

# ISRAEL HIGH-TECH & INVESTMENT REPORT

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## and what of the future

In all of the hullabaloo surrounding Israel's 60th birthday too much attention was given to the past and far too little as to the future. What is clear is that high-technology innovations and companies will be the leaders of Israel's economy. It has been proven beyond any shadow of doubt that young people can find a safe future. Statistics show that record sums of money, both from Israel and overseas, are being pumped into high-tech companies. An example of the magnet like appeal that Israel holds for outsiders is the starting up of an electric car industry. Only a few short months after the company started up a model car was shown recently. More companies are going public only a few years after their founding. The Government, for its part, is allocating higher budgets in support of young companies. To get a \$250,000 grants is relatively easy. The figures speak for themselves, high-tech exports account for 48% of all of this country's exports.

The high-tech sector now employs some 150,000 people, about 8% of the civilian workforce but generates an estimated 15% of the country's gross domestic product. Israel tops the world in research and development spending as a percentage of GDP, at 4.4%.

The high-tech industry has been one of the most important engines of Israel's economic growth during the past 10 years.

Global tech giants including Intel (INTC), Microsoft (MSFT), Motorola (MOT), IBM (IBM), and Google (GOOG) have all established large local research and development facilities.

The pipeline from university laboratories to the market place has been shortened. All universities have research and development authorities. It is their task to move individual innovations from the campus to industry. This activity has been so successful that Harvard University has hired Tel-Aviv's expert to head its R & D Department.

Universities are aware of the critically growing shortage of engineers and technically trained individuals. They are increasing the size of the departments and adding teaching staff.

The above factors point to a healthily growing high-tech industry.

Overlooked by observers are Israel's burgeoning defense industries. A number of years ago the skills in this field were proven when Israel Aircraft Industries. launched the Lavie jet fighter.

The high-tech industry has been one of the most important engines of Israel's economic growth during the past 10 years. Israel has proved itself to be a global leader in the production of unmanned aircraft. At one time they were used only for observation but now have a

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developed capability for delivering weaponry. Israeli "heads up display" helmets have been adopted by American and other air forces. A recent visit to Raphael Armaments Development Authority revealed a major capability for missiles. The UZI submachine gun has been adopted internationally by law enforcement agencies. A whole slew of missiles have been developed and these include the Gabriel naval anti-ship missile. The Barak naval surface-to-air missile, the Popeye AGM-142 air-to-surface missile, the Arrow anti-ballistic missile and the Jericho medium-range ballistic missile.

Israel is home to a world class pharmaceutical company Teva Pharmaceutical that has developed a Weizmann Institute of Science invention Copaxone, a multiple sclerosis remission drug that should sell \$2b. this year.

Even though it sounds like the Garden of Eden there are problems. Marketing still is problematical. Given Imaging has developed a pill that takes pictures while traversing through the colon, after a number of years of its existence it still has to reach sales of \$100m. a year. To overcome this weakness Israeli companies have set up overseas subsidiaries to deal with marketing and public relations.

Biotechnology is also a weakness. Though hundreds of millions of dollars have been poured into research and development there we are still missing a world class company.

On balance the future appears to be positive. There are no obstacles to further growth of Israel's high-tech. The rewards for its participants are great enough to continue to attract newcomers and additional injections of venture capital.

The highly energetic entrepreneurial spirit is a crucial characteristic of the Israeli mindset. This is illustrated by the number of start-ups that are being created every year in the country, and it is a quality one can find in a large number of Israeli people, many of whom forged vital contacts while serving in the Israeli army. Another source of this entrepreneurial spirit might be the vital need to manage in a country with very few resources, which necessitated creating intellectual value to survive against worldwide competition. The country does not have a choice: a lack of raw materials and a limited domestic market are factors pushing companies to export sophisticated products. This entrepreneurship might also be due to the constant political turmoil that has characterized Israel all through its history. In particular, many Israelis have the capacity to react very fast and to adapt their lifestyle according to the evolution of the environment. If we take the example of tourism, which at the beginning of 2001 almost disappeared owing to the political tension between Israelis and Palestinians, it

is amazing to see how people who depended upon this sector managed to change their professional and business orientation. Many of these people are now adopting a proactive attitude and are creating new businesses and opportunities. Moreover, Israelis are known to be risk takers compared to other cultures, that is, they are not afraid to go to the unknown and take a chance. If Israelis see an opportunity or an idea that can bring to a success, they will go for it.

### Solel signs second deal in Spain



Solel Solar Systems Ltd. has made its largest single sale of solar receiver technology for the supply of more than 190,000 UVAC 2008 receiver systems to Ibereolica Solar SL, a Spanish parabolic trough solar thermal plant developer. The receivers will power

eight 50-megawatt solar power plants that Ibereolica is developing in southern Spain. Beit Shemesh-based Solel Solar will begin deliveries of the solar receivers in 2009.

Solel added that this was its second large contract for solar receivers this month. The combined value of the two contracts is over \$250 million. Two weeks ago, the company signed a contract for the supply of 70,000 receivers to a Spanish consortium. Solel has not disclosed the name of the consortium. Solel Solar also plans to build a manufacturing facility for solar field components in Andalusia.

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The UVAC 2008 provides solar power plant developers with the most advanced commercially tested technology for capturing sunlight and converting it to heat for clean power generation. Ibereolica's plants will include thermal heat storage so the heat from the solar receivers can be converted to electricity during evening hours.

Solel Solar president and CEO Avi Brenmiller said, "We are extremely proud of this very significant deal with Ibereolica, one of Spain's elite developers of clean energy. A growing number of renewable energy providers, in Spain and around the world, are choosing Solel's solar thermal technology because it is the best way to produce maximum power from available sunshine."

**ID-U Biometrics Ltd. wins competition**

ID-U Biometrics Ltd. has won the 2008 "Globes"-IVA start-up competition. The company will go on to participate in the upcoming DEMO Europe's launch venue for new products, technologies and companies which will take place in Germany in October. It will also be a contender for the "Red Herring" Top 100 European companies.



ID-U Biometrics is developing a multivariate dynamic biometrics system, which uses a combination of the subject's behavioral, physiological and physical characteristics to verify a user's identity. The subject's responses to special external stimuli are used to construct his identifying template. CEO Dr. Daphna Palti-Wasserman founded the company in 2004.

**New technology interprets dog barks to prevent prison breaks**

When your dog barks, it may be trying to tell you something. That belief is tied to Israeli jails using a custom-built computer program called DogGuard that interprets a guard dog's barks.

Bio-Sense Technologies created the system to notify the prison staff when dogs were barking because of suspicious activity, i.e. prisoners trying to escape. It involves a sensor, placed on a wall or fence within a 15-yard radius of the dog, which can determine a dog's stress based on the sound of its bark. If an emergency is detected by a bark, an alarm sounds in the prison's control room.

"It collects the dogs' barks through microphones and sorts and grades them," explained Noam Tavor, head of the Israel Prisons Service canine unit. "It relays only the barks that are significant in terms of security—barks that reveal stress or aggression in the dog." Using dogs as a means of patrolling a prison's fences initially wasn't an efficient

system: "The dogs would bark, and staff of the prison wouldn't hear it, or would hear it and would not take action fast enough." Tavor said. However, after thorough research, Bio-Sense was able to record the patrol dogs' different barking patterns, load these recordings into a computer program, and determine "what makes the emergency bark different than the other barks," said Bio-Sense project manager Orit Netz.

The first DogGuard system was developed in 2005, and three more have been installed in Israeli prisons.

**IAI signs with India's Tata on joint venture**

Israel Aerospace Industries Ltd. (IAI) (T A S E : A R S P . B1) has signed a framework

cooperation agreement with India's Tata Industries Ltd. for the joint development, manufacturing, marketing and support of defense products in India. IAI president and CEO Itzhak Nissan and Tata Sons chairman Ratan N. Tata signed the agreement.

The cooperation agreement between IAI and Tata Advanced Systems Ltd. covers a wide range of defense and aerospace products, including missiles, UAVs, radars, electronic warfare (EW) systems and homeland security systems. The companies will sign an agreement for the establishment of a joint venture in India shortly.

IAI is also in negotiations with the Indian government for the delivery of air defense systems. The \$1.5 billion deal includes missiles, unmanned aerial vehicles (UAV), satellites, planes, and homeland defense technologies.

Israeli Start Up breakthrough for early detection of High Risk pregnancy. A new development of the Israeli Start Up from Yokneam, Diagnostic Technologies (DTL) is an innovation in early identification of high risk pregnancies, could reduce the morbidity and mortality of women and of the fetus. Pre-eclampsia, also known as toxemia of pregnancy appears in 3% of pregnant women in Israel (approximately 6% worldwide) and is characterized by a sudden hypertension and an elevated protein level in urine among pregnant women that can be exacerbated to secondary damage to additional organs such as the kidney, the liver,

the eyes, blood clotting and most severely in the brain where it causes convulsion and can lead to stroke.

The disease endangers the life of the fetus and can cause irreversible damage and even fetal loss and death. The scientists at Diagnostic Technologies developed a new method to identify which of the pregnant women is at elevated risk to develop the disorder. The early detection is performed approximately 20 weeks before the development of the symptoms and is based on the use of a simple blood test. The blood test determines the level of a special protein produced by the placenta that is known as PP13 (placenta protein 13). The test is performed from the 7th week of pregnancy, and can predict the later development of preeclampsia 6 months down the road. The test results give the physician a useful tool to evaluate the surveillance and management of the pregnant women and even assess if she can benefit from the use of low dose aspirin. Until now there was no other method to identify women at risk for developing preeclampsia before the disease manifests and puts the life of the mother and the fetus at risk.

Dr. Hamutal Meiri, a PhD in developmental neurobiology and the CEO of Diagnostic Technologies said: "Preeclampsia is the second most frequent cause of maternal death in pregnancy, but to our disappointment the dimension of the problem is not known to the public and many women, pregnant or not, are unaware of the real risk. In Israel we are speaking about approximately 5000 women annually who suffer from various forms of severity of preeclampsia. Due to the new test these women could benefit from the early detection which gives rise to prevention and management of the risk due to a better pregnancy management and preventive treatment".

### How embryonic stem cells develop into tissue-specific cells



While it has long been known that embryonic stem cells have the ability to develop into any kind of tissue-specific cells, the exact mechanism as to how this occurs has heretofore not been demonstrated. Now, researchers at the Hebrew University of Jerusalem

and elsewhere have succeeded in graphically revealing this process, resolving a long-standing question as to whether the stem cells achieve their development through selective activation or selective repression of genes.

The collaborative research group, which included Dr. Eran Meshorer of the Department of Genetics at the Silberman Institute of Life Sciences at the Hebrew University of Jerusalem, has revealed that the embryonic stem (ES) cells express large proportions of their genome "promiscuously." This permissive expression includes lineage-specific and tissue-

specific genes, non-coding regions of the genome that are normally "silent," and repetitive sequences in the genome, which comprise the majority of the mammalian genome but are also normally not expressed.

When ES cells differentiate into specific cell tissue-types, they undergo global genetic silencing. But until this occurs, the ES cells maintain an open and active genome. This might very well be the secret of their success, since by maintaining this flexibility they maintain their capacity to develop into any cell type. Once silencing, or genetic repression, occurs, this ability is gone.

Thus, one can say that the ES cells stand at the ready until the "last minute" -- prepared to engage in selective activation into specific cells - holding "in abeyance" their ability to become any kind of cells at the point and time required. To reveal the process as to how this occurs, the researchers created the first full-mouse genomic platform of DNA microarrays. Microarrays are glass-based chips that allow simultaneous detection of thousands of genes. The microarrays used in the study were not confined to specific genes only but spanned the entire genome.

Hundreds of such microarrays were required in the study to cover the entire genome in different time points during stem cell differentiation. It was by observation of these sequences that the researchers were able to establish exactly how and at what point the stem cells developed into specific tissue cells and when the silencing occurs.

The project carried out by the researchers appears in the latest issue of the journal *Cell Stem Cell*. The collaborators in addition to Dr. Meshorer who participated in the project include Tom Misteli, Ron McKay, Stuart Le Grice, Sol Efroni and Kenneth Buetow of the US National Institutes of Health, Thomas Gingeras of Affymetrix Inc. of Santa Clara, Calif., and David Bazett-Jones of The Hospital for Sick Children, Toronto.

### Project Better Place presents electric car prototype



Project Better Place presented its prototype electric car, using the Renault Megane. The venture is owned by CEO Shai Agassi, and the Israel Corp. (TASE: ILCO) is a major investor.

The vehicle looks similar to gas-powered cars, the Renault Megane's engine includes an electric battery, and the car notably does not need an exhaust pipe.

Project Better Place noted that the presentation model was a prototype - whose battery is an improvisation produced by a local

technician - and not a production model.

Agassi said that a few electric cars would arrive in Israel in a few months, but added that it would only be available for sale after the necessary infrastructure is in place. The list price of the electric car will probably be similar to the gasoline-driven model of the same car. However, the actual price tag will be less, thanks to tax breaks.

Project Better Place commissioned a survey, in which one in every six Israelis said that they would buy an electric car. The survey added that the public believes that there is strong market demand for it. Project Better Place added that half of the respondents said that switching to an electric car would be easy or very easy.

Shai Agassi reiterated his pledge to make Israel an electric car pioneer. Denmark, which has already declared its willingness to adopt the car, will follow. Israel Corp. chairman Idan Ofer said, "I consider this to be a revolutionary project and I believe that most of the public will drive an electric car within a decade." Ofer has invested \$130 million in the venture personally and through the Israel Corp.

### Detecting liars

The latest lie-detector trial suggests the best way to detect liars may be to lie.

Whether it be changes in body language, sweaty palms or fluctuations in brain activity, no surrogate marker of deception has yet proved reliable enough to be admitted as evidence in a court of law. Yet as governments and other large "shellers-out of cash know only too well, lies can also be expensive, which is why they continue to experiment with technologies that try to catch people out.

The latest is voice risk analysis (VRA), which, among others, Harrow Council in London is testing as a way of identifying fraudulent claims for social-security benefits. This week the council said that in the ten months from May 2007, when the system was installed, it had saved £420,000 (\$828,000). VRA is not new. The version used in Harrow was developed by an Israeli company, Nemesysco, for use by the country's intelligence services to identify potential terrorists.

The system is said to operate by detecting changes in the sonic frequencies of people's voices that are caused by stress, and comparing these with a baseline created by their responses to unemotive questions, such as requests for their personal details. It places the changes on a spectrum of risk and, according to Capita, a firm which provided Harrow with the technology, operators then "form their own judgement of risk based on both the VRA technology and behavioural-analysis skills in which they are also trained."

Mitchell Sommers, a psychologist at Washington University in St Louis, Missouri, with an interest in speech perception, says the findings confirm what

other studies have shown about VRA: that it is not particularly good at detecting liars, but that it does act as an excellent deterrent. "These things do not work any better than chance," he says. Yet in America, insurance companies regularly claim that VRA helps them to reduce fraud by around 90%.

Harrow is happy that VRA acts as a deterrent, but they do not say that is all it does. Amir Liberman, the chief executive of Nemesysco, denies that it works by chance and says his company's own research shows it is highly predictive of lying even when people are not informed their voice is being analysed. The system does not measure lying itself, he adds, but the emotion associated with lying.

### CoWare spreads its wings in Israel



A supplier of platform-driven electronic system-level (ESL) design software and services, CoWare is opening up a local-support and channel-distribution center for its ESL technologies used by systems and semiconductor companies.

"As I experienced during my tenure as a CAD manager at Motorola Semiconductors Israel, design engineers in Israel are very demanding," said Eshel Haritan, vice president of engineering at CoWare. "Back in the early nineties, the transition to RTL in production was considered cutting edge. Today, because of the challenges associated with multi-core designs and the large amounts of embedded software content, IP, semiconductor, and electronics companies are seeking CoWare's leading-edge technology."

### Microsoft launches R&D center

Microsoft Chief Executive Steve Ballmer said that Microsoft is an Israeli company almost as much as it is American.

Speaking at the inauguration ceremony of the American software giant's new research and development center in Herzliya, Ballmer said: "That . . . the IT sector in Israel is very advanced, and that Tel Aviv is a lot like the Silicon Valley. He said he knows very few places around the world that offer such a variety of start-up opportunities, and that his company intends to purchase more Israeli start-up companies.

### Flying car could become Israel's robotic ambulance

A group of Israeli technology and defense firm are working on what could become the world's first robotic aircraft for evacuating, and even treating, soldiers injured on the battlefield.

Israel's Fisher Institute for Air and Space Strategic Studies is working with local techies and arms-makers to build "MedUAV," a combination of ducted-fan flying drone and robotic ambulance. Test flights in

24 months. Eventually, the idea is to carry up to four passengers at speeds of 150 knots and heights of up to 10,000 feet.

Six of the 119 soldiers killed in Israel's 33-day war with Hezbollah might have survived, if the Israeli Defense Forces "had been able to evacuate casualties within the so-called 'golden hour,' when their chances for recovery were relatively high. But because the IDF could not thoroughly cleanse urban areas of hidden terrorists and concealed rocket-launching squads, the Israel Air Force often could not dispatch medical evacuation helicopters upon demand," Defense News notes.

The Fisher Institute's concept is to put together a relatively simple UAV, or unmanned aerial vehicle, at first -- and then follow with something that can also drive around a battlefield, picking up the wounded. The flying car becomes a robotic ambulance. .

### Technology versus terror

The wave of suicide bombings that swept over Israel in 2003 pushed the founders of WeCu Technologies into searching for a way to identify terrorists before they take action.

WeCU ("We see you," in case you are unaccustomed to SMS-speak) promises an automated system to detect people with mayhem on their minds. The system integrates methods and doctrines from the behavioral sciences with biometric sensors.

According to the company's founders, in under a minute it can screen an individual, without his or her knowledge or cooperation and without interfering with routine activities, and disclose intentions to carry out criminal or terror activity. It can identify subjects who are not carrying any suspicious objects, do not demonstrate any suspicious behavior, do not fit into a predefined social or other profile and do not arouse any suspicion.

Unlike systems currently in use, such as polygraphs or biometric systems based on identifying an individual under emotional pressure, WeCU does not attempt to determine whether the subject is lying, concealing information, under stress or feeling guilty. Instead, it seeks to identify concealed intentions by uncovering an associative connection between the subjects and defined threats.

The system consists of three components: Hidden biometric sensors that measure the subject remotely or during random contact; a system that displays the stimuli; and a computerized data analysis and decision-making system that operates in real time.

The system has been demonstrated to governmental authorities in Israel, the United States and Germany. The U.S. Department of Homeland

Security showed particular interest in WeCU. Two research grants have been given to the system, in a relatively rare show of support for the development.

The developers say that mass production of the system is expected within two and a half years. Each unit is expected to cost tens of thousands of dollars.

### VC investment hits 7-year high

The latest Kesselman and Kesselman PricewaterhouseCoopers MoneyTree Report shows that, during the course of the first quarter of 2008, venture capital-backed high-tech companies raised approximately \$427 million in Israel, the highest quarterly investment since the first quarter of 2001. In monetary terms, this is an increase of approximately 93% in comparison with the previous quarter, in which approximately \$221 million was raised, and an increase of approximately 39% in comparison with the corresponding quarter of last year, in which approximately \$307 million was raised.

The report also reveals that 92 Israeli high-tech companies raised capital in the first quarter of 2008, compared with 69 such companies that raised capital in the previous quarter and 81 companies that raised capital in the corresponding quarter of last year. The average investment per company was \$3.2 million this quarter, compared with \$3.8 million in the previous quarter and \$3.8 million in the corresponding quarter last year.

The data point to a shift towards investment in companies currently in the intermediate and later stages of their development. 74 such companies raised approximately \$382 million, the highest amount of capital raised in a single quarter since 2000. This amount represents approximately 90% of the total investment for the present quarter. For the overwhelming majority of funds investing in these companies, the investments for this quarter constitute follow-on investments.

In the analysis by sector, the software sector takes first place in the first quarter of 2008, with 25 companies raising approximately \$115 million, the highest amount raised by this sector in a single quarter for seven years. communications and networking takes second place, with 22 companies in this field raising approximately \$104 million in the present quarter. This compares with 14 companies that raised approximately \$58 million in the previous quarter and with 26 companies that raised approximately \$111 million in the corresponding quarter of last year.

Investment in the semiconductor sector shows an increase in the present quarter, with 10 companies raising \$63 million. This compares with 5 companies that raised approximately \$51 million in the previous quarter and with 5 companies that raised \$54 million



in the corresponding quarter of last year. The present quarter saw two large transactions (investment in amounts exceeding \$10 million per company) in this sector in a total amount of approximately \$34 million, this representing 54% of the total investment in the sector.

Twelve companies operating in the life sciences sector, which also covers medical devices and biotechnology, raised approximately \$50 million in the present quarter. This compares with 15 companies that raised approximately \$32 million in the previous quarter and 10 companies that raised approximately \$50 million in the corresponding quarter of last year. The average investment per company for the present quarter was \$4.1 million, as compared to \$2.1 million in the previous quarter and \$5 million in the corresponding quarter of last year.

The domestic venture capital funds invested approximately \$204 million, this sum representing approximately 48% of total investment for the first quarter of 2008. This compares with approximately \$118 million in the previous quarter representing 53% of total investment for that quarter, and \$164 million in the corresponding quarter last year also representing 53% of total investment for that quarter.

In addition to investment in high-tech companies with operations in Israel, local venture capital funds also invested \$21 million in 10 overseas high-tech companies that are not engaged in operations in Israel. This compares with approximately \$15 million invested in 10 non-Israeli companies in the previous quarter and with approximately \$16 million invested in 16 non-Israeli companies in the corresponding quarter of last year.

### UK co Micro Focus buys NetManage for \$73.3m.

British software company Micro Focus International plc (LSE: MCRO) has acquired Israeli software developer NetManage Inc. (Nasdaq: NETM) at \$7.20 per share for a total of \$73.3 million.

The transaction was made at a premium of 73% on NetManage's closing price of \$4.15. The companies expect to close the deal in June.

Micro Focus makes enterprise application management and modernization solutions, while NetManage develops solutions for transforming legacy applications into new Web-based business solutions. The consolidation will enable the companies to create a better software legacy modernization product.

Micro Focus said that it expects \$226-228 million revenue for the fiscal year ending on April 30, 2008. NetManage has a market cap of \$40 million.

### IBM to set up new R&D lab in Israel

IBM Corp. (NYSE: IBM) is setting up a new Systems and Technology Group Lab in Israel to be headed by Alain Azagury. The lab will leverage the deep technology skills and the creativity of the Israeli industry to create a unique organization that will attract top talent to IBM's System & Technology Group.

Since January 2008, IBM has acquired three Israeli IT storage solutions start-ups: XIV, FilesX Ltd., and Diligent Technologies Corporation. IBM has been active in Israel since acquiring Ubique in 1998, Israel's first computer research lab founded in the 1970s at the Technion Israel Institute of Technology. On this foundation, IBM set up development labs in Rehovot and Jerusalem. The company also operates a semiconductor lab at Ramat Hayal in Tel Aviv. XIV will operate separately from the new STG Lab.

Azagury will be responsible for coordinating storage development activities in Israel and leading the circuit and logic design technologies.

### The new IBM STG Lab will give the IBM R&D

Labs in Israel a firm representation of the IBM divisions dedicated to infrastructure solutions and technologies. The STG Lab will work closely with its sister labs in Israel: the long-established Haifa Research Lab directed by Oded

Cohn and the more recently established Software Lab headed by Daniel Yellin. The three labs employ over 700 researchers and developers, whose research generates products and solutions worldwide.

### High-tech capital raising in Q1 2008 reached \$617m.



In the first quarter of 2008, 135 Israeli high-tech companies raised \$617 million from venture investors – both local and foreign. The amount raised was the highest in seven years, 52 percent above the amount raised by 121 companies in the first quarter of 2007, and 23 percent above the previous quarter's amount raised by 115 companies.

"2008 started exceptionally well, demonstrating the strength of the local high-tech industry," said Zeev Holtzman, Chairman of IVC Research Center and Giza Venture Capital. "A relatively high number of high-tech companies took advantage of the momentum built up in 2007 and raised significant capital based to the premise that 'one should raise money when one can and not when it's needed.' Capital raising activity will probably moderate in upcoming quarters. Yet, we expect that the \$1.6

billion average investment level of the last few years will be maintained in 2008.”.

Ninety-six companies attracted more than \$1 million each. Of these, 29 companies raised between \$5 million and \$10 million each, 14 companies raised between \$10 million and \$20 million each, two companies raised between \$20 million and \$30 million each, and two companies raised more than \$30 million.

### Israeli VC Investment Activity .



In the first quarter of 2008, Israeli VCs invested \$262 million in Israeli companies, 53 percent more than in the first quarter of 2007 and 84 percent above investments made in the previous quarter (Q4 2007). “We haven’t seen such high figures since the first quarter of 2001.” said Efrat Zakai, Director of Research at IVC. “The quarter was characterized by a high level of investment by Israeli

VCs, as six funds each invested more than \$15 million.”.

The Israeli VC investment share of the total capital invested was 43 percent, very close to previous year’s average of 42 percent. First investments accounted for 42 percent of total dollar investments by Israeli VCs in Q1, compared with 51 percent in the first quarter of 2007 and 33 percent in Q4 2007. The average First investment by Israeli VCs was \$2.6 million, while the average Follow-on investment was \$1.2 million.

### Researchers develop method for transmitting medical images via cell phones

A process to transmit medical images via cellular phones that has been developed by a Hebrew University of Jerusalem researcher has the potential to provide sophisticated radiological diagnoses and treatment to the majority of the world’s population lacking access to such technology. This would include millions in developing nations as well as those in rural areas of developed countries who live considerable distances from modern medical centers.

Prof. Boris Rubinsky has demonstrated the feasibility of his new concept that can replace current systems -- which are based on conventional, stand-alone medical imaging devices -- with a new medical imaging system consisting of two independent components connected through cellular phone technology. The concept could be developed with various medical imaging modalities. This new technique is described in the latest online issue of the journal, Public Library of Science ONE .

Their invention is jointly patented and owned by Yissum, the Hebrew University’s Technology Transfer

Company, and by the University of California, Berkeley. Commercialization efforts will be made by Yissum and by Berkeley’s technology transfer organization.

According to the World Health Organization, some three-quarters of the world’s population has no access to ultrasounds, X-rays, magnetic resonance images and other medical imaging technology used for a wide range of applications, from detecting tumors and confirming signs of active tuberculosis infections to monitoring the health of developing fetuses during pregnancy.

The conventional medical imaging systems in use today -- self-contained units combining data acquisition hardware with software processing hardware and imaging display -- are expensive devices demanding sensitive handling and maintenance and extensive user training. Only those treatment centers with the required financial and manpower resources are usually able to acquire and utilize them. Even when such equipment does exist in developing countries, it is often not in use because it is too sophisticated or in disrepair or because the health personnel are not trained to use it, said Rubinsky.

“Imaging is considered one of the most important achievements in modern medicine. Diagnosis and treatment of an estimated 20 percent of diseases would benefit from medical imaging, yet this advancement has been out of reach for millions of people in the world because the equipment is too costly to maintain. Our system would make imaging technology inexpensive and accessible for these underserved populations,” said Rubinsky.

Under the new technology developed by Rubinsky, an independent data acquisition device (DAD) at a remote patient site that is simple with limited controls and no image display capability would be connected via cellular phone technology with an advanced image reconstruction and hardware control multiserver unit at a central site (which can be anywhere in the world).

The cellular phone technology transmits unprocessed, raw data from the patient site DAD to the cutting- edge central facility that has the sophisticated software and hardware required for image reconstruction. This data is then returned from the central facility to the cellular phone at the DAD site in the form of an image and displayed on its screen. “The DAD can be made with off-the-shelf parts that somebody with basic technical training can operate,” Rubinsky noted.

The fact that the image itself is produced in a centralized location and not on the measurement device has the potential to make technological advances in medical imaging processing continuously available to remote areas of the world, which despite their lack of sophisticated equipment in general often do have cell phone communication. (Indeed, it is estimated



that more than 60 percent of all cell phones currently in use in the world are in developing countries.)

Rubinsky stresses the key economic benefits of this new method: By simplifying the apparatus at the patient site, it reduces the cost of medical imaging devices in general. It also removes the need for advanced imaging training of the personnel at the patient site.

### **PineApp named 'Product of the Year' innovation award**



PineApp, a specialist in securing networks and email systems, announced that its Mail-SeCure perimeter security appliance has been named a 2008 AeA High-Tech Innovation Awards' finalist for 'Product of the Year' in the Systems Hardware category.

The 15th Annual High-Tech Innovation Awards were presented recently at the Hyatt Regency Irvine, California. The awards recognize local companies, individuals and products in the technology field that drive innovation in Orange County.

PineApp's award winning Mail-SeCure platform is an advanced anti-spam and email security appliance that combats evolving email-based threats such as botnets, image and MP3-based spam and sophisticated virus attacks. Mail-SeCure provides unrivaled email security with the integration of five anti-virus engines -- three signature based, one heuristic based and one zero-hour detection mechanism -- along with 11 anti-spam engines. This approach protects against targeted threats such as Mail-bombing, DoES and Backscatter, as well as non-targeted threats including viruses, spam, worms and Trojan-horses.

### **A Supernova explosion is observed in real time**

An ordinary observation with NASA's Swift research satellite recently led to the first real-time sighting of a star in the process of exploding. Astronomers have surveyed thousands of these supernova explosions in the past, but their observations have always begun some time after the main event is underway. The information gained from catching a supernova at the very onset is already being hailed as the "Rosetta Stone" of star explosion, and it is helping scientists to form a detailed picture of the processes involved.

A typical supernova is preceded by the burnout of a massive star. When the nuclear fuel at its core runs out, the star collapses under its own weight. The resulting body, now known as a neutron star, is so dense that one teaspoonful of its core material weighs as much as all the humans on earth.

This extreme compression is followed by a rebound, creating a shock wave that bounces off the surface of the newly formed neutron star and rips through its outer, gaseous layers. These layers are ejected, flying off the surface in rapidly expanding shells. For the last four decades, astronomers have theorized that the explosion is preceded by a burst of x-ray radiation that lasts for several minutes.

For the first time, that burst was actually seen -- all previous observations had taken place when the star was already an expanding shell of debris, days or even weeks after the explosions' start. Both luck and the Swift satellite's unique design played a role in the discovery.

In January of this year, Drs. Alicia Soderberg and Edo Berger of Princeton University, USA, were using the satellite, which measures gamma rays, X rays and ultraviolet light, to observe another supernova in a spiral galaxy in the Lynx constellation, 90 million light-years from Earth. At 9:33 EST, they spotted an extremely bright five-minute X-ray burst and realized it was coming from another location within the same galaxy.

The Princeton scientists immediately assembled a team of 15 research groups around the world to investigate, including Prof. Eli Waxman and Dr. Avishay Gal-Yam of the Weizmann Institute's Physics Faculty. Gal-Yam performed measurements and calculations that enabled the scientific team to cancel out the various disturbances that affect astronomical data, such as radiation-absorbing interstellar dust, which skews observed measurements.

The shock-wave eruption and X-ray generation of this supernova explosion went exactly according to the theoretical model that Waxman and Prof. Peter Messer's of Penn State University had developed earlier. The data showed that the explosion -- known as supernova 2008D -- is a relatively common type of supernova, and not a rare supernova involving jets of gamma ray radiation.

Already, the observation has provided scientists with valuable new information on supernovae, including the dimensions of the exploding star, the structure of its envelope and the properties of the shock wave that hurls off the star's outer envelope. As they continue to analyze the data, the scientists believe it may help them to solve some of the outstanding puzzles surrounding these types of explosion.

For instance, according to mathematical calculations of the forces involved in neutron star collapse, the bouncing shock wave should stall out before it manages to eject the stellar envelope. Clearly, this is not what happens in nature, but clues found in the Swift observations may help researchers to correct the model.

Now that they have observed a supernova from the pre-

explosion stage, the scientists are not only gaining a better understanding of the little-understood processes that make these stars explode; they hope their knowledge of the x-ray emissions will enable them to catch more stars that are right on the brink of becoming supernovae.

### Headset's and Ramos's LuboCollar, designed to help save lives of trauma patients



Hadasit and Ramot exhibited LuboCollar and other groundbreaking medical technologies at the ILSI-Biomed Israel 2008 Conference, 7th National Life Science & Technology Week, at the David Intercontinental Hotel in Tel Aviv, May 27-29, 2008. ILSI-Biomed Israel 2008.

Hadasit, the technology transfer company of Hadassah University Hospitals, and Ramot at Tel Aviv University Ltd., the technology transfer company of Tel Aviv University, announced that the Lubo Cervical Collar, designed to help save lives in trauma situations, has demonstrated to be 100% effective in a preliminary efficacy study. The IRB approved study was registered with the National Institute of Health (NIH) and operated under the guidelines of both the NIH and the Israeli Ministry of Health.

"We now know that LuboCollar is not only safe but that it also works. LuboCollar enables medical personnel to quickly and safely evacuate from the field semi-conscious and unconscious patients, who can't breathe on their own. It simultaneously secures the spine and equally if not more importantly, prevents suffocation. The introduction of LuboCollar is likely to lead to the establishment of new guidelines and a new era in the management of these patients," said Dr. Omri Lubovsky, a physician in the Department of Orthopedic Surgery at Hadassah University Hospital.

Trauma is the number one killer of people between the ages of five and 40. All injured patients in trauma are at risk for cervical spine instability and air blockage. Though existing cervical collars ensure cervical spine stabilization, they do not protect the airway of the patient, which is opened by invasive means in necessary situations. LuboCollar is designed to protect the neck and to maintain an open airway in a non-invasive, simple and quick to operate manner. It does so by using a "jaw-thrust"-like knob to maneuver the mandibles, pushing them forward in the direction of the chin.

Ten generally healthy people, between the ages of 18 and 60, who were scheduled for fracture surgeries at Hadassah University Hospital, were enrolled in the efficacy study. Results showed that LuboCollar was 100% successful in securing the airways of the seven patients who lost muscle tone after receiving general anesthesia. To generate more safety data, LuboCollar was also employed during the surgeries of the three to extend enrollment numbers in order

to further study the efficacy of the product," said Dr. Yuval Meroz, an anesthesiologist at Hadassah University Hospital and part of the clinical team of the LuboCollar study. Patients who were able to breathe independently after anesthesia. In all cases, no adverse side effects were reported. We are now waiting for approval from the Ministry of Health of Israel.

### UAV tested for patrols over northern water

Border protection authorities have been trialling an unmanned aerial vehicle over Australia's northern waters. Customs and Border Protection Command will use a six-week trial of the Israeli-made aircraft to assess its technology for use in helping combat quarantine and border threats, illegal foreign fishing and prohibited activities around marine sites.

The Heron model, operated by Israel Aerospace Industries, measures 8.5m long, has a wingspan of 16.6m and a range of 1800km.

The latest trial follows successful flyovers of the Gulf of Carpentaria, Torres Strait and the Great Barrier Reef, Home Affairs Minister Bob Debus said.

"UAVs are quiet, virtually undetectable and can maintain extended surveillance of a target area or vessel for many hours at a time. Video, photographs, live radar and vessel information will be transmitted from the aircraft to a station in Weipa and forwarded to the BPC national surveillance centre in Canberra.

The data will be shared with the Australian Fisheries Management Authority and the Great Barrier Reef Marine Park Authority.

"Piloted aircraft, helicopters and satellite technology are already available to help protect our borders and are in round-the-clock use by the command," Mr Debus said.

### Investment Trends in the Israeli VC Market

The Communications Sector, which has a track record for producing successful start-ups and innovative technology, accounted for 21% of the VC market in 2007 and continued to be the most invested in field in Israel. Following close behind are the growing Life Sciences Sector, which accounted for 20%, and the Semiconductor, which accounted for 19% of the total VC funds and 31% of the VC funds in the fourth quarter. The Internet Sector, with \$257 million, has increased its share to 15%.

#### Investment by Stage

Being at the most crucial phase, 78 Seed Companies attracted the largest amount of funds since 2001, with \$151 million in funds, accounting for 8% of the total capital raised in 2007.

Early Stage/R&D Companies accounted for 30.5% of the funds raised in 2006.

Mid-Stage Companies raised the largest sum of 169

.funding in 2006, accounting for 42% of the capital raised

With start-up companies continually moving through the pipeline and reaching the revenue growth stage, there were 37 Late Stage Companies that raised 19% of the total funds in 2006 versus the 21 companies the previous year

With 80 active funds and over \$10 billion under management, in over 1000 Israeli start-ups, Israel's venture capital industry thrives like no other country - except for Silicon Valley. In 2007, 462 Israeli hi-tech companies raised over \$1.75 billion - the highest amount in the past 6 years and a 8% increase over the previous year and 31.% above 2005 levels. This growth prompted both the IMD and the WEF to rank Israel as 2nd in the world for the amount of funds raised by technology start-ups, following only the US

### Thriving VC Market in Israel

International VC companies accounted for approximately \$1 billion - 61% of the capital invested in Israeli high-tech companies in 2007

International Venture Capital Firms: There are major U.S. and European VC funds with Israeli Branches, including Sequoia, Benchmark, Accel, Walden, Advent, Apax, Alta-Berkeley, and Partech. Additionally, many international funds, such as Lightspeed, Accel and Greylock, that do not have branches in Israel, actively invest in Israel through an in-house specialist. The VC divisions of leading multinationals, such as Intel, HP, TimeWarner Inc., Sony, Cisco and more, which have opened R&D centers and acquired companies in Israel, have also found that the country offers a profitable VC market

Israeli Venture Capital Firms: The great interest shown by the International VC's in Israel is due to the existence of a thriving local VC industry

In 2007, Israeli venture capital funds invested \$678 million, accounting for 39% of the total amount invested in Israeli high-tech companies. First investments made by the local industry were 43% of the total amount it invested in 2007. The average first investment was \$2.48 million. The average follow-on investment was \$0.89 million

#### Delivering successful exits

The Boom in Mergers & Acquisitions: In 2006, there were 79 mergers and acquisitions in the Israeli market worth a total of over \$10 billion, compared to 72 deals which reached \$2.75 billion in 2005

In 2006, out of the 79 M&A's, 48 of them were of VC backed companies and each deal averaged of \$187 million per deal. In comparison, in 2004 there were 32 M&A's averaging only \$24.25 million per deal

Increasing number of IPO's: As of the end of 2006, there were 90 Israeli companies offered on US stock exchanges and 40 offered on London's Stock Exchange. With over 70 Israeli listings, Israel has more companies on the NASDAQ than any other country in the world, outside of the U.S

In 2006, 33 Israeli high-tech companies raised \$4.15 billion in public offerings on the Israeli, US and European stock exchanges, which represents a 187% increase over 2005's dollar amount. Twenty Israeli technology companies made IPO's raising a total of \$693 million, eight of which were on foreign exchanges

#### Investment Trends in the Israeli VC Market

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Mid-Stage Companies raised the largest sum of 169 funding in 2006, accounting for 42% of the capital raised

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### Economy grows faster than expected

Israel's GDP rose by an annualized 5.4% in the first quarter and business product rose by 6.1%, the Central Bureau of Statistics reported today. The results belie the pessimistic forecasts of 4.3% GDP growth by the Ministry of Finance and 3.2% by the Bank of Israel

The growth is slightly slower than the 5.8% growth in the fourth quarter of 2007 and the 5.9% rate in the third quarter. Business product growth slowed from 7.6% in the fourth quarter and 7.3% in the third quarter

The Central Bureau of Statistics also reports that exports of goods and services rose by an annualized 12.6% in the first quarter, after rising by 14.7% in the preceding quarter. Imports of goods and services rose by an annualized 18.7% in the first quarter from 6.8% in the preceding quarter

Investment in fixed assets rose by an annualized 9.6%, after falling by 11.8% in the preceding quarter. Private consumption, excluding durable goods, rose by 6.1%. Private consumption of durable goods rose by 18.8% (99% in annual terms) in the first quarter

**Israeli wireless company Cellvine buys Wi-Tron**

Israeli company Cellvine Ltd. has signed an agreement to acquire Wi-Tron Inc. (Raritan, New Jersey), a manufacturer of power amplifiers

The financial value of the deal, paid for with shares, was not disclosed

Cellvine (Or Yehuda, Israel), whose investors include Peregrine Ventures, Stratum Wealth Management and U.S. entrepreneur Phillip Frost, offers cellular coverage enhancement products based on technology for improving cellular signals for in-building, urban and rural over-ground and subterranean environments. Upon completion of the transaction, the ratio between the shareholding of current shareholders of Cellvine and current shareholders of Wi-Tron will be 85 to 15, on a fully diluted basis. The transaction is subject to various formal conditions. Yoni Schiff, CEO of Cellvine Ltd., said: "Wi-Tron's strong amplifier technology will allow us to provide unique and cutting-edge outdoor coverage solutions to the civilian and defense markets." The merged company will be managed by Schiff and will be traded on Nasdaq's OTC Bulletin Board. The sales and marketing will be based in the U.S. with R&D conducted in Israel

**Israeli Shekel becomes fully convertible**

The shekel has become convertible currency on capital and money markets worldwide, after Israel was made an official member of the international currency clearing system operated by CLS Bank International. From now on, the Israeli currency is legal tender internationally, meaning that it can be used in trading on markets overseas, with banks everywhere converting shekels into other currencies, and Israeli companies and firms now able to settle payments in shekels either by check or bank transfer to the accounts of their customers overseas

The announcement by CLS said, "Following regulatory approval, the Israeli shekel has been designated as CLS Bank Settlement Eligible Currency by the CLS Bank Board of Directors. The extension of the CLS Bank service enhances systemic stability in the settlement of foreign exchange transactions, and over half of all CLS Bank Members will be able to settle in these two currencies immediately

Admission to the CLS system will mean that Israeli firms and businesspeople will be able to carry out all their payments and clearance locally, and these will be honored by their overseas customers. Check clearance and bank transfers will be executed through the two largest banks, Bank Leumi (TASE: LUMI) and Bank Hapoalim (LSE: 800A; TASE: POLI), backed by the new clearing platform set up at the Bank of Israel last September

**Six Israeli start-ups among Gartner "Cool Vendors"**

The Cool Vendors 2008 report covers 172 companies.

The Israel High-Tech & Investment Report is a monthly report dealing with news, developments and investment opportunities in the universe of Israeli technology and business. While effort is made to ensure the contents' accuracy, it is not guaranteed. Reports about public companies are not intended as promotion of shares, nor should they be construed as such

Six Israeli start-ups are among the Gartner Group's "Cool Vendors" list for 2008. The award is important for small companies with advanced technology by giving them exposure. Gartner Group selected the winners after the consultant's analysts met the companies and mapped their ideas and a selection committee picked the winners. Gartner Group covered 172 companies in 41 reports on different sectors.

The six Israeli winners for 2008 are:

- Shai Agassi's electric car venture Project Better Place;
- Aternity Ltd., which is developing software that monitors applications running on computers;
- Zoomix Ltd., a provider of information management and integration systems;
- Qumranet Inc., founded by Giora Yaron, which is developing a Linux-based virtual work environment;
- VeNotion Technologies Ltd., which develops business performance management solutions;
- Yoggie Security Systems Ltd., which is developing IT security solutions for mobile facilities.



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