

APIJET Announces Digital Winglets 4D™ Real-Time Flight Optimization Backed by Newly Issued U.S. Patent

Only Patented Solution Providing Deconflicted Optimizations for Lateral, Vertical, Speed and Time Without Hardware or Software Installation

SEATTLE, WA, UNITED STATES, April 2, 2026 /EINPresswire.com/ -- APIJET, the aviation software company behind Digital Winglets™, today announced that its Digital Winglets 4D™ platform is now supported by newly issued U.S. patent protection, marking a significant milestone in the company's leadership in real-time flight optimization.



With this patent, we are further validating the years of investment in science-based flight optimization and innovation behind Digital Winglets 4D™”

Rob Green, CEO of APIJET

The U.S. Patent and Trademark Office issued U.S. Patent No. 12,584,749 on March 24, 2026, covering key technologies underlying APIJET's, real-time, flight route optimization. The patent recognizes APIJET's systems and

methods for deriving aircraft state data, in real-time, without the use of onboard equipment or hardware installation.

This milestone builds on APIJET's previously announced Digital Winglets 4D™ platform expansion, which introduced the industry's first real-time, tactical flight optimization solution capable of delivering deconflicted recommendations across four dimensions: lateral, vertical, speed, and time.

“With this patent, we are further validating the years of investment in science-based flight optimization and innovation behind Digital Winglets 4D™,” said Rob Green, CEO of APIJET. “We are seeing unprecedented demand during a time of rapidly escalating fuel prices and our ability to integrate Digital Winglets 4D™ without requiring a physical presence on the aircraft makes it possible to deploy new customers at a vastly faster and more cost-effective pace than would otherwise be possible.”

For the development of Digital Winglets™, APIJET was the first company to license and expand upon NASA's Traffic-Aware Strategic Aircrew Requests (TASAR) software, empowering pilots and ground operations teams to continuously identify and execute more efficient routes during

flight. TASAR is a genetic algorithm, tested and matured over years of NASA research, to identify flight recommendations by pitting hundreds of route changes against each other to dynamically find the most efficient, deconflicted route.

“APIJET’s innovation of using ground-based flight-data in combination with derived state data processing furthers NASA’s TASAR vision of increasing operator autonomy through the generation of flight-optimizing trajectories for aircraft in flight,” David Wing, NASA Emeritus Langley Associate and TASAR Principal Investigator. “With Digital Winglets 4D™, APIJET is accelerating NASA’s vision by bringing TASAR benefits more quickly to a wide range of aircraft operators around the world independent of their current level of air-ground connectivity.”

Advancing the Science of Flight Optimization

Digital Winglets 4D™ extends APIJET’s proven Digital Winglets™ platform by incorporating real-time speed optimization alongside deconflicted lateral and vertical trajectory adjustments. This enables airlines to achieve more precise arrival targeting, improved fuel efficiency, and enhanced on-time performance, with a high Air Traffic Control acceptance rate.

- Real-time optimization of aircraft flight plans using aircraft state data, winds aloft, weather, and airspace constraints
- Continuous recalibration of trajectories across spatial and time dimensions
- Secure communication of optimized flight plans between aircraft and ground systems
- Aircraft-specific performance modeling to improve accuracy and efficiency outcomes

Delivering Measurable Airline Impact

- Reduce fuel burn and operating costs
- Improve on-time performance and arrival predictability
- Minimize disruptions from air traffic, weather, and airspace constraints
- Achieve higher air traffic control acceptance rates through deconflicted routing

Seamless Deployment, Immediate Value

Digital Winglets 4D™ is architected for rapid deployment with no onboard hardware or software installation required. Airlines already using Digital Winglets™ can seamlessly access 4D capabilities without additional integration work.

About APIJET

Based in Seattle, WA, APIJET is an aviation software company delivering real-time, conflict-free flight optimization solutions through its Digital Winglets™ platform.

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