

AmiShare™ Resilient Data Platform for Real-Time Critical Infrastructure Monitoring

Customer

Army Corp of Engineers
R&D Center

Challenge

Secure resilient data management for geographically dispersed critical infrastructure health monitoring edge nodes and its movement to the cloud for predictive analytics

Solution

Kinnami AmiShare, secure resilient hybrid data fabric for remote health monitoring of critical infrastructure

The Army Corps of Engineers is developing new technologies for monitoring and accurately assessing structural health of critical infrastructure in the U.S. including bridges, dams, locks, and waterways. Timely analytics assessing critical infrastructure health, vulnerabilities, interdependencies, and capability gaps can minimize consequences of their disruption.

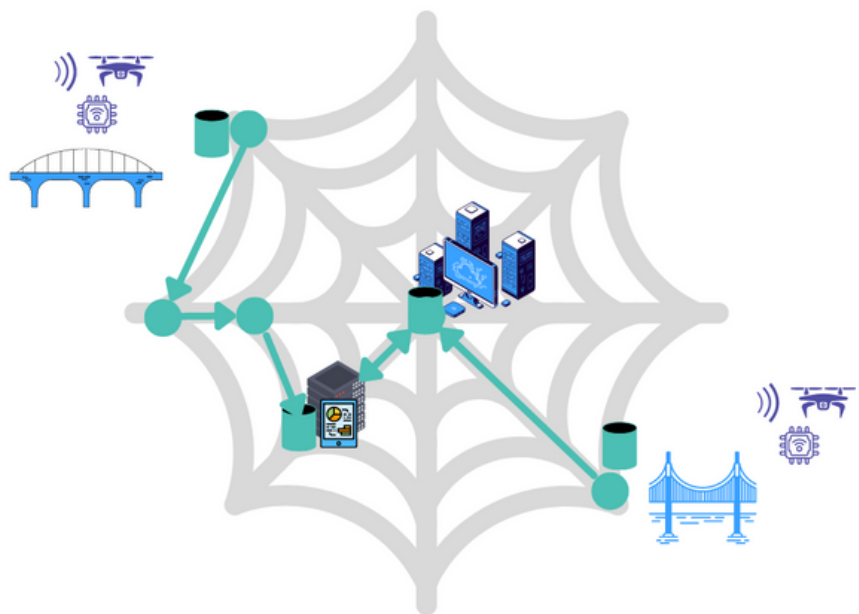
Kinnami AmiShare is providing a unique scalable open architecture platform allowing public and private entities to collaborate in the secure remote monitoring of critical infrastructure assets. Kinnami AmiShare is the scalable technology framework that securely manages data from its collection at multiple geographically distributed sources, through to rationalization, storage and decision making. This capability allows multiple partners to securely share real-time health status of critical infrastructure across its full lifecycle, no matter where the assets are located, or where the data is stored.

SITUATION

The aging U.S. infrastructure is resulting in bridge and building collapses, pipe ruptures and explosions, dam failures, and other related types of events. These failures are costing the government and private industry millions in repairs, business interruption and supply chain risks, present serious safety risks to the population, and cost households substantially. The current methods used for infrastructure inspection simply do not have the capabilities to detect or predict critical weaknesses in time.

AmiShare—Resilient & Secure Data

- Data fabric supports edge computing at multiple geographically distributed nodes, hybrid cloud and local services, and corresponding large-scale analytics at specialized analysis sites
- Secures and manages continuous-monitoring data collected from diverse sensing platforms
- Provides data resilience in harsh environments with unstable or absent networks
- Data movement is optimized according to AI/ML-based policies



Resilient and Secure

Environments

Distributed networks & storage
Peer-to-peer networks
IoT & edge devices
Autonomous & robotics
Unsecured networks

Secure & Protected

Smart data movement
AI/ML-based policies
Client-side encryption
Replication & versioning
Auto-data recovery

RESILIENT DATA CHALLENGE

Real-time monitoring of critical infrastructure and predictive analytics enabled on a secure resilient data infrastructure platform will deliver a scalable technology framework for analyzing changes in the structural health of critical infrastructure. AI/ML-driven analytics using infra-sound, IoT sensor and image data collected from bridges can provide accurate structural health assessments. Continuous-monitoring data from these diverse sensing platforms will be acquired from multiple geographically distributed nodes and securely shared with hybrid cloud and local services, and specialized analysis sites. A secure resilient data fabric will be used to connect the computing edge to decision-makers in the field or the office for analysis of critical infrastructure such as bridges, dams and locks.

SOLUTION & RESULTS

Kinnami AmiShare resilient data fabric will be the scalable technology framework supporting The Analytics for Critical Infrastructure inside a Resilient Data Fabric project. AmiShare will securely manage data from its collection at multiple geographically distributed sources, through to rationalization, storage and decision making. Kinnami AmiShare is the underlying infrastructure for secure data management of analytics and a dashboard hosting multiple applications for decision making.

- Provides resilient data management from sensor data acquisition through to the decision-making dashboard post-analysis
- Purpose-built for performance in harsh environments and operates autonomously even when connectivity is degraded or absent
- Integrates with legacy technologies and low power wireless networks
- Device agnostic ecosystem designed to accommodate future devices
- Single holistic solution and security model reducing administrative complexity
- AI/ML-driven Policy Engine for dynamic system response

EDGE, DATACENTER AND CLOUD ENVIRONMENTS

Kinnami AmiShare can be used for operations in any edge, datacenter or cloud environment—wherever data is generated, collected, processed or stored. In the public sector—disaster relief, humanitarian aid, or logistics supply missions—where conditions can be harsh and networks may be degraded or absent.