



Hub of Human State Monitoring Innovations

NOVAAlert Whitepaper

NOVAAlert in a nutshell

NOVAAlert stands at the forefront of a new era in smart transportation safety and wellness: In automotive, aviation, and aerospace. NOVAAlert is poised to help make significant contributions to safer roads, skies, and space exploration by leveraging its expertise in contactless biomonitoring, AI-powered analytics, and a human-centric approach. NOVAAlert's commitment to innovation, driven by a team of seasoned management professionals and globally recognized advisors, positions the company as a key player in shaping the future of safer mobility on Earth and beyond. Novalert's technologies are also applicable in other significant growth markets.

Background

- NOVAAlert IVS Ltd., a pioneering startup specializing in Intelligent Vertical Solutions (IVS), is dedicated to enhancing human safety and performance across multiple sectors.
- We develop innovative, real-time, AI-powered contactless human state monitoring and alerting systems, primarily focusing on dual-use automotive, aviation, and emerging space mobility.
- Our comprehensive technologies go beyond the limitations of traditional monitoring wearables and camera technologies, thus forming a more reliable complementary bundling.
- Several prototypes have been designed and built, including deliveries to Israel Aerospace Industries.
- Our seasoned entrepreneurial management and veteran services group comprises biomedical, industrial, and electronics experts, augmented by top-tier human factors, medical, and business advisors.
- We are committed to delivering innovative solutions that monitor vital signs and vigilance to improve safety, optimize performance, and contribute to a safer and more productive future across various industries.
- NOVAAlert was selected as 5 of 50 companies and completed Expand Deep Space Accelerator.
- NOVAAlert was founded and funded in 2021 by Dan Atlas (Managing Director), following decades of automotive and contactless monitoring R&D by his former companies, with global scientific validation projects and equipment sales in the US, Canada, Europe, and Israel.
- Dan raised \$US1.2M in project funds from Israel, the US, and EU governments to help such pre-inception developments and tests.

What sets us apart

- Years of pre-inception automotive and contactless monitoring R&D, global tests, and validation projects.
- Core technology leverages proprietary know-how and pending patents.
- Platforms comprise nonintrusive, multiparameter sensors embedded in specially designed seat cushions, wireless seatbelt tags, and sensing straps over shirts.
- Contactless, through-clothing technology.
- Enabling continuous, comfortable monitoring and analytics without impeding movement or requiring skin contact. No skin preparation, no itchy adhesives and gels. AI-powered analytics.
- Focusing on critical applications: We prioritize sectors where human factors are paramount to safety and efficiency. These include:
 - Automotive DMS (Driver Monitoring Systems): Helping prevent accidents caused by driver fatigue, intoxication, or health issues. Mandated in Europe as of mid-2024.
 - Aviation: Enabling a single flying pilot in the cockpit while the copilot naps, mitigating health risks, and unscheduled sleep associated with long flights; enabling the communicated status of an ill passenger.
 - Space Mobility: Ensuring travelers' well-being during space travel.
- Dual-Use Applications: Our technology's adaptability extends beyond transportation and aerospace, offering valuable applications in:
 - Healthcare: Continuous surveillance monitoring of non-critical patients for early detection of health deterioration and suggested seeking professional help.
 - Sports & Fitness: Optimizing athletic performance by tracking fatigue and stress levels.
 - Security & Surveillance: Alerting for vital sign issues of unattended personnel.
 - Mental Health: Enabling sensory feedback for emotional stress management training.

SENSeat™

Description

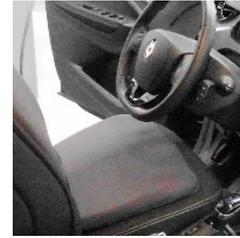
- Contactless, through clothing smart sensing seat cushion
- Designed and validated to monitor driver's and pilots' vital signs and identify early signs of fatigue
- Provides vibratory countermeasures well before entering the dangerous stage of drowsiness
- Multiparameter sensors and actuators are embedded within the seat to provide AI-powered real-time alerts and fatigue countermeasures
- Hi-Reliability: Multi-sensor redundancy and self-calibration for dependable performance
- Dual-Use Applications: Solutions cater to civilian and military/security markets
- Driver's health monitoring can alert their surroundings of a potentially incapacitated driver
- Flying and non-flying pilots' health monitoring can alert a napping non-flying pilot of potential incapacitation, enabling safe takeover
- Unique features include "virtual rumble strips" and reaction time trend analysis.
- Functions as a "black box" for incident recording
- Complements camera-based systems that suffer from optical issues and miss open-eye microsleap.
- High reliability dual function backup, self-tests
- Low production cost.

Mobility Use Case

- DMS (Driver Monitoring System), 2024 EU mandated
- PMS (Pilot Monitoring System).

Security Use Case

- Covert screening polygraph.



DMS Seat+Back Cushion

The lab prototype demonstrated vital signs and signs of fatigue monitoring to OEM.



PMS Seat Cushion

Delivered pilots' vital sign monitoring systems to Israel Aerospace Industries, tested on roads and in takeoff.



Covert screening polygraph

Working systems by a former Atlas company were delivered to Israel's and USA's Homeland Security.

SMARTag™

Description

- Biometric monitoring tag (ID and physiology)
- Seatbelt clip-on, contactless (no body contact)
- Integrates wireless monitoring on smartphone
- Parameters mix - Pulse, Respiration, Activity
- **Low-Cost & Reliable:** Affordable sensors with self-calibration and backup functionalities.
- Low production cost.

Mobility Use Case

- Can be attached to infant's seat belt to alert of child's presence and ensure not accidentally left behind
- Cheat-proof HOV (High Occupancy) passenger counting using scientifically validated parameters. Includes Bluetooth ID and real-time driver's phone connectivity.

Security Use Case

- Wireless, fast-to-apply smartphone screening polygraph using scientifically validated parameters.

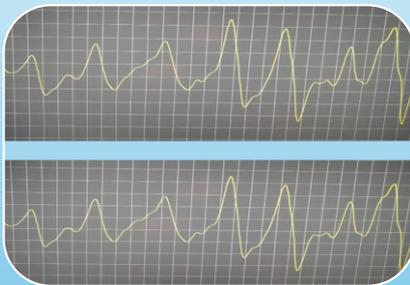


Prototypes were tested in a moving car and the lab.

Solution Innovation - NOVAAlert SMARTag™

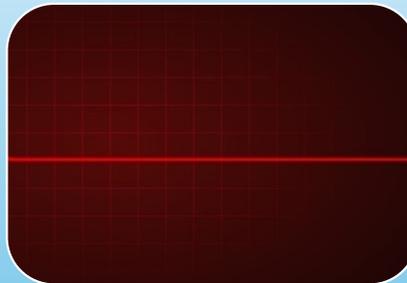
Cheat-proof biometric passenger counting in fast carpool lanes.

A NOVAAlert LifeGuard Seating Machines™ Platform



Cheater 1

Placed 2 tags on the same seatbelt
(identical vitals)



Cheater 2

Clicked seatbelt for with no person or
mannequin – no vital signs.



Cheater 3

Strapped a dog in– non-human vitals.

<https://contest.techbriefs.com/2023/entries/automotive-transportation/12123>

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NOVAAlert Intelligent Vehicular Solutions Space V1

NOVAAlert IVS Ltd.

SENStrap™ (NEW)

- In-development medically-unregulated monitoring family
- No medical claims in avoiding the need for FDA clearance
- Sensory biofeedback for stress management training

Description

- Wearable over shirt
- Comfortable, lightweight sensing strap
- Integrates contactless, wireless monitoring
- Alerts based on hi/lo heart rate/respiration rate thresholds
- No skin preparation, no adhesives, no gel, no cable
- Unlike smart shirts that need washing
- Unlike smart shirts where silver may have long-term effects
- Quick to attach and remove
- Enables friendly over-clothing health checkups
- Personal symptomatic decision support to seek help
- Parameters mix - ECG, Pulse, Respiration, Activity
- Low production cost.

Mobility Use Case

Intended use for the unique challenges of air and space travel

- In-flight stress/health issue identification
- Ill passenger emergency flight landing decision support
- Sensory biofeedback stress management training.

Sports Use Case

- Friendly alternative to on-body ECG heart rate monitors
- Accurate alternative to optical heart rate watch monitors.

Security Use Case

- Tiny, fast-to-apply smartphone screening polygraph.



Partnering Models

1. We are open to creating an aerospace partnership (NOVIATION Medical™) in Mitzpe Ramon. Its mission will be collaboration to develop and manufacture ICU-level, regulated, medical monitoring equipment for astronauts, space and aircraft passengers, and other space mission personnel. It will leverage NOVAAlert's biomedical know-how. Its distinction will be contactless monitoring, meaning all sensors and electrodes will be in strips over shirts- no body contact. And, presently no competition.



2. Additionally, our non-medical technologies are open to joint development - collaborating to co-develop customized solutions tailored to specific needs and target markets. Technology licensing. Investment opportunities.
 - Vehicle Manufacturers: Integrating our technology into new vehicles to enhance safety and driver assistance systems: trucks, buses aftermarket; bundling with inadequate camera-based driver monitoring due to optical issues and undetected open-eye microsleep.
 - Airlines and Aerospace Companies: Providing solutions to improve pilot monitoring and passenger well-being during flights, enabling a single operator while the other can nap - provided both are monitored.
 - Healthcare Providers: Offering non-critical personal monitoring solutions for hospitals and homes.
 - Government and Defense Agencies: Developing customized solutions for security and surveillance applications, including covert polygraph chairs.
 - Sports Fitness and Wellness Companies: Contactless, reliable ECG-based heart rate monitoring; contactless stress management.

Founder

- Dan Atlas is a recognized serial entrepreneur, visionary, and biomedical engineering inventor. He is credited with pioneering Israel's sensory biofeedback instrumentation and clinical mentoring. Supported and licensed biomedical startups with many original monitoring designs never seen before or thought possible.
- His technological designs since 1977 enabled early global trans-telephone ECG, covert polygraphy, medical and security applications of laser, contactless smart hospital and consumer monitoring beds, combat pilot sensing helmets, smart steering wheels, driver alertness technologies, medical wearables, and orchestrated over 300 projects.
- Formerly a US field, aerospace, military aviation, and industrial electronics engineer (Honeywell, Columbia University, Avion, Kearfott, Litton Industries), he later worked at Israel's Rafael, Weizmann Institute of Science, and Tadiran Microelectronics, consulted to Astronautics and Israel Military Industries. Dan co-founded ATLASense Biomed, a pioneering remote patient monitoring company.
- Electrical Engineering at New York University and graduate Biomedical Engineering at Tel Aviv University.

Contact: Dan Atlas, Founder/Managing Director

dan@novalert.com 050-7795686 www.novalert.com
