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NEWS FROM THE ILAN RAMON INTERNATIONAL SPACE CONFERENCE

Conference Highlights Untapped Potential of Israeli Space Program

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In the winter of 1998, after another Shavit launch failure and loss of an Ofeq spy satellite, Israel's space program was on the verge of bankruptcy. With only one payload-carrying satellite in low Earth orbit and no available funding for new builds, Israel's Ministry of Defense (MoD) was forced into selling off real estate to hang on to its military space ambitions.

"The decision was made to close the program. But we found a way to sell 1,000 apartments to keep the program running," Ilan Biran, MoD director-general at the time, told participants here at the Fourth Annual Ilan Ramon International Space Conference, named after Israel's first astronaut killed along with six other members of the STS-107 Space Shuttle Columbia mission on Feb. 1, 2003.

And while Biran's account omitted the nearly \$100 million in commercial investment solicited to sustain Israel's remote-sensing program — a controversial matter now pending in U.S. courts — it aptly illustrates the shoestring funding and ad hoc nature in which Israel plans and executes national space plans.

"There's lots of high talk, but the priority doesn't match," said Biran, now chairman of state-owned Rafael Ltd. In his address, Biran cited three critical elements now lacking in Israel's space program: a clear statement of work outlining operational requirements and deployment schedules; an appropriate budget for funding national requirements; and a government-endorsed ten-year plan.

Until all three elements are firmly in place, Biran warned that the stark gap between potential and implementation will continue to grow.

Untapped Potential

Untapped potential was the dominant theme of the formal two-day conference



Chaim Eshed

by NASA, Israel's Fisher Institute for Air & Space Strategic Studies and the Israeli Science Ministry, as well as a half-day, business-oriented preconference hosted by the U.S. Embassy and Futron Corp., a U.S.-based industry consultancy.

About 500 government, industry and academic participants, including dozens from the United States, Italy, France and several other countries, received overviews of current Israeli programs and were encouraged to cooperate in future initiatives. But with few exceptions, enthusiasm here was limited to academic and scientific endeavors in the civilian sphere rather than near-term prospects for profitable ventures with Israeli industry.

"Can we be among the leaders in the

global space sector?" Chaim Eshed, Israeli MoD director for space programs, asked rhetorically. "No doubt we're leading in the niche of minisatellites. Up until now, MoD has been the biggest locomotive driving this success. But I'm concerned that we're at the peak now, and from such a high point, the direction is usually down."

Eshed's space roadmap calls for a 3-D constellation of minisatellites — weighing up to 400 kilograms — with increasingly sophisticated electro-optical and radar payloads. MoD's second priority aims to increase revisit time and fill critical gaps through very inexpensive microsatellites in the 100-kilogram to 120-kilogram class capable of being launched on-demand by fighter or transport aircraft. He admits, however, that MoD plans are highly dependent on external funding generated from the commercial market.

In an admittedly provocative Jan. 29 presentation, Jay Gullish, Futron's senior program manager for space and telecommunications, noted that Israel ranked ninth in a worldwide survey of global space capabilities. According to his research, Israel accounted for two of the 68 satellites launched in 2007 and is building two of the 102 satellites under contract for 2008. Both are key benchmarks for assessing worldwide competitiveness.

According to Futron's research for 2008, Gilat retained its number 43 ranking among the world's largest revenue-generating space companies while Israel Aerospace Industries Ltd. (IAI) dropped from 47 to 49 in its global listing.

"You all have a lot to be proud of, but I'd not be complacent," Gullish told government and industry executives here. "There's great work going on here in the schools and I've seen tremendous enthusiasm generated by the new INSA [Israel Nano-Satellite Association]... But what

has significantly changed over 2008? Are you selling more satellites? Have you concluded any new partnerships or cooperative ventures? Do you have a space policy?" he asked.

Gullish chided what he viewed as the limited transparency of the Israeli space program. "In a global environment where transparency is so important, Israeli policy is still a mystery to me. I don't understand your budget, your capabilities or what you aim to achieve." He noted that even in communist China, the government publishes an annual white paper on space, and data regarding strategy, objectives and timelines can be accessed online.

In a speech, Maj. Gen. Ido Nehushtan, Israel Air Force (IAF) commander, dashed hopes here that the so-called "owner" of the military space mission aimed to revitalize moribund space plans. Not only was Nehushtan's annual address void of any vision for space, it failed to even hint of future operational requirements or modernization plans.

In fact, his address — which former IAF chiefs have used to accentuate priorities and lobby for added funding — barely mentioned space, beyond commenting about its "special place" and its "contribution to dealing with today's threats."

When asked if he was disappointed by the address, Tal Inbar, head of the Fisher Institute's Space Research Center and a key organizer of the event, replied diplomatically: "Focus on the positive. We're extremely encouraged by the interest we're getting from NASA, Italian and European space officials, and by the fact that so many young soldiers and officers with [Israeli military intelligence] have elected to participate in this year's conference."

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NASA's Worden Praises Israeli Space Capabilities

Simon "Pete" Worden, director of NASA's Ames Research Center in Mountain View, Calif., called for closer cooperation between the U.S. space agency and its Israeli counterparts.

Worden praised Israel's space capabilities and insisted commercial competitiveness and revenue streams do not fully reflect a nation's strength in space. "From what I've seen, Israel has actually built a very well-integrated security system ... Space is essential for national security and critical for infrastructure, and if it makes money, that's great, that's gravy," Worden said.

In an interview following a weeklong visit here, Worden commended Israel's potential in micro- and nano-satellites, air-launched options and various research initiatives. He also singled out Israel's data-fusion capabilities as "top-ranked in the world" and an area for potential cooperation with NASA.

"Israel's technical capabilities are impressive and affordable ... I'm going to take back a very thorough report, and recommend spending a lot of effort in reconnecting with the Israel Space Agency and other relevant organizations here," Worden said.

He added, "Israel has clearly recognized that space is a strong force multiplier, and that development of communications, surveillance and C4ISR capabilities pays big dividends. It also realizes that space is an inspiration; it's part of a country's intellectual currency, with a lot of positive benefits. I've seen how it has inspired a lot of young

people here, and how it has given Israel a seat at the table in numerous practical fora."

Israel's MicroSat, Ltd. Almost Up and Running

Nearly a decade in the making, Israel's MicroSat, Ltd., a new firm specializing in satellites weighing up to 120 kilograms, is finally about to open for business. A partnership of IAI and Rafael, MicroSat Ltd. will specialize in generic, low-cost satellite busses capable of housing a variety of so-called plug-and-play payloads to be launched on demand for multiple commercial, scientific and security missions.

Initially, IAI aggressively opposed attempts by Rafael to encroach on what it viewed as its exclusive, satellite-producing domain. In the first few years of the decade, IAI had argued that it would be wasteful for Israel to invest in duplicative infrastructure and have the proceeds shared by the two government-owned firms. By the middle of the decade, however, the two firms signed an agreement launching the new venture and the matter has been stuck in various governmental reviews since then.

Late last year, Israel's Anti-trust Authority finally endorsed the new venture and a similar endorsement is expected soon by another government body. "The wheels of bureaucracy turn slowly here in Israel, but we've overcome the last obstacles and will soon be ready to roll," said Amitsur Rosenfeld, managing director of the new firm.

First Israeli Nano-Satellite Now In Final Construction

The first Israeli nano-satellite, dubbed InKlajn (pronounced incline, and named in memory of local scientist Marcel Klajn) should be completed within two months, and executives here are now evaluating at least two launch options.

Raz Tamir, co-founder of the Israel Nano-Satellite Association and director of IAI's recently established nanosatellite department, said launch options include the Indian Polar Satellite Launch Vehicle and Space Exploration Technologies' Falcon 1. Launch costs for InKlajn, which weighs less than 10 kilograms, are estimated at \$150,000 or less, and initial revenue-generating plans call for a constellation of narrow band satellites for air traffic control and other commercial applications.

Raz said his program is currently funded for two satellites, but anticipates tremendous interest once the first InKlajn is successfully launched. Several local specialty firms have joined the project, partly due to Raz's enthusiasm and also for the opportunity to test and qualify components in space.

"This guy is the vision driving the nanosatellite industry here in Israel. A few years ago, people thought he was crazy, but now many of us are converts to the huge potential to be gained from this legitimate, niche sector," said Beni Levy of Accubeat, a Jerusalem-based producer of Atomic clocks.

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