

VISUAL FUSION+

Situational awareness C2 platform enhanced with **Agentic AI**

1. Introduction

VisualFusion+ is Rinicom's advanced video management, situational awareness, and real-time analytics platform that transforms how operators perceive and act in complex environments. Supporting ultra-high-resolution video, ultra-low latency, and multi-source sensor integration, VisualFusion+ ensures seamless data fusion in operational command centers.



Integrating Agentic AI, VisualFusion+ becomes a proactive, semi-autonomous system capable of dynamic prioritization, policy-driven orchestration, and adaptive collaboration across mission-critical sectors. At its core, VisualFusion+ leverages Agent Apps, lightweight, modular AI-driven software elements equipped with multiple sensors and advanced data contextualization, enabling seamless interaction through natural language queries, structured tasks, or policy triggers.

2. System Overview

VisualFusion+ supports a wide array of system inputs, including H.264, H.265, HD-SDI, and IP streams, with resolutions up to 8K (7680x4320). It integrates seamlessly with mesh network connectivity, ensuring consistent, encrypted, and reliable communication across urban, maritime, and contested environments.

The platform offers real-time GUI configuration via a web interface and programmable IP-based configuration, balancing simplicity for first responders and customizability for advanced operators. It features rapid scene selection, programmable layouts, and widget overlays using JavaScript, supporting up to 1,000 live widgets such as gauges, maps, and CAD models.

Key Architectural Features:

- Ultra-low latency for near-real-time responsiveness
- Integrated rendering of 3D CAD models and digital twins
- Fully customizable operator HUD and augmented reality overlays
- Modular deployment ("bring your own hardware" or integrated Rinicom units)
- Resilient mesh connectivity and IP encryption for secure data streams
- Support for multi-camera picture-in-picture and fallback redundancy

VisualFusion+ includes a comprehensive database of Agentic Apps for domain-specific tasks, enabling scalable, adaptive deployments across diverse mission requirements. In addition, VisualFusion+ allows the users to create and integrate their own proprietary Agentic Apps, dramatically increasing flexibility and operability of the system.

3. Sector Applications

Section 3.1: Maritime Domain Awareness and Port Security

VisualFusion+ enables vessel and port area monitoring with AIS integration and PTZ camera auto-tasking, offering live over-the-horizon feeds and drone-assisted hull and perimeter inspections. With Agentic AI, the system prioritizes unauthorized approaches or suspicious movements, reducing operator burden and enhancing interdiction and rapid incident response.

Section 3.2: Robotics and Autonomous Platforms

The platform supports ground robotics in logistics hubs, perimeter patrols, and industrial settings, with seamless integration of robotic camera streams and sensor data into the operator environment. Agent Apps align camera tasking with robotic workflows, enhance obstacle detection, and escalate maintenance alerts autonomously.

Section 3.3: Emergency Response and Disaster Management

VisualFusion+ integrates drone, CCTV, and wearable camera feeds during mass-casualty incidents, enabling comprehensive situational awareness for commanders. Agent Apps prioritize high-risk feeds, auto-escalate critical incidents, and guide emergency dispatch coordination for efficient triage and patient tracking during high-stress events.

Section 3.4: Offshore Energy Generation

The system monitors offshore wind turbines, rigs, and substations for environmental anomalies, vessel exclusion zone breaches, and equipment degradation. Agents automatically prioritize feeds based on storm thresholds, while integrated digital twins facilitate predictive maintenance and operational optimization.

Section 3.5: Critical Infrastructure Protection

VisualFusion+ secures data centers, power plants, and water facilities by detecting unauthorized access and unusual activity patterns. Agentic AI escalates threats in real-time while drones and fixed cameras provide layered visibility, ensuring comprehensive protection without increasing cognitive load on security teams.

Section 3.6: Defence and Tactical ISR

VisualFusion+ integrates with tactical UAV and ground camera systems for forward-operating bases, vehicle-mounted, and soldier-worn systems. Blue force tracking data overlays onto live feeds, while Agent Apps autonomously track targets, highlight threats, and manage bandwidth under contested environments, ensuring continuous situational clarity for tactical teams.

Section 3.7: Hospitals and Emergency Medicine

In hospital environments, VisualFusion+ supports emergency departments, triage, and critical care with integrated video feeds from ambulance bays, helipads, and patient zones. Agents detect surges in patient flow, sudden collapses, or critical patient movement, prompting staff and adjusting displays dynamically to support rapid, informed medical decisions during crises.

Section 3.8: Transportation – Train Drivers and Crane Operators Display

VisualFusion+ delivers enhanced operational safety and efficiency in transportation. For train drivers, it integrates trackside, cab, and platform feeds, detecting obstructions, trespassing, or congestion and providing heads-up display notifications for immediate corrective action. In crane operations within ports and logistics terminals, VisualFusion+ displays load alignment, environment views, and personnel proximity, with Agentic AI detecting misalignments and alerting operators to hazards. This reduces fatigue, enhances precision during loading and unloading, and ensures safe, efficient transport operations in high-risk environments

4. Technical Capabilities

VisualFusion+ offers:

- Ultra-low latency video streaming critical for time-sensitive operations
- Full 8K support with multi-monitor and videowall configurations (up to 16 screens)
- Up to 1,000 customizable widgets (gauges, AR overlays, maps, 3D models)
- Encrypted video streaming and data transmission
- HTML5 overlay architecture for direct integration with existing systems
- Live integration with PLC, IPC, and control systems for real-time data ingestion
- Remote and local operator display flexibility, including over-the-horizon streaming for drone and maritime ISR.

Its Agentic AI layer:

- Enables proactive monitoring, dynamic prioritization, and cross-system task orchestration
- Supports natural language queries and structured policy triggers
- Operates modularly, allowing custom Agent Apps for specific vertical use cases.

5. Deployment Strategy

Deployment begins with requirements analysis to define use-case-specific policy frameworks and API mapping for integration with existing command and control or SCADA systems. Pilot trials validate thresholds, workflows, and interface customizations, followed by scaled integration with drones, robotics, and sensors. A continuous learning cycle using operational data refines Agentic AI models, ensuring system relevance and operational effectiveness across evolving missions.

6. Conclusion

VisualFusion+ enhanced with Agentic AI delivers a transformative approach to situational awareness, surveillance, and command and control. It empowers operators with ultra-low latency, high-resolution visual clarity while enabling automated prioritization and actionable insight through Agent Apps and adaptive AI. This integrated platform is ready to enhance safety, efficiency, and responsiveness across maritime, defence, healthcare, transportation, critical infrastructure, robotics, and emergency response sectors, transforming operational environments with clarity in complexity.

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