



# AutonoSwarm

Zero-Downtime AMR & AGV Fleet Orchestration  
for Resilient Smart Factories

**Enabling Offline Physical AI Continuity in Advanced  
Manufacturing via Edge-Native Infrastructure**



# ORGANISATION PROFILE

**Autonomaline Systems Inc.**

**Canadian Deep-Tech AI Infrastructure Pioneer**

Specializing in resilient, edge-native wireless communication and cyber-physical orchestration.

**Personnel & Size**

**Micro-SME & Venture**

**Agile Deep-Tech SME | Core Systems Engineering Team + R&D Advisors;** expanding headcount Q3/Q4 2026.

## Core Products, Services & Technical Areas

- **AutonoSwarm (Enabling Infrastructure):** Deployable AI-native private mesh edge hardware for localized spatial computing.
- **Swarm Logic:** Cyber-physical robotics orchestration platform for multi-domain autonomous fleets (UAV/UGV/AMR).
- **Universal Asset Adapter Layer:** Software abstraction integrating PX4, ROS2, and PLCs. **Zero-hardware-redesign, API-level integration for European OEMs.**
- **Digital Twin Simulation:** End-to-end simulation-first architecture using Blender, NVIDIA Omniverse Isaac Sim, and AODT/SRK to engineered-out Sim2Real gaps prior to physical deployment.

## R&D Project Expertise

# \$250k CAD

## DND IDEAs Defense Contract

- Successfully executed and delivered a defense contract for the Canadian Department of National Defence, deploying resilient, standalone 5G edge infrastructure (TRL 5–6) in contested, off-grid environments
- **CDL-NGC:** selected for current cohort
- **Solar powered handheld device** Patent pending offline educational device
- **AUV, UGV** Demo'ed to AUVSI.

# PROPOSAL INTRODUCTION (I)

## Manufacturing Challenge

Unreliable wireless connectivity, cellular dead zones, and cloud latency cause AMRs and AGVs to freeze on dynamic factory floors, resulting in \$100,000+/hour in line stoppages, material flow bottlenecks, and severe loss of Overall Equipment Effectiveness (OEE)

## Solution

A unified, off-grid physical AI orchestration platform that allows heterogeneous mobile robots to maintain sub-50ms peer-to-peer state synchronization and localized spatial awareness during complete network blackouts.

## Enabling Technology

Sub-component integration of AutoSwarm's private 5G mesh edge nodes via our Universal Adapter Layer directly onto European AGVs and factory controllers

**Industrial Validation:** Joint field pilot testing in an operational European smart manufacturing or logistics facility

**Software-Defined Virtual Commissioning:** Employs a simulation-first pipeline to model dynamic shop floors, test edge-case RF dropouts, and eliminate Sim2Real gaps in software before touching physical AGV/AMR assets.

## PROPOSAL INTRODUCTION (II)

### Expected Outcome

A **TRL-7 validated, off-grid fleet orchestration platform** enabling multi-vendor mobile robots to maintain continuous operations during factory network disruptions.

#### **Dramatically Faster Integration:**

Reduces physical line testing and commissioning cycles by up to 70% by eliminating Sim2Real friction in a risk-free virtual environment.

### Impacts

- **Zero Line Stoppages** Eliminates connectivity-induced downtime and protects factory production throughput.
- **Enhanced Shop-Floor Flexibility** Enables rapid reconfiguration of dynamic manufacturing cells without fixed network re-wiring
- **100% Data Sovereignty** Enforces complete air-gapped spatial data privacy and enterprise IP protection
- **OpEx Optimization** Reduces multi-asset fleet management overhead by 70–80%.

### Schedule

**Target Duration:** 24 Months

**Start Date:** Q2 2027

**End Date:** Q2 2029

# Consortium Partners & Search Profile

## Current Lead

### **Autonomaline Systems Inc. (Canada)**

Autonomaline Systems Inc. (Canada) – Lead Software & Edge Infrastructure Architect / Project Coordinator.

## Target European Partners

- **Industrial OEMs & Robotics Builders:** AGV, AMR, and industrial mobile robot manufacturers seeking modular zero-downtime autonomy software.
- **Advanced Manufacturing Operators:** Factory owners and logistics hubs willing to host field trials.
- **System Integrators & Research Institutes:** RTOs (e.g., Fraunhofer, Tecnalia, AIT) leading SMART Eureka manufacturing proposals.
- **Target Countries:** Germany, Austria, Czechia, Estonia, or broader SMART Eureka member countries.

## CONTACT INFO

### PROJECT COORDINATOR

**Jamil Aryan**

Founder & Chief Executive Officer

### ORGANIZATION

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