FIREARC

Creative Aviation for Wildfire Defence

Truth From Above. Tactical Vision.

Brady Gilchrist
Founder & CEO FIREARC INC.

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

EXECUTIVE SUMMARY

FireArc is a hyper-local wildfire reconnaissance company. FireArc is pre-ignition perimeter intelligence for communities.

FireArc is directional wildfire reconnaissance at the fifteen-kilometre perimeter scale surrounding communities and critical infrastructure to determine how wildfire would most likely approach them before ignition.

Our system works in four layers:

HaloScout uses satellite data to identify dominant approach corridors and forest condition.

HaloScan flies aircraft using FireArc designed sensors for high-resolution verification,

EdgeScan confirms conditions at neighbourhood scale using drones.

FRIZ translates everything into clear, sector-based priorities.

We do not fight fires. We show where risk concentrates so communities can act before it's too late.

The most expensive wildfire decision is rarely the one made in crisis. It is the one made months and years earlier, calmly, around a planning table, based on incomplete visibility.

Incomplete perimeter visibility is not a neutral condition. It is a structural liability.

THE REALITY

Wildfire loss follows geometry.

Fire does not arrive randomly. It moves through terrain, climbing slopes that accelerate its spread and descending into valleys that channel its path. It feeds on fuel continuity, the unbroken corridors of vegetation that carry flame from distant ignition points toward the places people live and work. It aligns with wind, which determines not only speed but direction, pushing embers kilometres ahead of the main front. It exploits access constraints, the roads that exist and the ones that do not.

This geometry concentrates. The approaches that matter, the corridors most likely to deliver fire to a community, typically fall within fifteen kilometres of that place. Not the entire forest. Not the whole region. A defined, mappable exposure envelope surrounding a specific Area of Interest.

Those Areas of Interest are everywhere. Communities. First Nations. Mines operating in remote forested terrain. Transmission corridors that cut through heavy fuel. Dams with downstream consequences. Military installations. Water treatment plants. The infrastructure that holds modern life together.

Yet most mitigation spending begins without this clarity.

Communities invest in fuel treatment, home hardening, evacuation planning, and infrastructure protection. These are the right categories. But without verified directional exposure intelligence, without knowing which corridors matter, which sectors carry

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

the highest ember probability, which evacuation routes intersect with likely fire paths, spending becomes assumption based.

Most recommendations do not draw on quantified perimeter aerial analysis. Resources scatter. Priorities blur. The most dangerous gaps remain while lower priority work moves forward.

The most expensive wildfire decision is rarely the one made in crisis. It is the one made months earlier, calmly, around a planning table, based on incomplete visibility. It is the fuel break placed poorly. The evacuation route that runs through a dominant approach corridor. The hardening program that protects homes outside the likely breach path while exposed neighbourhoods remain vulnerable.

FireArc exists to resolve that gap.

FireArc is the reconnaissance layer between planning and suppression.

WHAT WE DO

FireArc is a wildfire reconnaissance company using satellite, AI, GIS and aviation tools.

We do not produce abstract risk maps. We do not simulate continental fire behaviour. We do not write policy papers or convene planning committees.

We define a specific Area of Interest. A town. A mine site. A transmission corridor. A dam. A First Nation community. Then we analyze the fifteen-kilometre exposure region surrounding it. We determine how wildfire would most likely approach that place. Not in theory. In geometry.

This means identifying dominant approach corridors, the terrain and fuel combinations that would most efficiently carry fire toward the Area of Interest under realistic weather conditions. It means mapping ember exposure sectors, the downwind zones where firebrands would land ahead of the flame front, igniting spot fires on roofs, in gutters, against structures. It means locating infrastructure intersections, the points where power lines, pipelines, roads, and water systems cross high probability fire corridors.

It means examining evacuation route conflicts, the places where the routes people would use to leave intersect with the routes fire would use to arrive. It means understanding compound breach vectors, the scenarios where multiple corridors converge, where fire could approach from more than one direction at the same time, where defensive resources would be stretched or overwhelmed.

This is not abstract risk. This is directional exposure. It is specific. It is spatial. It is actionable.

We do not simulate continents or rely on black box prediction. We fly for places that matter, to see the truth of the landscape.

THE FIREARC SYSTEM

FireArc operates through a layered aviation intelligence platform. Each layer serves a distinct purpose, operates at a distinct scale, and delivers distinct outputs. Together, they form acomplete reconnaissance system that moves from

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

strategic scan to tactical verification to operational intelligence.

HaloScout
Strategic Perimeter Scan

HaloScout is the entry point. It establishes directional exposure geometry around a defined Area of Interest using multi band satellite imagery, public geospatial datasets, and machine learning analysis anchored in FireArc's BlindSpots analytical framework, which structures exposure evaluation across systemic, operational, and landscape-level drivers.

HaloScout operates at the fifteen kilometre scale. It identifies dominant approach corridors, typically three to five primary vectors, where fire would most likely travel toward the Area of Interest. It maps ember exposure sectors, flags evacuation route intersections, and ranks overall exposure by direction and severity.

HaloScout is fast, scalable, and cost effective. It can be deployed across dozens of communities without aircraft mobilization. It answers the foundational question. Where would fire most likely arrive, and what would it encounter first?

HaloScout works from orbital altitude. It sees broad patterns. It identifies where to look. It applies the best available Canadian wildfire science.

What it cannot do is verify ground conditions at the resolution required for operational decisions.

That is why HaloScout is designed to be followed by HaloScan.

HaloScan
Aircraft Reconnaissance

HaloScan deploys manned aircraft for low altitude corridor verification and high resolution imaging.

Where HaloScout identifies the corridors that matter, HaloScan flies them. Pilots follow dominant approach vectors at altitudes that capture detail invisible from space. Fuel loading at the stand level. Terrain features that would accelerate or channel fire. Infrastructure exposure at the structure level. Access conditions on roads that appear passable on maps but may fail under real conditions.

HaloScan captures high resolution RGB and multispectral imagery. It documents what satellites cannot resolve. The density of underbrush beneath a closed canopy. The true state of a transmission right of way. Vegetation encroachment along an evacuation route. The difference between a fuel break on paper and a fuel break in reality.

This is aviation applied directly to wildfire defence.

Not suppression.
Not response.
Reconnaissance before ignition.

EdgeScan
Drone Reconnaissance

EdgeScan operates at the interface zone, the boundary where wildland meets community and exposure becomes impact.

Using low altitude drone systems, EdgeScan conducts neighbourhood level verification flights. It inspects access and egress corridors at street scale. It documents structure level exposure. The deck that overhangs a ravine. The woodpile stacked against a foundation. The roof that

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

faces the dominant ember sector. It can validate treatment zones after fuel management work is complete.

EdgeScan closes the loop between aerial intelligence and field execution.

It is the final flight layer before operational decisions are made.

FRIZ
Fire Risk Identification Zones

It is not a product. It is an intelligence framework.

FRIZ translates the exposure geometry captured by HaloScout, HaloScan, and EdgeScan into sector based prioritization that leaders can understand and act upon. It organizes the fifteen kilometre perimeter surrounding an Area of Interest into directional zones, each scored for approach probability, ember exposure, infrastructure intersection, and breach severity.

A Fire Risk Identification Zone is a defined directional sector where wildfire is most likely to approach, intersect infrastructure, or create compound exposure. Each zone represents a distinct risk pathway.

FRIZ does not write plans. It reveals sequencing logic. It shows which zones demand immediate attention, which can be addressed in later phases, and which represent acceptable residual risk.

It gives funders defensible evidence. It gives planners clear priorities. It gives communities a shared vocabulary for understanding where they are exposed and why.

FRIZ is a visibility instrument. It makes the invisible visible.

THE DOCTRINE

FireArc does not fight fires. We do not replace suppression agencies, rewrite emergency plans, or deliver theoretical hazard reports. FireArc operates within aviation compliance standards and structured mission protocols. This is reconnaissance capability, not consultancy. Every deployment is anchored to a defined Area of Interest and a fifteen-kilometre operating envelope.

We examine defined geometry and verify dominant approach corridors at the resolution required for operational decisions. We document exposure where wildfire becomes consequence, not at continental scale and not in abstract probability models disconnected from terrain. Our purpose is singular: reveal directional exposure before ignition.

We provide the exposure intelligence that allows others to execute effectively. Fuel management contractors, emergency planners, infrastructure operators, municipal leaders, and funding agencies retain authority and responsibility. FireArc makes the sequencing visible. We do not decide for them. We clarify where action matters first.

Our operating envelope is fifteen kilometres. Our focus is defined Areas of Interest. Our output is directional exposure truth that enables tactical sequencing before ignition. We fly for placesthat matter, because clarity is the first layer of resilience.

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

WHY NOW. WHY THIS MOMENT. WHY FIREARC

Wildfire intensity is increasing. Communities are expanding into forested terrain. Infrastructure networks are stretching deeper into fuel heavy landscapes. At the same time, suppression costs are rising and public tolerance for loss is falling.

Mitigation spending is growing, but much of it still begins without verified directional exposure clarity. Fuel work is planned without quantified approach geometry. Evacuation routes are assessed without understanding dominant fire corridors. Infrastructure hardening proceeds without sector level prioritization.

The gap is not awareness. The gap is visibility.

Wildfire response systems are saturated. Suppression capacity is finite and increasingly stretched by scale and duration.

Mitigation work is underway across the country, yet much of it remains mis-sequenced. Fuel treatment occurs without verified approach validation. Infrastructure hardening is distributed without quantified ember probability. Evacuation planning advances without confirmed exposure geometry.

Spending is rising.
Loss is rising.

The missing layer is not effort. It is perimeter intelligence.

The geometry that governs wildfire approach is knowable. Terrain, fuel continuity, wind alignment, and infrastructure intersection create patterns that can be mapped, verified, and prioritized.

The tools now exist to close that gap. High resolution satellite data. Affordable airborne imaging. Multispectral analysis. Structured sector scoring frameworks. What has been missing is disciplined integration at the fifteen kilometre perimeter scale.

No institution currently owns that layer.

FireArc exists to explain and operationalize it.

The moment calls for enhanced reconnaissance before ignition.

The absence of perimeter reconnaissance does not preserve neutrality. It preserves blind sequencing.

WHAT HAPPENS AFTER

When a community deploys FireArc, it receives directional exposure clarity that reorganizes decision making.

Mitigation sequencing becomes sector based rather than generalized. Fuel management budgets concentrate on dominant approach corridors first. Infrastructure hardening aligns with ember exposure probability rather than equal distribution. Evacuation planning accounts for likely fire arrival vectors. Funding applications are supported by spatially defensible evidence.

Work that was previously assumption based becomes prioritized.

Nothing in suppression changes. Authority does not shift. Plans are not replaced. What changes is the order of operations.

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca

Clarity reduces misallocation. Sequencing increases effectiveness. Residual risk becomes explicit rather than accidental.

Beyond operational sequencing, FireArc reshapes understanding.

Directional exposure becomes visible in a way that is comprehensible to non-specialists. Leaders and planners gain a shared spatial language for wildfire approach. Complexity becomes structured rather than overwhelming.

FireArc does not replace institutional expertise. It strengthens it by making perimeter intelligence legible.

That is the practical outcome.

FireArc provides reconnaissance before ignition. That clarity drives resilient action.

FireArc™, FRIZ™, SmartMoat™, HaloScout™, and HaloScan™ are proprietary frameworks and systems developed by FireArc Inc. The methodologies, cell-based architectures, exposure geometry logic, sequencing models, and analytical structures described herein are intellectual property of FireArc Inc. Use, replication, derivative development, or implementation beyond descriptive reference requires written authorization or licensing.

© 2026 FIREARC INC. Brady.Gilchrist@firearc.ca