



**Gottlieb's**

# **SATELLITE MOBILITY WORLD**<sup>sm</sup>

*Highlighting Disruptive, New, Mobility-Focused Satellite Ventures and Technologies*

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***With Gilat COO, Ron Levin...***

## ***Ground Segment Solutions for Multi-Orbit Satellite Constellations***

With the advent of NGSOs, satellite operators and integrators will leverage the advanced beamforming and onboard processing capabilities of these new satellites to form hybrid networks. While the benefits of using GEO and NGSO in combination will be significant, managing the ground segment will be incredibly challenging.

Gilat is meeting the challenge in extraordinary ways. As the recent winner of a major SES mPower ground segment contract, their technology is rapidly becoming an industry standard.

To find out more about the unique technologies they have developed, we met with newly appointed COO, Ron Levin.

***SMW: Multi-orbit constellations will soon become a reality. What technologies and expertise will Gilat bring to the industry to enable these new networks?***

Ron Levin: (Ron): Next-generation satellite technology is evolving to multi-orbit constellations that include Non-Geostationary Orbit (NGSO) constellations and Very High Throughput Satellites (VHTS) in Geosynchronous Earth Orbit (GEO). This new generation of multiple-orbit constellations will



feature software-defined radios, enabling the real-time reconfiguration of power, coverage, and the bandwidth necessary to track airplanes and ships, support robust service level agreements and deliver 5G and IoT services.

At Gilat, we refer to this next generation as the Elastic Era. It's an era in which satellite operators and integrators will leverage software-defined satellites and cloud-based applications to efficiently focus the satellite and ground segment resources where and when there is actual demand.

In this new Era, managing these complex new satellites and constellations requires unique innovation in the ground segment. Tight coordination between ground and space is necessary to manage software-defined platforms, dynamically and automatically configure carriers, do higher throughput data processing, and enable network orchestration capabilities while communicating with 'moving' satellites.

Gilat's Elastic architecture is designed to address the challenges of multi-orbit operation of any satellite constellation, including medium earth orbit (MEO) or low earth orbit (LEO), GEO, and NGSO. Our architecture supports 'make before

break' for an uninterrupted and transparent user experience. It no longer requires allocation of the maximum needed carrier size and computing power ahead of time.

This inefficient "design to peak usage" will no longer be essential. Instead, the network scales up bandwidth on demand to accommodate additional users, expand geographic coverage and meet changing demand trends. As a result, ground infrastructure is better optimized, resulting in reduced operating costs.

***SMW: Gilat has announced several contract awards for Non-geostationary constellations; can you provide insight on this success?***

Ron: As a leading ground segment provider for the NGSO market, Gilat is making very significant progress on several fronts.

We have partnered with SES to deliver the next-generation satellite communication for the O3b mPOWER constellation that operates in MEO at 8,000 km away from the earth's surface. The constellation consists of high-throughput satellites with a payload that will deliver terabits of capacity at low latency.

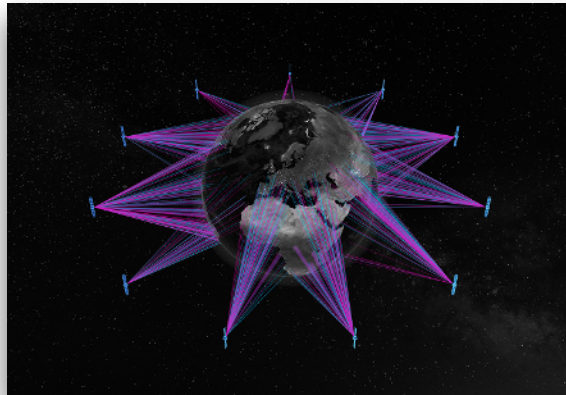
Gilat's and SES' strategies align in striving to provide our customers with abundant bandwidth, optimized services across market verticals, and the flexibility and elasticity to achieve an excellent user experience.

Several months ago, we also announced an additional partnership with a leading satellite operator to supply Gateway Solid State Power Amplifiers (SSPAs) to support LEO constellation gateways. Gilat's wholly owned subsidiary, Wavestream, was selected to supply the SSPAs because of their proven reliability in harsh environments, best addressing the stringent requirements of NGSO constellations installed in remote locations.

The advantages of NGSOs match perfectly with Gilat's main growth verticals. They also arrive at the perfect time for MNOs to start taking their 5G strategy beyond the cities and into the hands of

enterprise users in the maritime, aeronautical, and enterprise markets and governments and institutions around the world.

*SMW: Recently, you published your contract award by SES for the next-generation Mobility platform; this is further to Gilat providing a large global network for Intelsat (formerly Gogo) IFC. What is it about Gilat's technology that makes it attractive to the mobility segment?*



Ron: The recently secured agreement with SES for our next-generation mobility platform will enable Gilat to support maritime services to some of the world's top cruise lines and maritime service providers. The connectivity will be delivered by our multi-orbit platform, utilizing the O3b

mPOWER constellation and other SES GEO satellite assets including SES-17.

You rightly point out that this contract comes further to Gilat's leadership in the aero market,



primarily exemplified by the large global network that we provide to Intelsat (formerly Gogo) for in-flight connectivity. This aero network is built with Gilat's ground system and aero modems. Our open architecture allows working with any satellite network operator. At the same time, a central global management system and QoS features enable it to provision and manage bandwidth across multiple teleports, satellites, and user beams.

Currently, thousands of Gilat's aero modems are installed on aircraft. Our experience in the Mobility segment, a deep understanding of its complex requirements, our ability to partner closely with our customers and our innovative technology have been the key elements of our success.

***SMW: Are there other disruptive technologies on the horizon and how is Gilat preparing for them? What are you working on these days?***

Ron: The next major technologies to influence and

shape future satellite communication are software-defined, virtualized ground networks. Our future software-defined ground networks will integrate with software-defined satellites creating end-to-end networks with a high level of elasticity. Supported by our gateway, satellite operators and

service providers will experience a whole new level of network performance.

The programmable Software-Defined Network (SDN) allows for on-the-fly changes to beam carrier configuration to address dynamic network optimization. Carriers can be modified to increase or reduce capacity to accommodate service needs

better or to mitigate signal fade conditions.

For example, as a larger passenger airplane goes through a beam, capacity can be temporarily increased to accommodate the need for intensified usage. Or, when fade mitigation is required, the SDN provides capacity steering to ensure uninterrupted service. Software-defined networks enable seamless reconfiguration of resources.



Virtualization supports a cloud infrastructure and thereby significantly improves software agility and compute density.

These will become the standard solutions for new GEO and NGSO satellite networks within the coming years. Gilat is embracing these technologies and continuing to enhance our next-generation architecture, making it virtual, cloud-enabled, and easily integrable into an SDN Orchestrator

We also see the emergence of new frequency bands that will require Gateway baseband equipment to cope with higher bandwidth on both the uplink and downlink and better mitigate the fades caused by atmospheric conditions at these frequencies.

Lastly, we see 5G NTN (Non Terrestrial Networks) as another technology on the horizon, driven by 3GPP Release 17 and Release 18. Gilat is an active member of the working group and is keeping close track of how these new standards can expand the satellite communication industry into new markets.

***SMW: How do you see the satellite industry evolving over the next 5-7 years, and what do you expect***

### ***Gilat's role to be?***

Ron: over the next five to seven years, expect the following advancements:

- The Proliferation of NGSO constellations – today, more than 3,000 active satellites are orbiting the Earth. If current LEO satellite proposals become a reality, about 50,000 active satellites will orbit the Earth within the next ten years.
- More affordable launch options to LEO/MEO/GEO orbits with reusable and 3D printed rockets.
- Increased satellite flexibility enabling on-demand placement of capacity – as the number of Internet-connected devices increases in developed markets as well and developing markets, satellites will be able to dynamically and quickly redirect beams and power to meet immediate capacity requirements wherever needed.

- Using tracking beams in a “follow the ship,” or “follow the airplane” model - vessel tracking via satellites will efficiently provide huge amounts of capacity to extremely bandwidth hungry vessels.
- Software-defined networks will leverage all available connectivity services whenever possible, making satellite communication more agile, quicker to deploy, and less expensive to support in regional locations.
- Adoption of telecom industry standards. As a result, satellite will finally become an integral part of telecom – next-generation satellites will seamlessly integrate with 5G telecom networks to manage connectivity to cars, vessels, airplanes, and other IoT devices in remote and rural areas.

The Elastic Era will go a long way toward bridging the digital divide; billions of devices will be able to access low latency, real-time

applications. The Era will unleash new market opportunities where satellite communication was previously unfeasible or commercially challenging.

The new multi-orbit constellation infrastructures will support bandwidth intensive applications such as 5G cellular backhaul, video conferencing, tele-medicine, banking/trading, IoT aggregation and other cloud-based applications. The enhanced infrastructure will provide a wide range of new communication capabilities to markets already using satellite connectivity, including maritime, commercial/business aviation, education, government, and media services.

At Gilat, we will continue to meet the demands of the Elastic Era. We'll support operators and integrators with our advanced technology and play our part in the challenging new world of multi-orbit satellite networks.



#### **About Ron Levin:**

*Recently appointed COO, Mr. Ron Levin was formerly Vice President Mobility & Global Accounts at Gilat Satellite Networks, where he leads Gilat's activities with Satellite Operators and Broadband Managed Services.*

*Prior to Gilat, Ron headed Strategic Sales at ECI Telecom, a leading telecom equipment provider. Previously he headed Product Management at Jungo Software Technologies, a developer of software for home and small business gateways, which was later acquired by NDS and Cisco.*