An Interview with Gilat's New CEO, Yona Ovadia

Gilat Goes Aero: What's Behind Its Surprising IFC Success

Gogo's recent award of a major inflight connectivity contract to Gilat is major news to those who follow the aviation IFC segment. Prior to the award, we had heard little about Gilat's initiatives in the aero satellite mobility market and, in particular, their new SkyEdge II-c VSAT platform.. So, to many of us in the trade press, Gilat's successful entry into the market was a real surprise, especially given the relatively entrenched positions of the current hub and modem manufacturers. Hence, we felt it was time to have a closer look at Gilat and give their new CEO, Yona Ovadia, the chance to tell his company's unusual story. So, we sought out Yona and were granted an interview. Here's what he had to say:

SMW: I understand Gilat is involved in numerous markets and activities. The company's stock has recently risen significantly. Can you give us an overview of

Gilat's recent activities and how the company is evolving.

Yona Ovadia: Broadband is quickly becoming an essential part of everyday life. Be it in the office, at home, on the road, in the air, at sea, or in a remote village, people want to be connected with plentiful, quality and affordable broadband. As we see more and more satellite capacity being launched, and much more yet to come, at ever more affordable prices, I believe this dream comes ever closer to reality.

Gilat's vision is to deliver this high quality broadband connectivity over satellite worldwide with a focus on the following growth engines: Mobility, primarily with Inflight Connectivity (IFC), Broadband Cellular Backhaul (CBH) and rural broadband.

I'll give a few examples: In response to the great potential of the IFC space, we developed a full portfolio of products to answer the most demanding needs of this market. Over the last year we made a major breakthrough with Gogo, significantly enhancing their 2Ku service.

In CBH, we have established our leadership in the LTE backhaul space with tier-1 MNO wins around the globe, many of them with long term service contracts.

This meets our strategy to engage in projects with recurring revenues, with the goal of maintaining a more consistent and profitable revenue stream. In 2017 we secured LTE backhaul business in North America with T-Mobile and Sprint, following on the footsteps of KDDI and Softbank in Japan, Globe in the Philippines and EE in the UK among others.

The third example is in the enterprise broadband market where we have recently secured business with NBN, Australia's National Broadband Network,

to provide business and enterprise satellite to serve nationwide business in regional and rural Australia

SMW: The Gilat-Gogo contract has attracted a lot of attention in the press. Can you update us on the current status of the Gogo project and how you expect it to evolve?

Gilat's IFC Modem for Gogo attracted attention from the start exhibiting unprecedented performance in Gogo's live airborne media and investor event already on May 9th 2017.

This high visibility industry event on their Boeing 737 test plane, the "Jimmy Ray", demonstrated performance of over 100Mbps. This was acknowledged by the analyst and media community to be the highest performance ever achieved onboard a commercial aircraft, as well as demonstrating continuous service with excellent user

Since then, we built, with Gogo, the largest-of-its-kind global satellite network, covering over a dozen satellites and the highest amount of capacity, and our aero modem is now in use by five airlines in hundreds of airplanes.

Based on Gogo's backlog, over 2,000 aircraft are expected to fly with Gilat's aero modem, providing an outstanding passenger user experience. We worked with Gogo hand in hand to meet their needs and comply with their most stringent requirements. I believe that the expertise that we gained from this joint initiative has made us a most valuable player in the IFC space.

SMW: With the Gogo contract, Gilat has effectively entered the IFC market. Can you give us an idea of the advantages offered by Gilat's aero modem for IFC markets? What is behind the high performance? Can you tell us more about the modem's functionality in terms of

applicability to these markets? Please address network management, beam switching and roaming between satellite networks.

Yona Ovadia: Gilat's aero modem is an ultra-high-performance modem manager (MODMAN). It achieves aggregate rates of 400Mbps, enabling high-speed Internet, multimedia applications, and IPTV services to passengers. The hardware is built from multi-core ARM processors delivering fast speeds at a very low power consumption. It contains a full set of embedded protocol optimization and acceleration technologies and advanced QoS capabilities to deliver the superior user experience.

In addition, it has the latest generation DVB-S2X chipset that together with Gilat's efficient modulations and coding enables operators to benefit from highest spectral efficiency. This is of most important for next generation IFC services that requires high bitrates and thereby consumes more space segment.

Our aero modem also provides the full feature set for aeronautical services, which incorporates advanced mobility features such as high speed Doppler compensation, transmit power density control with link adaptation, and antenna skew compensation with dynamic spread spectrum.

An important advantage comes with our modem's support of automatic beam switchover, which is what ensures continuity of passenger service when switching the service over different satellite beams, satellites and teleports globally.

SMW: Can you tell us more about the advantages of Gilat's X-Architecture

for IFC and mobility in general? What are the advantages of this architecture including as they come through in your Network Management platform.

Gilat's X-Architecture for SkyEdge II-c is a proven VSAT ground segment architecture for satellite communication widely deployed in many networks providing services regionally and globally.

X-Architecture is Software Defined Networking (SDN)-based, and a distributed network architecture that addresses both current and future needs of operators with a single platform that supports both fixed and mobility SATCOM applications. X-Architecture is designed for scalability thus enabling global deployment in any number of teleports, utilizing any number of satellites and satellite beams. It also allows centralized data processing sites with a scalable, cloud-based design and Network Functions Virtualization (NFV) that includes acceleration, QoS, security, and management.

A key component is the central management system for the entire network that maintains full resiliency and redundancy. Our Total Network Management System (TotalNMS) is what enables IFC global service providers' real-time viewing of the location and status of all airborne terminals, simple service provisioning and service monitoring.

It also includes an advanced Mobility Manager that enables centralized decisions for automatic beam switchover. Those decisions are based on aircraft location, beam load and priority, thereby maximizing space segment resources enabling delivery of maximum throughput supporting the excellent passenger experience.

Another important point about the NMS is the availability of continuous service coverage when traveling outside the IFC service provider's coverage area. When roaming service agreements exist, an automatic switch to the roaming service provider occurs. X-Architecture delivers network flexibility, lowest cost per bit and highest spectral efficiency while ready and planning to introduce latest technologies such

as advanced waveforms and beam hopping as they mature and further down the road, integration with 5G.

SMW: How will the evolution of satellite networks from GEO to LEO and MEO affect modem technology? Will Gilat's modem's support LEO and MEO infrastructure and will it be universally compatible with Phased Array antennas - in particular for beam switching. Do hybrid LEO\GEO networks pose any challenges to your modem-hub infrastructure given the more complex beam switching environment in a LEO or hybrid LEO constellation?

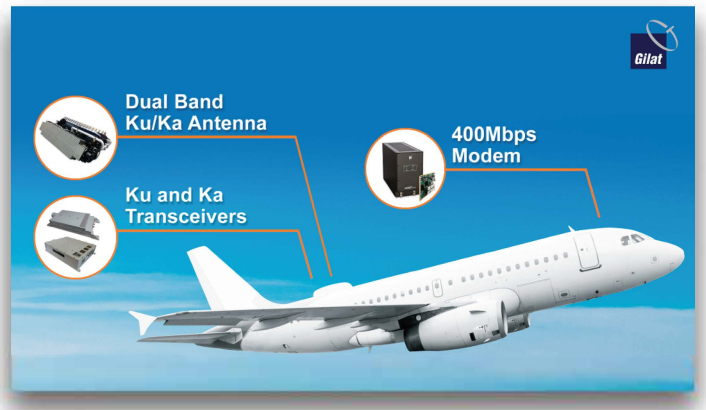
Yona Ovadia: GEO VHTS and NGSO constellations will transform the role and economics of satellite-based communication by providing abundance of capacity at a much lower cost per bit than today, as well as significantly lower latency. This change will revolutionize the use of satellites.

Instead of a last resort communications solution, Non-Geo in particular will bring satellite performance and pricing to the point where it can finally be integrated as an equal in several use cases of mainstream communication networks.

As multiple layers of satellite beams come into being, a paradigm shift to user-centric network operation from the traditional satellite-centric operation is required. A user-centric satellite network can provide users with a cross-satellite, cross-orbit, cross-beam

multi-connectivity that ensures adequate availability of throughput and QoS. Our development roadmap is aiming to address exactly this.

Already today, Gilat's modem hardware delivers high speeds and high spectral efficiency and utilizes software defined radio technology that can be programed to support GEO, LEO or MEO. Our modems use open standard SW and HW interfaces enabling full compatibility with any type of air, land, and maritime mobility antennas including electronically steered antennas. Looking forward, we see the emergence of multi-connectivity terminals for supporting converged GEO/MEO/LEO networks that support both networks simultaneously to enable service continuity. Looking forward toward GEO VHTS and NGSO we will be further developing our technology to efficiently support the scale and performance requirements of this new and abundant capacity.

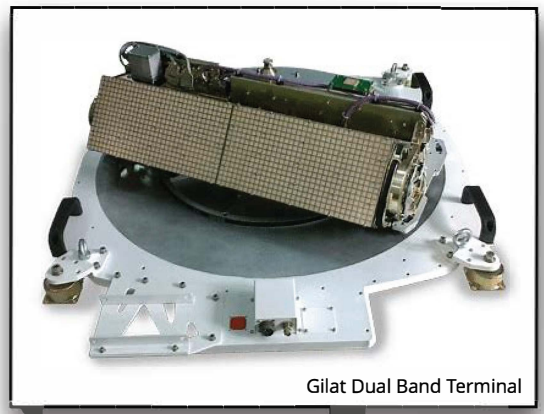


SMW: Can you tell us more about Gilat's Ka-Ku-Band aero antenna and what makes it unique and why is it needed? I understand Gogo is deploying your modem with its 2Ku platform. Where in the aero market do you see the best opportunity for your dual band Ku-Ka band antenna?

Yona Ovadia: To date, unlike Ku-band, global Ka-band coverage is not available, and even if it was available, it would have pockets of capacity supply shortages on busy routes, around airports and in regions with heavy air traffic. These supply shortages are usually addressed by adding overlapping capacity from multiple satellites that are mostly available in Ku-band.

A dual Ka and Ku-band antenna enables service providers the freedom to choose the lowest cost, best performance satellite capacity with almost no practical restrictions. It enables business flexibility to add overlapping Ku-band capacity where Ka-band beams are fully utilized.

This solution provides a full global coverage today while taking advantage of abundant and lower cost Ka-band capacity that is usually available over land while utilizing Ku-band capacity over lower demand areas, where Ku-band capacity is expected to be the only option in the near future.



Gilat Dual Band Terminal

Since the aero antenna is the most expensive component of the inflight terminal and costly in terms of installation, antenna upgrades are practically non-existent once installed. A single band antenna locks a service provider to a subset of satellite options and limits access to satellite capacity.

Currently we see opportunity for our dual band antenna in the Chinese market and with regional service providers where different frequency bands are used for domestic and international flight.

SMW: I understand that Gilat has been developing its own phased array antenna and, in addition, Gilat is working on developing a flat panel, phased array antenna in cooperation with Airbus and funded by the Clear Sky Joint Undertaking of the European Commission's Horizon 2020 and that the objective of the program is to develop a flat panel antenna that could be embedded in the wing of an aircraft. Can you bring us up to date on your ESA development efforts in both projects, and when a product would become commercially available?

Yona Ovadia: Mobility applications and NGSO satellites pose a major challenge to the

performance and economics of satellite connectivity. Traditional mechanically steered antennas will not be sufficient and efficient to address the market transformation, thus mandating Electronically Steered Antennas (ESA).

The main virtues of ESA - very low profile, instantaneous bandwidth, beam agility, multi-beam connectivity, scalability/modularity and longevity - are imperative for unlocking new business opportunities and for the performance of satellite networks.

Gilat has been investing in phased array technology for some number of years. We are now gradually moving to develop a full commercially available Electronically Steered Antennas (ESA) for the aero market.

ESAs maximize the areas under the airplane radome delivering higher antenna gain with lower profile and lower add-on drag. Eliminating mechanical elements, ESAs can deliver higher MTBF essentially reducing the total cost of operation of an aero terminal. ESAs also significantly improve the antenna lock time when switching satellites including switching from GEO and LEO or MEO while enabling to simultaneously track and lock to 2 different satellites thereby reducing the switch time.

The Airbus program is working on a new concept to embed the antenna in the aircraft wing delivering a line-fit antenna option without a need for an external radome.

SMW: Looking forward to 2018 and beyond, where do you see Gilat focus its future innovation?

Yona Ovadia: As we look ahead at the market, we see the trend of abundance of capacity continuing and accelerating, particularly as NGSO and VHTS come into play, and this will undoubtedly unlock new markets and grow demand and opportunities, across all markets.

It's quite clear to us that the demand for plentiful quality affordable broadband will continue to grow.

We believe we will see hybrid networks, GEO and NGSO, leveraging the advantages of multi-orbit, to optimize the service, as well as satellite integrated with terrestrial networks. Also, as

NGSO comes into play with its low latency, we see satellite taking a major role in 5G deployments as well as several flavors of IoT / M2M applications. Further, NGSO will require mature and affordable Electronically Steered Antennas (ESA).

In IFC, that is one of our growth engines, we will see the connection of ever smaller planes and ships onto broadband networks.

Enterprise and CBH Broadband markets will continue to evolve with demand for higher throughput and superior QoS and VHTS satellites could play a large role delivering super-fast quality and ubiquitous services everywhere.

These developments present a great opportunity for Gilat and for the satellite industry in general. Looking further, satellite ground networks are anticipated to become more integrated with the space segment as the transformation continues with more flexible and higher throughput satellites being put into space. All these will serve to meet the challenging requirements of growing broadband usage, users and markets, which are characterized by high data rate, high spectral efficiency, high mobility and high cost-efficiency.

Gilat is committed to continue and invest in growing our competitive advantage in these areas, and we plan to continue to execute upon our strategy and to capitalize on these opportunities to expand our growth engines.

SMW: Thank you, Yona. I'm certain our readers will find your thoughtful and in-depth explanations of Gilat's technology and IFC initiatives really revealing and informative. AG

About Yona Ovadia:

Yona Ovadia serves as Gilat's Chief Executive Officer

Mr. Ovadia joined Gilat in April 2015 and had previously served in various managerial posts at Amdocs for 30 years, including as Amdocs Executive Management member