



## Revolutionizing Tactical Intelligence with TERRAMIND FX

### Introduction

In today's fast-paced and dynamic operational environments, the ability to gather, analyze, and act on information quickly can make a significant difference in the effectiveness of military and public safety operations. Unmanned Aerial Vehicles (UAVs), commonly known as drones, have emerged as powerful tools for real-time terrain mapping and situational analysis. This white paper delves into the challenges faced by field squads in accessing and utilizing real-time information and explores how Terramind FX is revolutionizing on-the-ground intelligence, surveillance, and reconnaissance (ISR) capabilities.

### The Challenges of Field Operations: Disconnected and Delayed

Field squads often operate in environments where they are disconnected from their headquarters (HQ), presenting several critical challenges. First, the limited access to information due to isolation means squads are often deprived of the wealth of intelligence available at HQ, leading to a lack of situational awareness and increased risk. Even when data is received, it may be outdated, rendering it less useful for timely decision-making.

To counter these communication barriers, squads need to **embed their own ISR capabilities** to gather real-time intelligence independently, crucial for maintaining operational effectiveness and ensuring mission success.

### Terramind FX: Bringing ISR to the Next Level

Terramind FX addresses these challenges by providing a robust, on-the-ground ISR solution that empowers field squads with real-time 3D mapping

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and situational analysis. By leveraging the power of radiance fields, Terramind FX delivers near-zero latency 3D terrain mapping directly on mobile devices. This capability is a game-changer for field squads, ensuring instant access to the most current data without waiting for the drone's return to base. Images and data are integrated into the mapping and analysis process within seconds of capture, offering unparalleled immediacy and detail. With real-time data at their fingertips, field squads can make informed decisions quickly, adapting to changing conditions and threats as they happen, significantly enhancing operational efficiency.



Terramind FX goes beyond real-time mapping by incorporating smart analytics that deliver actionable insights directly to field operators. Line of sight analysis allows operators to determine visibility and potential obstructions in the field, crucial for planning surveillance routes or setting up secure perimeters. The software's ground path planning capability calculates the most efficient and safest routes through complex terrains, considering topography and environmental factors to ensure swift and secure movement. Additionally, Terramind FX automates the detection of safe landing zones, enhancing the safety and efficiency of aerial deployments in tactical operations. Its orthographic image projection feature provides a bird's-eye view of the terrain, converting 3D data into 2D maps without distortion, facilitating detailed analysis and planning.



One of the standout features of Terramind FX is its ability to perform reconstruction, analysis, and visualization entirely without an Internet connection. This connection-free operation ensures that all critical functions can be performed on-field, regardless of connectivity, making it ideal for remote or network-limited environments. Field squads can make real-time decisions without relying on external infrastructure, maintaining operational effectiveness even in disconnected scenarios.



## Mode of Operation

Terramind FX offers a seamless mode of operation designed to maximize efficiency and effectiveness in the field:



- 1. Connect to a Live UAV Feed:** Connect to a live UAV feed and reconstruct the terrain in 3D in real-time during the flight. This allows for immediate terrain visualization and situational awareness as the UAV collects data.
- 2. Explore the 3D Map:** Dive into the reconstruction of the terrain and explore the 3D map using free-viewpoint navigation while the UAV collects data. This interactive feature enables operators to examine specific areas of interest closely.
- 3. Perform Real-Time Analysis:** Immediately perform real-time analysis such as line of sight estimation, landing zone detection, and ground path planning. These analytical tools provide actionable insights that enhance operational planning and execution.
- 4. Export and Distribute:** Export and distribute 3D maps and analysis reports to Remote Video Terminals. This capability ensures that all relevant personnel, both on the field and at HQ, have access to the latest intelligence for coordinated decision-making.



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## Key Features and Specifications

The following table summarizes the key features and specifications of Terramind FX:

Characteristics	Specifications
<b>Live 3D terrain reconstruction</b>	• Photorealistic radiance fields technology
	• Robust to incomplete captures
	• Real-time progressive reconstruction
<b>Analytics features</b>	• Multiscale granularity: meters to kilometers
	• Line of sight estimation
	• Landing zone detection
	• Ground path planning
<b>Real-time edge processing</b>	• GPS coordinates extraction of each 3D point
	• Orthographic image projection
	• Optimized for embedded mobile platforms
<b>Supported UAV</b>	• No need for servers nor internet connection
	• Parrot Anafi
	• Custom integration with other UAV
<b>Export and Distribute</b>	• Support multiple UAV streams simultaneously
	• Export Digital Elevation Maps (DTM or DSM)
	• Save 2D and 3D maps with analysis reports
	• Share across teams

## Revolutionizing Tactical Operations with Cutting-Edge Technology

Terramind FX is at the forefront of tactical intelligence, transforming how real-time data is gathered, processed, and utilized in the field. By embedding robust ISR capabilities directly with field squads, Terramind FX reduces dependency on HQ and ensures that operators have the intelligence they need, when they need it. Real-time 3D mapping and smart analytics provide unparalleled situational awareness, enabling squads to stay ahead of threats and respond proactively. Immediate access to actionable insights streamlines decision-making, reducing response times and improving mission outcomes. Terramind FX seamlessly integrates advanced features like line of sight calculations, ground path planning, and landing zone detection, providing a comprehensive ISR solution in one package.



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## Conclusion

Terramind FX is revolutionizing tactical intelligence by delivering instant, on-the-go 3D terrain mapping and situational analysis. By addressing the challenges of disconnected field squads and slow decision processes at HQ, Terramind FX empowers operators with real-time data and actionable insights, enhancing the effectiveness and safety of tactical operations. As we continue to innovate and push the boundaries of real-time processing and radiance fields, the future of tactical intelligence looks brighter than ever. Stay tuned as we continue to explore new frontiers and bring you the next generation of tactical intelligence solutions with Terramind FX.

## Contact us

<https://terramindfx.com>  
<https://tyndallfx.com>

+33 7 44 31 39 09  
terramind@tyndallfx.com

## Live Tactical Intelligence On-the-field from Aerial Images



### 3D Terrain Mapping



Reconstruct large operational terrains with photorealistic quality and multi-scale levels of detail

### Enhanced Analytics



Generate orthographic images, estimate line of sights, detect landing zones, and plan ground paths



### Latency-Free on Mobile



Low latency reconstructions and analysis on mobile without waiting for the drone's return

### Interactive Visualization



Directly visualize the 3D map on-field with free-viewpoint navigation



### Connection Free



Perform reconstruction, analysis, visualization on-field without an internet connection