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The Big Heroes

Medtronic signs marketing agreement with CathWorks

This is Medtronic's third marketing agreement this year with an Israeli medical technology company.

Israeli medical device company CathWorks has signed an agreement with international medical technology solutions giant Medtronic for marketing of its products in Europe, sources inform "Globes." CathWorks developed and markets non-invasive imaging technology for coronary arteries during catheterization. The company published trial results demonstrating its ability to detect when there is no need to use stents for treatment of heart disease.

This is Medtronic's third marketing agreement this year with an Israeli medical technology company. Medtronics signed a successful marketing agreement with Israeli company Mazor Robotics in 2016, and eventually acquired the company for $1.64 billion two years later, after which the two companies' products were fully integrated with each other. Early this year, a marketing agreement was signed with Alpha Omega, which developed a product imaging and directing medical devices during brain surgery. This product complements the brain surgery device marketed by Medtronic. A month ago, Medtronic signed an agreement with EDP, now owned by Philips, but which operates from Israel and markets systems for guiding devices for treatment of heart arrhythmia.

An unusual approach

A string of three marketing agreements by a large international company with young Israeli medical companies in the short span of six months is unprecedented in the sector.
It indicates a strengthening of Medtronic's connection with Israel, but also a new attitude by the corporation towards signing agreements with young companies. Similar agreements were signed with other countries around the

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Editorial Offices: P.O.Box 33633, Tel- Aviv 61336, Israel E-mail: htir_1@netvision.net.il

world in recent years.

Through these agreements, Medtronic is gaining ownership of the marketing of imaging products used to direct its medical devices. In this way, it can offer doctors a more attractive overall package, while at the same time upgrading its devices and the imaging systems of its partners, so that they can work well together. It is possible that one of these agreements will lead to a future acquisition, as happened with Mazor. Joint marketing enables Medtronic to see the true value that its customers attribute to the product, and to view from the inside the behavior of the company with which it is cooperating.

On the other hand, if the company's revenue increases following its cooperation with Medtronic, and consequently its value as perceived by its investors, the US company will eventually have to pay more for the acquisition, as happened in the case of Mazor. This may be the reason that not all of the medical device companies adopt this approach. Medtronic itself adopted it only recently. It appears that Medtronic's management has decided as a matter of policy to reduce the risks in future acquisitions, even if it has to pay more for those acquisitions as a result.

Marketing cooperation with an enormous international company does not always guarantee the local company's success. For example, GE Healthcare, the health division of General Electric, previously signed several exclusive marketing agreements with Israeli companies (Insightec, WideMed, Arineta), some of which went well, while others were less successful.

The promise was fulfilled

Medtronic has been very active in Israel in recent years. The network of companies that it acquired in Israel already constitutes its largest R&D center outside the US. In 2018 alone, Medtronic acquired Mazor for spinal surgery, diabetes information company Nutrino Health, and Visionsense, which specializes in imaging for brain surgery.

In December, Medtronic CEO Omar Ishrak visited Israel and took part in the International Conference for Innovations in Cardiovascular Systems (Heart, Brain and Peripheral Vessels) and High-Tech Life Science Industry.
He visited the company's employees in Israel (mainly at Mazor), and met with young Israeli companies. The marketing agreements developed over the past year were primarily due to seeds sown on this visit. On the same occasion, Medtronic Israel country director Yaron Itzhari said that there were more deals in the pipeline, and his statement has indeed been confirmed.

Kfar Saba-based CathWorks was founded in 2013 by president Guy Lavi and cardiologist Prof. Ran Kornowski, with help from Mor Research Applications, the technology commercialization company of Clalit Health Services. The company has raised $50 million to date from international investors such as the Quark Ventures fund, the Corundum Fund,

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Deerfield, and Biostart Ventures, in addition to initial Israeli investors Triventures and Pontifax Venture Capital. Jim Corbett, CathWorks' American CEO, is a former senior executive at medical companies, including Boston Scientific and Baxter. CathWorks markets its products in the US with approval from the US Food and Drug Administration (FDA).

Pitango healthcare fund makes first closing

Pitango partner Ittai Harel: The digital revolution is reaching healthcare.

Israeli venture capital firm Pitango has announced the first closing of a new Health-Tech Fund, dedicated to investments in the HealthTech Domain. Up until now, the firm has mainly been active in high-tech, although since it was founded it has allocated sizeable amounts of its funds to life sciences and has had partners specializing in this area, and has even garnered successes, but this is the first time that it has raised money specifically for this field.

Pitango aims to close the fund at $150 million. The first closing is of "a substantial part of this amount," according to Pitango managing general partner Ittai Harel. The new fund is managed by Harel together with the firm's other partner specializing in life sciences, Dr. Guy Ezekiel. The team will be joined by Dr. Seth Rudnick, an investor in US venture capital firm Canaan Partners, as a consultant partner.

Talking to "Globes", Harel said, "The fund will invest in medical devices, digital health, drug development, and also ag-tech (agricultural technology) and food-tech. In the past, we focused most of our efforts on classic life sciences and medical devices. In the past few years, this area has seen fewer acquisitions, because of consolidation among the big companies, and less openness on the part of global capital markets, but today its situation seems to be improving. We have actually recorded successes even during these less easy times in the field. We believe that in the specialized fund, medical devices and digital health will account for half the fund or more, but no final decision has been made."

What led to the establishment of a dedicated healthcare fund at this particular time?
Harel: "I lobbied for it among the other partners for several years. The unique opportunity is mainly in the digital revolution coming to the medical world. For other industries, the digital revolution brought amazing opportunities. Healthcare is a little behind, but now the revolution is starting here too, and this is a $7 trillion industry.

"Israel in general and Pitango in particular combine know-how in digital and life sciences that can be exploited to take advantage of this trend.

"Although the number of potential acquiring companies has fallen in medical device, in digital health there are a lot of acquisitions, and classic tech players have also entered this field. The market has also become global, and today you find acquiring companies in Japan, China, Australia, and Europe, and not just in the US."

On healthcare in Israel, Harel says, "Up until three years ago, the ceiling for a healthcare exit was around $350 million, with perhaps one exception - Given Imaging. Suddenly we are seeing more mature companies with larger exits, and also companies raising tens of millions of dollars on the stock market.
It seems that the industry has finally developed the ability to grow a company beyond the initial stage."

From the crisis of 2007-2008 until a few years ago, you were one of the only entities investing substantial amounts in medical devices in Israel.

Did you manage to take advantage of opportunities in this period, in which you were almost the only player?
"Yes, we were working here with few other funds alongside us. There was a real shortage of money for the field in comparison with the talent and ability that exist here. And so we took advantage of opportunities, and it was also a period of gaining experience and learning."

What companies should we watching in your portfolio?
"EarlySense is a strong and excellent company, and is now one of the outstanding companies as far as commercial growth and potential are concerned. Magenta is looking very promising. Medisafe has posted substantial growth, and I might also mention DouxMatok, Clew, and CyberMDX."

Variantyx, Pitango's first investment from the newly-launched Health-Tech Fund, is pioneering a paradigm shift in genomics diagnostics with its proprietary Genomic Intelligence technology. Varaintyx's Unity test is the industry's first comprehensive Whole-Genome-Sequencing Based diagnostic effectively combining all genomic tests into one.

IGP leads $110m investment in digital forensics co Cellebrite

The Israeli company's systems can collect and analyze data from mobile phones, PCs and tablets, computer clouds and even civilian drones seized by security forces.

Israeli digital forensics company Cellebrite announced today that it has raised $110 million from investors led by Israel Growth Partners (IGP), which was founded by Moshe Lichtman and Haim Shani. The new investors will receive a 25% stake in the company, reflecting a valuation of $440 million. Also participating in the financing round are some of the main investors in IGP.

Based in Petah Tikva, Cellebrite has developed digital intelligence solutions for law enforcement agencies and governments and is controlled by Japan's Sun Corporation.

Cellebrite has developed tools which serve law enforcement and intelligence agencies and the military in dozens of countries. These tools help identify threatening activities and are also used by large corporations, companies like Apple, Google, Verizon and major banks, for internal investigations.

The company's systems can collect and analyze data from mobile phones, PCs and tablets, computer clouds and even civilian drones that have been seized by security forces.

Cellebrite was founded in 2001 by Yaron Baratz, Yuval Aflalo and Avi Yablonka who have never held positions in the company.

Elbit wins $73m German aircraft protection deal

The Israeli defense electronics company will work closely with Germany's Diehl for the integration of the systems inside A400M aircraft.

Israeli defense electronics company Elbit Systems Ltd. (Nasdaq: ESLT; TASE: ESLT) announced today that it has been awarded a $73 million contract from Diehl Defence GmbH & Co. KG to provide J-MUSIC Directed Infrared Counter Measure (DIRCM) systems for the German Air Forces' Airbus A400M aircraft. The contract will be performed over a four-year period.

Elbit Systems will work closely with Diehl for the integration of the J-MUSIC DIRCM systems inside the A400M Defense Aid Support Systems (DASS) protection suite.

Elbit Systems ISTAR Division general manager Elad Aharonson said, "Germany is an important market for us. We are proud to be a trusted supplier of the German Armed Forces and of our continuous cooperation with Diehl Defence and Airbus Defence and Space. This contract award is yet another testament to the maturity of our DIRCM systems and to the high level of confidence that they provide to users."

Elbit unveils CONDOR MS long-range surveillance

The CONDOR family of systems is integrated onboard a variety of platforms among them the F-16 A/B/C/D/I, F-4, SU-30 and B-737.

Israeli defense electronics company Elbit Systems Ltd. (Nasdaq: ESLT; TASE: ESLT) has launched CONDOR MS, a new Long Range Oblique Photography (LOROP) system that introduces Multi-Spectral (MS) sensing capability and Artificial Intelligence (AI) analytics to stand-off strategic intelligence gathering missions.

CONDOR MS integrates three high resolution electro-optic (EO) sensors into the company's widely operational CONDOR2 system: Visible & Near Infra-Red (VNIR), Medium-Wave Infrared (MWIR), and Short-Wave Infrared (SWIR). The combination of multi-spectral sensing, high level of stabilization and auto image enhancement enables the new system to dramatically extend coverage area in day, night and adverse weather conditions thereby improving the strategic reconnaissance output while increasing the survivability of the platforms. Deep learning algorithms and precise geo-location enable the CONDOR MS to identify a large number of targets at extremely high rates, hence significantly shortening the time frame needed to close sensor-to-shooter loops.

Over the last two decades Elbit Systems has been the prime contractor in numerous LOROP programs based on the CONDOR family of systems that features one of the smallest and lightest pods in the category. The CONDOR family of systems is integrated onboard a variety of platforms among them the F-16 A/B/C/D/I, F-4, SU-30 and B-737.

Trax buys Shopkick for $200m

The Israeli image recognition for retail goods company has acquired a US company with a platform that provides it with access to consumers.

Israeli image recognition company for retail and consumer goods Trax has acquired US startup Shopkick for $200 million. Shopkick has developed a platform for shopping rewardsfor customers.

Shopkick is owned by SK Planet, a subsidiary of Korean company SK Telecom, which bought Shopkick for $200 million in 2014.

Trax cofounder and chief commercial officer Dror Feldheim told "Globes," "As a company we do full digitalization for stores, brands and consumers and this company provides us with access to consumers. Many of the things that we are doing today with image recognition technology that serve us within stores, we will provide to Shopkick that will continue to work independently with consumers in the US."

He stresses that Shopkick's 150 employees in the US will continue to work as a unit independent of Trax, which after this acquisition has 700 employees in 50 countries, 250 of them in Israel. Headquartered in Singapore, Trax will hire 100 more people in Israel over the next year, mainly in the computer vision and algorithms sector, said Feldheim.

Trax is currently raising a $100 million financing round at a company value of $1.1 billion. Feldheim says the financing round will

be closed soon and will provide funds for three acquisitions: LenzTech Co., a Beijing computer vision technology service provider, Shopkick, and a European competitor, which Feldheim says will be announced soon.

Founded in 2010 by CEO Joel Bar-El and Feldheim, the company has raised $235 million to date, including a $125 million financing round last July. Investors include Warburg Pincus, Boyu Capital, and DC Thomson and GIC Pte.

Bar-El told "Bloomberg" last month that Trax expects to conduct an IPO in 18-24 months.

Israeli co Eviation unveils electric plane at Paris Air Show

The company, which has developed the world's first all-electric aircraft, has signed its first deal, with US regional carrier Cape Air.

Israeli startup Eviation has unveiled the industry's first all-electric aircraft at the Paris Air Show. Eviation has also signed its first deal for an option to supply US regional carrier Cape Air with a 'double-digit' number of aircraft. The plane, called Alice, can carry up to nine passengers and has a range of up to 650 miles and cruising speed of 276 mph.

"Operating at a fraction of the costs of conventional jetliners, our Alice will redefine how people travel regionally and usher in a new era of flying that is quieter, cleaner and cost effective," Eviation CEO Omer Bar-Yohay told "Reuters."

The aircraft, which can potentially remedy the high carbon emissions from conventional planes, is currently undergoing test flights and hopes to receive certification by 2021. Eviation expects to begin shipping for commercial use by 2022.
Cape Air founder and CEO Dan Wolf said, "We see tremendous opportunities to reduce the environmental impact of our operations."

The aircraft is designed for short haul commuter flights and costs about $4 million, much cheaper than conventional jet-powered planes The plane has three MagniX engines, which can produce 900 killowatts of power.

IVC-Meitar: Israeli tech exits totalled $14.5b in H1 2019

The average exit value in the first half of 2019 set a five-year record.

In the first half of 2019, high-tech exit activity in Israel reached $14.48 billion in 66 deals, a five- year high according to the IVC - Meitar report. This amount included one mega-deal in which Nvidia acquired big data connectivity chip developer Mellanox Technologies Ltd. (Nasdaq:MLNX) for $6.9 billion (subject to closing). Excluding the Mellanox deal, total exit value reached $7.58 billion in the first half of 2019.

Despite a slight decrease in the number of exits (which include: IPOs, M&As and buyouts), from 73 exits in the first half of 2018 to 66 exits in the first half of 2019, the total exit value in the first half of 2019 increased significantly from $6.49 billion in the first half of 2018 to $14.48 billion in the first half of 2019.

The average exit value in the first half of 2019 set a five-year record, reaching $116.6 million, almost double compared with $63 million in 2015 annually.

Meitar Liquornik Geva Leshem Tal Law Firm partner Adv. Shira Azran said, "In the first half of 2019, we witnessed a significant increase in the total volume of exits, particularly those with a value exceeding $100 million. We identify a similar trend in transactions that are currently under negotiation. There is a large variety of buyers, and, in some cases, the purchase price is not only a function of an assessment of the value of the acquired technology, but also a determination of value based on revenue and

profitability levels of the acquired company as a reflection of the maturity of the acquired companies."

Azran also referred to the increase in the number of growth companies raising large amounts of capital in recent years, and the high expectation of investors for a significant return. She said, "Therefore, the increase in the value of exits is also consistent with the expansion of the backlog of mature companies. On the other hand, due to the constant increase in the volume of investments, it is too early to assess whether these companies will succeed in fulfilling investor expectation."

Four IPOs were completed in the first half of 2019, with two sizable companies (Fiverr and Tufin) listed on Wall Street and raising significant amounts. Meitar Liquornik Geva Leshem Tal Law Firm partner Ad. Itay Frishman said, "The two successful IPOs in the US are likely to generate interest among more Israeli companies that will want to examine initial public offerings as a path to exit and liquidity. Naturally, an examination of these trends in a semi-annual period is limited, but we feel that a significant number of the exits in the first half of 2019 accomplished the investment model of investors and founders. We will need to wait for the full year's results to evaluate this period compared with previous years."

In the first half of 2019, the number of deals between $100 million and $1 billion climbed to a record of 23 (16, excluding public companies and companies with a prior exit) compared with 18 deals in 2018 (or 16, excluding public companies and companies with prior exit). An analysis of private companies with first-time exits shows that in the first half of 2019, the value of exits in the range of $100-$250 million soared to $1.89 billion. Exit values in the range of $250-$500 million increased to $1.06 billion in the first half of 2019 compared with $1.04 billion in 2018 annually.

Payoneer seeks funding round at $1b value

The Israeli cross-border payments platform company has hired investment bank FT partners to explore expansion options, "Bloomberg" reports.

Cross-border payments company Payoneer has hired US investment bank FT partners in order to explore raising another financing round from private investors, "Bloomberg" reports, according to a person familiar with the matter. The financing round would be at a company value of over $1 billion and the fintech startup is also considering acquisitions.

Founded in 2005 in Israel by Yuval Tal and Yaniv Chechik, who are both no longer active in the company, Payoneer has raised $270 million to date including from Viola, Greylock, TCV and Susquehanna, including a $180 million financing round in 2016. The company has 1,200 employees, including 600 in Tel Aviv. Payoneer has offices in New York and Hong Kong and works with millions of customers in over 200 countries.

Payoneer has developed a cross-border payments system based on direct relations with banks worldwide rather than a credit card based infrastructure, thus saving credit card company fees. The company also handles all the regulatory and currency procedures associated with international payments.

THE BIG HEROES

ELI HURWITZ

Teva-The Origins of Israel's Pharmaceutical Industry

Teva (Hebrew for "nature") was founded in 1935 by Elsa Kuver and Dr. Gunter Friedlander in Jerusalem. Prior to World War II, Germany was the center of the global pharmaceutical industry. Many immigrants from that country brought with them

pharmaceutical expertise that provided a firm foundation upon which the Israeli drug industry was built. Notwithstanding the ongoing violence of the Middle East, Teva enjoyed some advantages over its competitors around the world. For one, Israel attracted a high concentration of scientists – more per capita than any nation in the world. Furthermore, the Israeli government granted Teva tax subsidies to encourage the development and production of new drugs. It was in this environment that Teva grew, going public in 1951 on the Tel Aviv Stock Exchange.

Having consolidated its domestic position, Teva began to expand geographically in the early 1980s. Eli Hurvitz, a kibbutznik who joined the company in a junior management position after graduating in economics and business administration from Hebrew University in 1957, was destined to transform Teva into a global pharmaceutical powerhouse. He perceived an opportunity to penetrate the U.S. market when the federal Waxman-Hatch Act passed Congress in 1984. This legislation concerned generic drugs, treatments that have lost their patent protection. Also known as multi-source or off- patent medicines, generics are chemically identical to branded prescription drugs, but they are priced 30 to 70 percent less than patented versions. Hurvitz used the generics segment as Teva's entree into the US pharmaceutical market. In 1985, the company forged an agreement with chemical conglomerate W.R. Grace to create TAG Pharmaceuticals, a 50-50 joint venture. In 1985, TAG acquired Lemmon Co., a Pennsylvania-based company. Lemmon became the sales and distribution arm for generics manufactured by Teva in Israel. Although CEO Hurvitz later said that "an Israeli who's coming to the States has a David and Goliath syndrome," he reminded himself that little David prevailed in that Biblical battle. The potential Teva saw in Lemmon soon turned to profits; the U.S. venture's sales more than doubled from $17 million at the time of its acquisition to about $40 million in 1987, by which time it was marketing seven generic versions of branded drugs.

The company's first major new drug, known as Copaxone, was originated more than two decades earlier in the laboratories of Israel's Weizmann Institute, where doctoral student Dvora Teitelbaum was studying the use of synthetic proteins to quell multiple sclerosis attacks in animals. Together with Professors Michael Sela and Ruth Arnon, Teitelbaum spent 15 years isolating and researching the polymer COP-1 (later branded Copaxone) passing preliminary clinical trials in 1986. The treatment reduced the relapse rate for people in the early stages of relapsing-remitting MS by anywhere from 25 percent to 30 percent in clinical trials. At that time, the Weizmann Institute teamed up with Teva to bring the drug to market. Since Copaxone's patent had expired during the long development process, Teva requested and received orphan drug status from the U.S. Food and Drug Administration. About one-third of the 350,000 MS sufferers in the United States stood to benefit from the treatment.

Initially launched in Israel, Copaxone earned FDA approval in 1997. The roll out achieved several milestones, both for Teva and for MS sufferers. Copaxone was the first drug developed in Israel to achieve FDA approval for distribution in the United States. Unlike its interferonbased competitors, it was also the first drug developed specifically to treat MS. Copaxone has been approved for the treatment of relapsing-remitting multiple sclerosis. In a two-year, randomized, double-blind, placebocontrolledtrial of 251 patients, Copaxone was shown to reduce relapses by an average of 29 percent when compared with placebo. Multiple sclerosis is a chronic, often progressive disease of the central nervous system (brain, spinal cord and optic nerves), that affects 350,000 people in the United States (approximately 10,000 people are

diagnosed each year). For Eli Hurvitz, the approval of Copaxone by the FDA was one of the great moments in his life and ranks in parallel with his being awarded the Israel Prize.

Under Hurvitz's leadership, Teva has become a global pharmaceutical company specializing in the development, production and marketing of generic and proprietary branded pharmaceuticals, as well as active pharmaceutical ingredients. It is among the top-20 pharmaceutical companies - and is the largest generic pharmaceutical company - in the world. Net income for 2007 reached $1.95 billion, a 5 percent increase over 2006. Net\ sales for 2007 were $9.4 billion, with global Copaxone sales of $1.71 billion.

Teva's share price and net profits rose thousands of percentage points during Hurvitz's active leadership tenure. Hurvitz served as Teva's President and Chief Executive Officer for over 25 years and compelted over 40 years with Teva. Hurvitz has served as Chairman of the Board of Teva since April 2002. Hurvitz received the Israel Prize for Lifetime Achievement for a Unique Contribution to the Society and to the State of Israel. Hurvitz, 78, stepped down as CEO in 2002. . "The dynamics of the generic industry are influenced by the growing number of people going on pension, people who are sicker and have less money for medicinals. As a result, the outlook for generics has become more expansive" said Hurvitz.

ISAAC KAPLAN

Prof. Isaac Kaplan, father of laser surgery/
A Beam of Light for the Benefit of Mankind

The history of laser surgery had its roots in the pioneering work of the South African-born surgeon, Isaac Kaplan. Already well known for his great skill in reconstructive surgery when he settled in Israel, Dr. Kaplan performed hundreds of reconstructive surgical procedures on wounded Israeli soldiers. Always interested in improving surgical procedures, he obtained a carbon-dioxide laser tube from Europe in the early 1970's. Since a laser can focus exceptionally dense power and energy on a minute area, Dr. Kaplan reasoned that it could serve as a surgical device for cutting and removing body tissue by vaporization.
He sought the assistance of Uzi Sharon, an Israeli engineer, in making lasers both mechanically functional and easy to use. In a burst of creative energy, Sharon created a prototype in just over a month. Dr. Kaplan subsequently became world famous for his success in using lasers in surgery, and he is justly known as "the father of laser surgery."

Each year, more surgeons are switching to this method because of its bloodless, nontraumatic features. The laser allows treatment of microscopic amounts of tissue, with negligible effects on surrounding healthy tissue. Its cauterizing effect on the treatment site also reduces trauma and speeds healing, reduces patient discomfort, and minimizes scar tissue. Hospitals tend to favor laser surgery because patients can return home sooner, reducing bed occupancy.

SHIMON PERES

Shimon Peres was an Israeli politician who served both as ninth President of Israel, (2007 to 2014) and Prime Minister of Israel, as well as Interim Prime Minister. He was a member of twelve cabinets in a political career spanning 70 years. Peres was elected to the Knesset in November 1959 and, except for a three-month-long hiatus in early 2006, was in office continuously until 2007, when he became President, being in that role for another seven years. At the time of his retirement in 2014, he was the world's oldest head of state. He was considered the last link to Israel's founding generation.

Peres is regarded as one of the founders of Israel's technology sector. Through personal

meetings with the French government, he established collaboration treaties with France's nuclear industry in 1954. In 1958, he founded the re-organized RAFAEL Armament Development Authority, under the MOD's jurisdiction. From his desk he would control all aspects of Israel's nuclear program (first as Director-General and after 1959 as Deputy-Minister. In the 1980s, he is credited with having laid the economic foundations for Israel's start-up economy. In later years, he developed an obsessive fascination with nanotechnology and brain research.
He believed that brain research would be the key to a better and more peaceful future. He launched his own nanotechnology investment fund in 2003, raising $5 million in the first week. In 2016, he founded the 'Israel innovation center' in the Arab neighbourhood of Ajami, Jaffa. The center aims to encourage young people from around the world to be inspired by technology. Laying its foundation stone on July 21, 2016, Peres said: "We will prove that innovation has no limits and no barriers. Innovation enables dialogue between nations and between people. It will enable all young people - Jews, Muslims and Christians - to engage in science and technology equally."

ISRAEL TAL

Tal was the creator of the Israeli armored doctrine that led to the Israeli successes in the Sinai surprise attack of the Six Day War. In 1964, General Tal took over the Israeli armored corps and organized it into the leading element of the Israeli Defense Forces, characterized by high mobility and relentless assault. He re-trained all Israeli gunners to hit targets beyond 1.5 km. In open terrain, such long distance gunnery proved vital to the survival of the Israeli armored corps in subsequent wars. Israel's Arab opponents, especially Egypt and Syria, normally fired their Soviet-made Tank guns from a distance of between 200 and 500 meters, and quite often tank units advanced to within 100 meters of their targets before firing their main guns. This gave the Israelis an opportunity to exploit this weakness in the Arab Tank forces. Its mobility is considered comparable to the German Blitzkrieg and many hold it to be an evolution of that tactic. Tal's transformation and success in 1967 led the IDF to expand the role of armor. However, this resulted in reduced attention to other less glamorous, but essential aspects of the army, such as the Infantry. Following the 1973 surprise attack, this excessive focus on fast striking offensive armor left the IDF temporarily without adequate defensive capability. Only in latter stages of the war (with the aid of a US $1.1 Billion airlift, Operation Nickel Grass) did the armor break out and show its potential; General Avraham Adan's armor penetrated the Egyptian lines, crossed the Suez Canal and enveloped the Egyptian 3rd Army near Suez. While the IDF has become a more balanced force since 1973, Tal's development of armored doctrine has been very important to the IDF and has influenced armored doctrines in other parts of the world.

YOSSI VARDI

Joseph "Yossi" Vardi is an Israeli entrepreneur and investor. He is one of Israel's first high-tech entrepreneurs. For over 47 years he has founded and helped to build over 85 high-tech companies in a variety of fields, among them software, energy, Internet, mobile, electro-optics and water technology.

But it is his career as an early-stage angel, beginning in 1996, that turned Vardi into a household name among Israeli youth – in particular for his role in ICQ, the first instant messaging application for the Internet. ICQ was created by Mirabilis, cofounded by Vardi's son, Arik.

The astounding story of Mirabilis sparked a startup boom that - other than a few dips - has continued to this day. Indeed, the "Mirabilis Effect," as coined by Forbes magazine in 1999,

describes the phenomenon of "young Israeli entrepreneurs yearn[ing] to copy the company's success."

This success took the form of a $400 million sale to AOL a mere 19 months after releasing ICQ — the brainchild, as Vardi describes them, "of four kids with long hair wearing T-shirts and jeans."

These boys, says Vardi, "became cultural heroes in the Israeli saga. They redefined the = meaning of achievement, and inspired a whole generation of Internet entrepreneurs."

STEFF WERTHEIM

Honorary Chairman, IMC

Stefan "Stef" Wertheimer is a German-born Israeli industrialist, investor, philanthropist and former politician. He is a former Member of the Knesset, and is well known for founding industrial parks in Israel and neighboring countries. The Wertheimers became Israel's richest family after selling their Iscar company to Warrent Buffett for more than $4.0 billion.

In 1952, Wertheimer started his own business in the backyard of his home in Nahariya, a small metal shop and tool making company called ISCAR. The company quickly became a success and attracted the interest of Discount Investments, who later became a minority investor in the company. Today, ISCAR is one of the world's largest (by sales) manufacturers of carbide industrial-cutting tools, which are used by carmakers like General Motors and Ford. ISCAR branches exist in over 50 countries worldwide and the company employs nearly 6,000 people.

In 1969, as part of Israeli efforts to overcome the French weapons embargo after the Six-Day War, Wertheimer founded ISCAR Blades which later became Blades Technology Ltd. - one of the largest manufacturers of blades and vanes for jet engines and industrial gas turbines.

Today, Blades Technology's customers include Pratt & Whitney, Rolls-Royce, Snecma, General Electric, Techspace Aero, Solar Turbines, and others.

In May 2006, Berkshire Hathaway, billionaire investor Warren Buffett's conglomerate holding company, bought 80% of ISCAR Metalworking Company for $5 billion (the Wertheimers paid $1 billion in taxes to the Israeli government). In May 2013 Buffett bought the rest of Iscar for $2.05 billion.

DOV FROHMAN

Dov Frohman is an Israeli electrical engineer and business executive. A former vice president of Intel Corporation, he is the inventor of the erasable programmable read only memory (EPROM) and the founder and first general manager of Intel Israel.

In 1969, after completing his Ph.D., he followed former Fairchild managers Gordon Moore, Robert Noyce, and Andrew Grove to Intel Corporation, which they had founded the previous year.

It was while troubleshooting a fault in an early Intel product that Frohman in 1970 developed the concept for the EPROM, the first non-volatile semiconductor memory that was both erasable and easily reprogrammable. At the time, there were two types of semiconductor memories. Random-access memory (RAM) chips were easy to program, but a chip would lose its charge (and the information encoded on the chip) when its power source was turned off. In industry parlance, RAM chips were volatile. Read-only memory (ROM) chips, by contrast, were nonvolatile—that is, the information encoded in the chip was fixed and unchangeable. But the process for programming ROM memories was time-consuming and cumbersome. Typically, the data had to be "burned in" at the factory: physically embedded on the chip through a

process called "masking" that generally took weeks to complete. And once programmed, the data in the ROM chip could not be altered. The EPROM was nonvolatile and reprogrammable. It was the catalyst for innovations and developments that led to flash memory technology. The EPROM was also a key innovation in the personal computer industry. Intel founder Gordon Moore called it "as important in the development of the microcomputer industry as the microprocessor itself." It remained Intel's most profitable product well into the 1980s.

After inventing the EPROM, Frohman left Intel to teach electrical engineering at the University of Science and Technology in Kumasi, Ghana. He returned to Intel in 1973, but his long-term vision was to return to Israel to create a center of high-tech research there. In 1974, he helped Intel establish a small chip design center in Haifa -Intel's first outside the United States. On his return to Israel, Frohman taught at the School of Applied Sciences at Hebrew University of Jerusalem and worked as a consultant to Intel on the side. In 1985, after negotiations with the Israeli government on the establishment of a semiconductor plant in Jerusalem, Intel's first outside the United States, he left Hebrew University to become general manager of Intel Israel.

In 1991, during the First Gulf War, when Iraq attacked Israel with Scud missiles, Frohman kept Intel Israel open despite recommendations from the Israel Civil Defense authority that all non-essential businesses close down.
As a result, Intel Israel was one of the few businesses, and the only manufacturing business, in the country to remain open throughout the war. Frohman described his experience during the war in an article in the Harvard Business Review. In 1995, he led Intel's efforts to establish a second semiconductor fab in Israel, in the town of Kiryat Gat in the south of Israel on the edge of the Negev Desert.

Today, Intel Israel is the headquarters for the corporation's global R&D for wireless technology. It developed the company's Centrino mobile computing technology, which powers laptops, and advanced microprocessor products. It is also a major center for chip manufacture. In 2008, the company opened a second semiconductor fab in Kiryat Gat - a $3.5 billion investment, with seven thousand employees. In 2007, Intel Israel's exports totaled $1.4 billion and represented roughly 8.5 percent of the total exports of Israel's electronics and information industry.

Frohman retired from Intel in 2001.

BENNY LANDA

In 1969, Landa began his professional career at CAPS, a micrographics research company. He helped develop a new micrographic product that earned the company a major contract with Rolls-Royce Aero Engine Division and led to Landa's appointment as head of R&D.

In 1971, Benny Landa and a colleague co-founded Imtec, an international micrographics company. Landa invented the company's core imaging technology. While researching liquid toners, he developed a method of high-speed image development which used charged pigmented particles in a liquid carrier.

Landa immigrated to Israel in 1974. Applying the filmless imaging concept developed by his father, Landa founded Indigo Digital Printing in 1977. In 1993 at IPEX, he introduced the E-Print 1000, a digital color printing press. Bypassing the printing plate setup process, the new process eliminated numerous costly and time-consuming steps associated with offset printing. It enabled printing from a computer file directly onto paper and launched short-run, on-demand, and variable data printing into the marketplace. Using ElectroInk, the Indigo digital press applied small liquid color particles

and an electric charge to form a thin, smooth, plastic layer on paper. By the 1990s, Indigo became a significant alternative to traditional offset press manufacturers.

In 2002, Landa sold Indigo Digital Printing to Hewlett-Packard for US$830 million. Following the acquisition of Indigo, Landa established The Landa Group for nanotechnology research. Wipigment colorants for print production.

Landa created Landa Digital Printing to further commercialize the nanotechnology solution for printing. The group developed a printing ink using the nanopigments, called Landa NanoInk and an offset digital printing process called Nanography.

Landa introduced Nanography and a line of Nanographic Printing presses at Drupa in 2012. The new Nanography technology enables high-speed digital printing with B1 (41 in./1,050 mm) format media on all forms of substrates, including untreated paper, films or plastic. Nanography hopes to allow printers to produce short-to-medium run lengths. The cost effectiveness of the process is still to be determined as no live production presses are producing sellable work to date.

HARRY TABOR

Harry Zvi Tabor was an Israeli physicist. He was known as the father of Israeli solar energy. He is generally credited with having brought Israel's solar energy program to international prominence.

In 1949 prime minister David Ben-Gurion sent a letter to England to offer Tabor a job on the 'physics and engineering desk' of the Research Council of Israel, which he accepted. His first task was to create the National Physical Laboratory of Israel, which had been Tabor's idea as he felt it was essential the new country have the equivalent of the National Physical Laboratory in Britain to create standards amongst the different measurements in use in the country, primarily British, Ottoman and metric.[2] Once the laboratory was established, he focused on solar energy for research and development.

He was instrumental in developing the solar water heater that 95 percent of Israeli households have.[2] In 1992 he was awarded an honorary degree from the Weizmann Institute of Science.[8] These simple water heaters operated without pumps, whereby cold water was heated in the panel, which acted as a thermosiphon. This unit in turn became the standard for solar water heating worldwide, and helped popularize the commercialization of solar thermal technology in the United States in the 1970s, where Tabor lectured and acted as a consultant to solar start-up companies such as Northrup, Inc. which subsequently merged into ARCO Solar, which became BP Solar. Tabor experimented with various coatings to optimize the absorptivity of solar energy, with minimizing the re-radiation, or emissivity of the heat absorbed. This led to his development of a "black chrome" surface for the copper water-bearing plate.
Tabor worked with the Standards Institute of Israel, to establish testing procedures and an official performance certificates so that a solar collector could not be bought without SII certification.

Tabor and French immigrant Lucien Bronicki developed a small solar power unit, an Organic Rankine cycle turbine, for developing countries with problematic power grids.[3][9] It was designed to neutralize the maintenance issues of reciprocating engines so it had only one moving part, the rotor. A 3 kWe prototype was exhibited at the 1961 United Nations Conference on New Sources of Energy in Rome, but it failed to find commercial success.

DAN TOLKOWSKY

Tolkowsky was born in Tel Aviv in 1921 and

was educated at the Herzliya Hebrew Gymnasium. In 1936 he joined the Haganah. In 1938 he went to London to study at Imperial College London and graduated with a BSc. in engineering in 1941.

In 1959 Tolkowsky joined the Discount Bank Investment Corporation (DBIC), originally an arm of the Bank, later a public company in Israel. He was appointed as Managing Director in 1965 and Vice-Chairman in 1980. Beginning in 1962, DBIC was the first financial institution in Israel to invest in local hi-tech industry. Tolkowsky helped Uzia Galil start the technology holding company Elron Electronic Industries in 1962. In 1985 Tolkowsky, in partnership with his son Gideon and Frederick Adler, a noted American venture capital investor, founded Athena, the first venture fund in Israel, to invest in Israeli and American ventures, mostly hi-tech, which operated until 1997.

Tolkowsky also held a series of minor government posts. In 1963 he joined the National Council for Research and Development. He served as Chairman of the Subcommittee on Radiation and Radioisotopes of the Israel Atomic Energy Commission. In 1970 he headed a commission of inquiry that investigated an accident at Lod Airport. From 1978-1980 he was a member of the Israel Securities Authority plenum. In 1997 he served on the Ciechanover Commission, which investigated a failed Mossad assassination attempt against Hamas leader Khaled Mashal in Jordan. He also was a member of a committee examining the organizational structure of higher education institutions.

Tolkowsky is a Commandeur of the French Legion d'Honneur (1958), holds a Doctorate Honoris Causa from the Technion Israel Institute of Technology (1980), and holds an award from the joint US-Israel Science and Technology Authority named after Yitzhak Rabin.

UZIA GALIL

Elron was founded in 1962 by Uzia Galil, with the support of Dan Tolkowsky of the Discount Investment Corporation. Uzia Galil graduated from the Technion – Israel Institute of Technology in 1947, and in 1948 joined the Israel Navy as an officer responsible for maintaining its Radio systems. In 1952 Uzia was sent to study for a master's degree in Electrical Engineering at Purdue University in the United States. During his studies in the United States, he worked at Motorola's research lab and was part of a team that developed of one of the world's first colour televisions. But in 1954 he had to return to Israel to complete another 4 years of service in Navy, which financed his studies.

Uzia Galil short experience working for Motorola in the United States exposed him to the technology industry and he decided to establish Israel's first high tech Startup company. He started the company, while still serving in Navy, in a friend's (Benjamin Sandller) flat in Haifa, later joined by another friend (Gideon Kirshner), who was a teacher at the Haifa Technical High-School, and worked with them in his spare time. The company's first products were measurement instruments for medical and electronic applications. In 1958 Uzia left the Navy, however the company did not generate enough revenues and he got a job at the Physics laboratory of the Technion; while there Moshe Arens, who was Professor of Aeronautics at the time, introduced him to Dan Tolkowsky. Dan, who was fascinated by Uzia's ideas, managed to convince the board of Discount Investment Corporation to provide the capital required to properly fund the company. Elron was officially formed in 1962 with an initial capital of $US 160,000, and within 3 years generated annual revenues of $1 millions. First joint venture – Elbit Computers Ltd.

In 1966, Shimon Peres, who at the time was

the deputy defence minister, visited Elron and Uzia convinced him to establish a new company that will develop Minicomputers for defence applications. The new company, initially called Elbit Computers, was a joint venture with the Israel's Ministry of Defence and Elron (each holding 50% of the company). The company launched its first product in 1967 the Elbit-100 Minicomputer. The company evolved through the years to become the multinational defence electronics company - Elbit Systems (NASDAQ: ELBT).