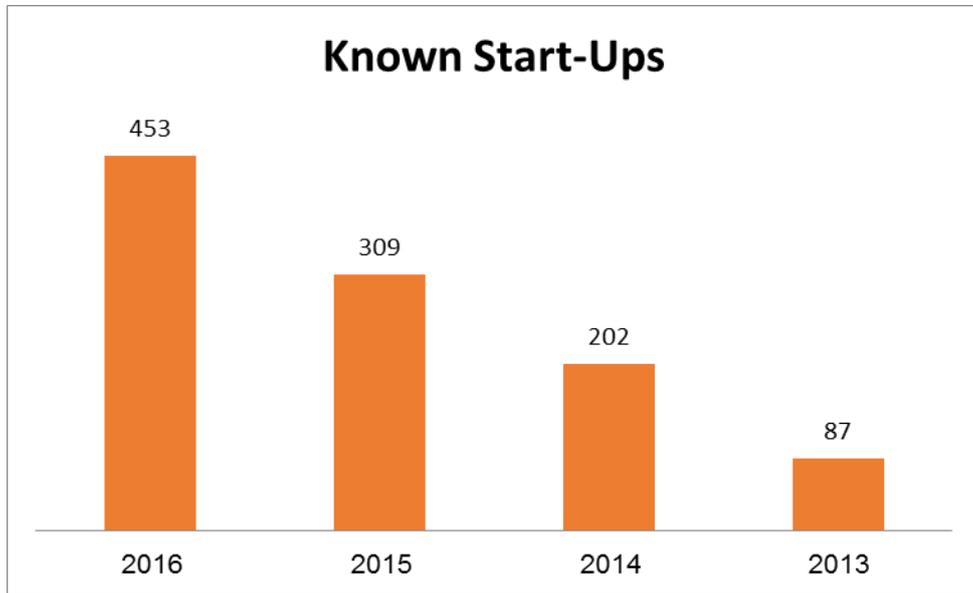
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Exhibit 5: EcoMotion types of stakeholders



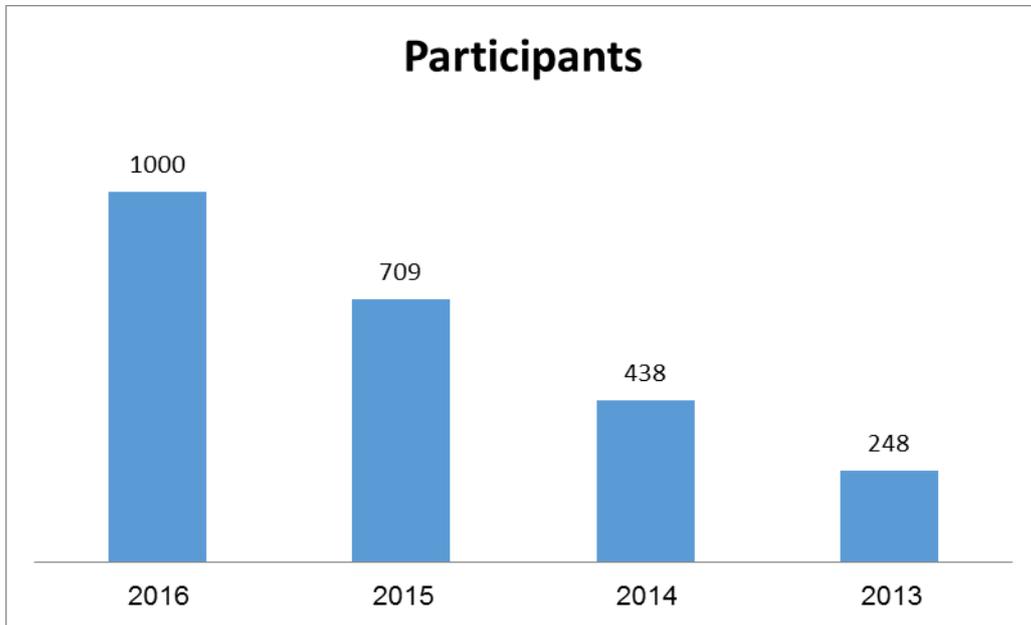
Source: EcoMotion

Exhibit 6: Known start-ups in the smart transportation sector in Israel (2013 – 2016)



Source: EcoMotion

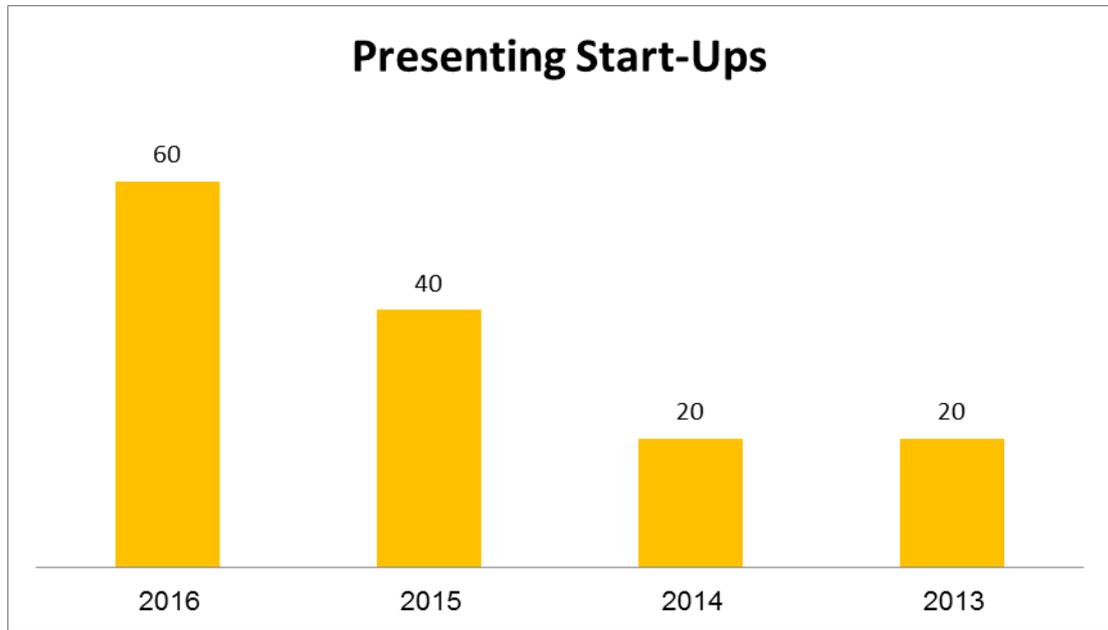
Exhibit 7: Number of participants in EcoMotion's main events (2013 – 2016)



Source: Ecomotion documents

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Exhibit 8: Number of presenting start-ups at EcoMotion's main events (2013 – 2016)



Source: EcoMotion

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Exhibit 9: Number of international executives at EcoMotion's main events (2013-2016)



Source: EcoMotion

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Exhibit 10: Examples of Israel's smart transportation companies



Source: EcoMotion

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Exhibit 11: EcoMotion and associated logos



Source: Ecomotion

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Endnotes

- ¹ This section draws on The Israel Export & International Cooperation Institute presentation, "israelautomotiveindustry-march2013-arial"<https://www.slideshare.net/IsraelExport/israel-automotive-industry>
- ² This section draws on "Israel's automotive & smart mobility industry" study, Roland Berger, Dec2016, Roland Berger is one of the largest international consulting firms https://www.rolandberger.com/publications/publication_pdf/roland_berger_israel_automotive_andsmart_mobility_final_131216.pdf
- ³ Fuel Choices Initiative, Nov. 2016 Summit's book
- ⁴ <http://www.israelinnovation.org.il/>
- ⁵ <http://www.kh-uia.org.il>
- ⁶ <http://www.ecomotion.org.il/>
- ⁷ Senor, Dan, and Saul Singer. Start-up nation: The story of Israel's economic miracle. McClelland & Stewart, 2009
- ⁸ <http://israeltradeca.org/israels-automotive-research-development-center-layout/>
- ⁹ MIT media lab - <https://www.media.mit.edu/>
- ¹⁰ <https://www.capsula.studio/>
- ¹¹ "Israel's automotive & smart mobility industry" study, Roland Berger, Dec 2016
- ¹² Growing and sustaining entrepreneurial ecosystems_ what they are and the role of government policy - SEEANZ white paper - http://seaanz.org/sites/seaanz/documents/reports/SEAANZ_WP_01_2014_Mazzarol.pdf
- ¹³ Mason, C., & Brown, R. (2014). Entrepreneurial ecosystems and growth oriented entrepreneurship. Final Report to OECD, Paris <http://www.oecd.org/cfe/leed/entrepreneurial-ecosystems.pdf>
- ¹⁴ Venkataraman, S. (2004) "Regional Transformation through Technological Entrepreneurship," *Journal of Business Venturing* **19**(1): 153-167
- ¹⁵ Entrepreneurial ecosystems and the role of government policy - <http://theconversation.com/entrepreneurial-ecosystems-and-the-role-of-government-policy-35809>
- ¹⁶ Isenberg, D. J. (2010) "How to start an Entrepreneurial Revolution," *Harvard Business Review* 88(6): 40-51