SOLUTION BRIEF

AmiShare™ ROS & ATAK Integrations

Resilient and Secure: Peer-to-peer Data Sharing in Degraded Environments

Customer

US Air Force CSAR

Challenge

Secure real-time data sharing for GPS & communications contested or denied environments

Solution

Kinnami AmiShare, resilient data management platform, integrated with ROS & ATAK, in combination with West Virginia University's positioning and navigation algorithms for drones

The 563rd Rescue Group (563rd RQG) directs flying operations for the US Air Force's active duty rescue wing dedicated to Combat Search and Rescue (CSAR). The group seeks to employ advanced technologies and tools to ensure the safety and rapid rescue of isolated personnel.

AmiShare integration with Robot Operating System (ROS) and Android Tactical Assault Kit (ATAK) provides a resilient data fabric enabling secure peer-to-peer sharing of sensitive information critical to mission success.

SITUATION

During CSAR missions, rescue teams need to be able to accurately locate personnel in harsh environments and extract them safely.

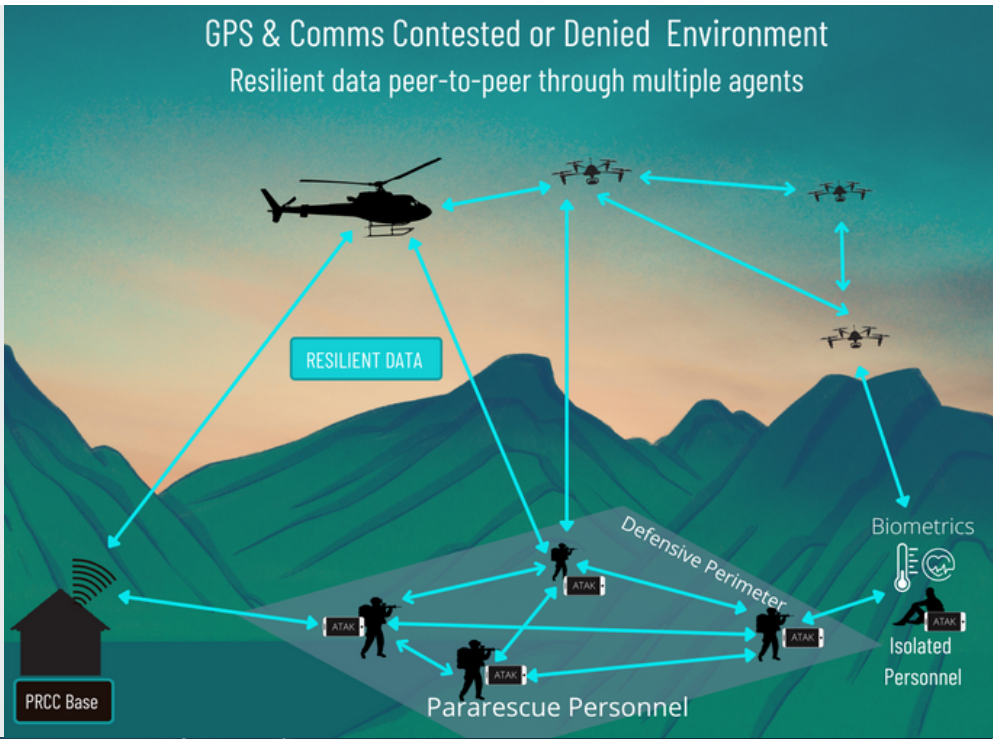
- Network connectivity and GPS is often degraded or denied
- Personnel might be injured or immobile

Operations information must be shared securely with team members and other CSAR teams in parallel. Rescue mission assets, such as drones, Electric Vertical Takeoff and Landing aircraft (eVTOLs) and helicopters, must communicate with each other, the Personnel Rescue Coordination Center (PRCC) and other command and control agencies.

AmiShare—Resilient & Secure Data

- AmiShare integrated with ROS & ATAK provides a resilient data fabric for secure data sharing across team members and assets.
- Situational awareness, biometrics and other ATAK app data can be shared across multiple domains in "real-time".
- Data is moved according to the best available route and pre-defined policy.
- Any rescue team member or drone can establish short-range communication with isolated personnel, helicopter or PRCC.

KINNAMI
Resilient Data Everywhere



AmiShare ROS & ATAK Integrations

Resilient and Secure: Peer-to-peer Data Sharing in Degraded Environments

RESILIENT DATA CHALLENGE

The 563rd RQG needed to be able to accurately locate isolated personnel and coordinate rescue missions in network or GPS degraded or denied environments. To do this, they needed a way to securely share location data and situational awareness information, including biometrics from isolated personnel, with all team members in real-time.

SOLUTION

PEER-TO-PEER DATA SHARING

Kinnami AmiShare will be deployed providing a resilient data fabric for secure peer-to-peer data sharing. Integrations with ROS and ATAK enable secure data hopping across all rescue team members and assets.

AmiShare is suitable for sensor data, and audio, video and map imagery files used for situational awareness in ATAK. Position data, chat, mission planning and shared overlays can be shared securely using the ATAK integration with AmiShare.

AmiShare operates autonomously when connectivity is denied, prioritizing urgent data to offer the best “real-time” data delivery.

LOCATION DATA

The AmiShare secure resilient data fabric integrated with ROS, in combination with West Virginia University’s (WVU) positioning and navigation algorithms for drones, provides a means for locating isolated personnel where communications and GPS are degraded or denied.

WVU’s research specializes in robot localization technology for challenging environments. WVU research focuses on multi-sensor fusion, adaptive estimation algorithms for learning sensor uncertainties without prior knowledge, cooperative active perception to reduce localization errors, and the use of learning algorithms to assess environmental conditions.

EDGE ENVIRONMENTS - HUMANITARIAN AID - DISASTER RELIEF

Kinnami and WVU’s combined solution can also be used for operations in other edge environments including disaster relief, humanitarian aid, or logistics supply missions, where terrain may be rugged, conditions can be harsh and networks may be degraded or absent.

Environments	Secure & Protected
Distributed networks & storage	Smart data movement
Peer-to-peer networks	Client-side encryption
IoT & edge devices	Replication & versioning
Autonomous & robotics	Auto-data recovery
Unsecured networks	

"Partnerships like this help us field tomorrow's Air Force faster and smarter, and we're excited to be working with Kinnami and West Virginia University on this important research."

-U.S. Air Force Col. Peter White, 563rd Commander

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Resilient Data Everywhere

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