



CASE STUDY

How Ribbit's Safety-First Approach Secured \$1M+ in Government Contracts

## Overview

Remote areas have historically suffered from costly and infrequent air cargo services. Poor transportation affects millions of civilians, leading to food insecurity and poverty. Humanitarian agencies struggle to deliver aid effectively. Meanwhile, frontline war fighters risk missing a critical resupply during times of conflict.

Ribbit is a startup developing an autonomous autopilot for remotely piloted cargo aircraft. Their technology improves air cargo services into remote areas for civilian, defense, and humanitarian customers. To date, they've demonstrated gate-to-gate missions without human intervention using a retrofitted Cessna aircraft.



**Industry:**  
Autonomous Aircraft

**Company Size:**  
Less than 10

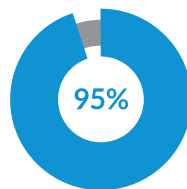
**Location:**  
Toronto, Ontario,  
Canada

**Solution:**  
C/C++test CT,  
C/C++test

## Key Results



\$1M+ government contracts secured



95% test coverage through CI pipelines



100% compliance with MISRA and JSF





## The Challenge

When Ribbit's engineering team first set out to make small aircraft autonomous, they faced critical challenges.

- » **Safety and compliance.** The team needed to prove their systems were safe enough to fly without pilots in some of the world's most challenging environments. Northern Canada's Indigenous communities, for example, rely entirely on air transport for essentials. These operations can't afford failures. In fast-paced iterative design cycles, Ribbit sought the safety benefits of DO-178C and JSF coding standards without using the extra resources required for full certification.
- » **Regulatory uncertainty.** Aviation authorities, like Transport Canada, needed assurance that Ribbit's retrofitted systems were safe, however, their regulations for unmanned aircraft are still evolving. Ribbit must sustain product development and testing while managing risk responsibly in cooperation with regulators.
- » **Development speed versus rigor.** They needed to prototype quickly while ensuring their codebase was robust enough for future certification. In aviation, every line of code could mean the difference between a successful mission and a catastrophic failure.
- » **Hardware constraints.** Testing on real aircraft was expensive, so they needed strong simulation and static analysis to catch coding issues early.

## The Approach

Ribbit's engineers took a pragmatic, phased approach that reflected their aerospace roots. They began with what they knew best. They retrofitted small, commercially available aircraft like the Cessna 150 with sensor arrays and ruggedized computing systems running on modified Linux.

Rather than rushing to full autonomy, they progressed methodically, applying a “proven with use” approach.

**Step 1:** Testing with safety pilots onboard.

**Step 2:** Remotely supervised flights under Canada's Special Flight Operating Certificate framework.

This approach allowed them to gather real-world data while maintaining operational flexibility.

The technical team decided to develop their core autonomy stack in C++ for maximum control and safety-critical reliability. They incorporated redundancy into every system, from dual GPS units to fail-safe servo mechanisms that pilots could easily override. They also needed a modern Agile foundation of robust software processes.

While evaluating static analysis tools, Ribbit's engineers preferred Parasoft's deep aerospace expertise in safety-critical systems, TÜV certification, and seamless integration with their existing workflow.

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“Parasoft helps us enforce coding standards early, so we can focus on autonomy and compliance.”

—Marko Ilievski, staff robotics engineer at Ribbit



*Ribbit flight testing their autonomous autopilot system.*

## The Solution

To enforce MISRA and JSF coding standards from the start, they adopted Parasoft's static analysis solution. They wanted to embed compliance into the foundation of their development DNA from the start by integrating static analysis into their CI workflow. This strategic decision allows them to move quickly without cutting corners on safety, which is crucial in the highly regulated aviation industry.

“Parasoft helps us enforce coding standards early, so we can focus on autonomy and compliance,” said Marko Ilievski, staff robotics engineer at Ribbit.

Ribbit selected Parasoft C/C++test for:

- » Static analysis and compliance to enforce MISRA and JSF rules early in development.
- » VS Code integration that fits seamlessly into their workflow without slowing down engineers.
- » AI-powered violation triage to reduce false positives and enable focusing on critical issues.
- » Future certification readiness by building a foundation for eventual DO-178C compliance.

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*Senior robotics engineer performing a preflight inspection of the flight stack.*



## Results

The partnership with Parasoft has become a cornerstone of Ribbit’s development strategy. Parasoft C/C++test gives them more than just compliance checking—it’s a key enabler for their small engineering team. The VS Code plugin allowed developers to catch issues in real-time without context switching. AI-powered violation triaging helped prioritize the most critical fixes, a crucial efficiency for a team juggling multiple responsibilities.

New engineers onboard faster with standardized coding practices enforced automatically during every commit to deliver high-quality code. The team also achieved 90-95% test coverage using C/C++test CT through continuous integration pipelines that combined test execution with their simulation environments.

"Parasoft helps standardize the team's coding practices and deliver consistent product quality. It is also beneficial for onboarding new employees more effectively. Their static analysis tool is like a personal tutor that sets the benchmark for our code quality," said Carl Pigeon, co-founder and CEO of Ribbit.

When demonstrating their systems to Transport Canada, Ribbit could point to their Parasoft-verified processes as evidence of rigorous development, even before formal certification. This proved instrumental in securing their SFOC approvals for unmanned test flights.

Since adopting Parasoft, Ribbit has achieved:

- » **Multiple \$1M+ government contracts.** Proven safety processes secured defense and humanitarian contracts.
- » **Higher code quality.** 100% compliance with MISRA and JSF to ensure a robust codebase.
- » **Regulatory confidence.** Transport Canada approved their SFOC for unmanned flights in low-risk areas.



"Parasoft's static analysis elevates code quality at the first review, which saves our senior engineers one or two hours a day," said Jeremy Way, co-founder and COO of Ribbit.

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- » **Scalable processes.** Easier onboarding for new engineers with standardized coding practices.
- » **Faster development cycles.** Static analysis catches errors early, reducing late-stage fixes.

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Ribbit demonstrates how innovative aerospace companies can move quickly without compromising safety. They're driving rapid innovation using modern software development approaches while embracing the rigor of continuous compliance in their processes. By making Parasoft's compliance solutions part of their core development workflow from the beginning, they've created a competitive advantage that serves multiple stakeholders.

## Take the Next Step

[Request a demo](#) to see how your embedded development team can consistently deliver high-quality code with AI-assisted static analysis.

### About Parasoft

Parasoft helps organizations continuously deliver high-quality software with its AI-powered software testing platform and automated test solutions. Supporting the embedded, enterprise, and IoT markets, Parasoft's proven technologies reduce the time, effort, and cost of delivering secure, reliable, and compliant software by integrating everything from deep code analysis and unit testing to web UI and API testing, plus service virtualization and complete code coverage, into the delivery pipeline. Bringing all this together, Parasoft's award-winning reporting and analytics dashboard provides a centralized view of quality, enabling organizations to deliver with confidence and succeed in today's most strategic ecosystems and development initiatives—security, safety-critical, Agile, DevOps, and continuous testing.