O4.4-156

# Integration of mass position monitoring and auto centering on Indonesian seismic networks

Amir Julian Bahari Gunawan

The Agency for Meteorology Climatology and Geophysics of Indonesia

BMKG

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## The Outline

1. The Challenge in Indonesian Seismic Network Maintenance
2. System Integration as alternative solution
3. Proposed Advantages and Challenges

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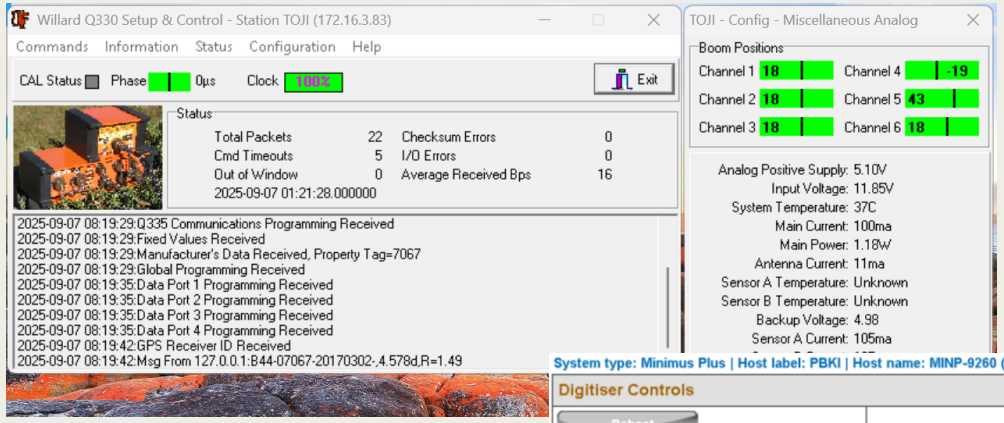
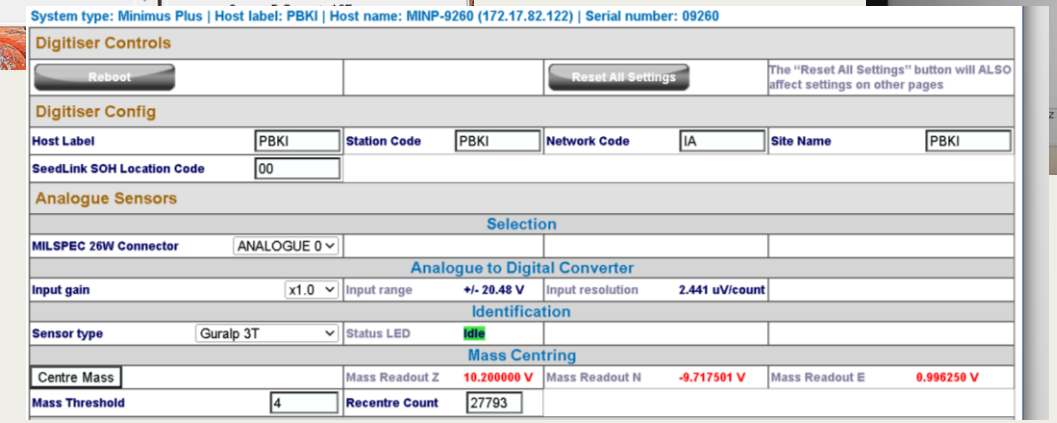
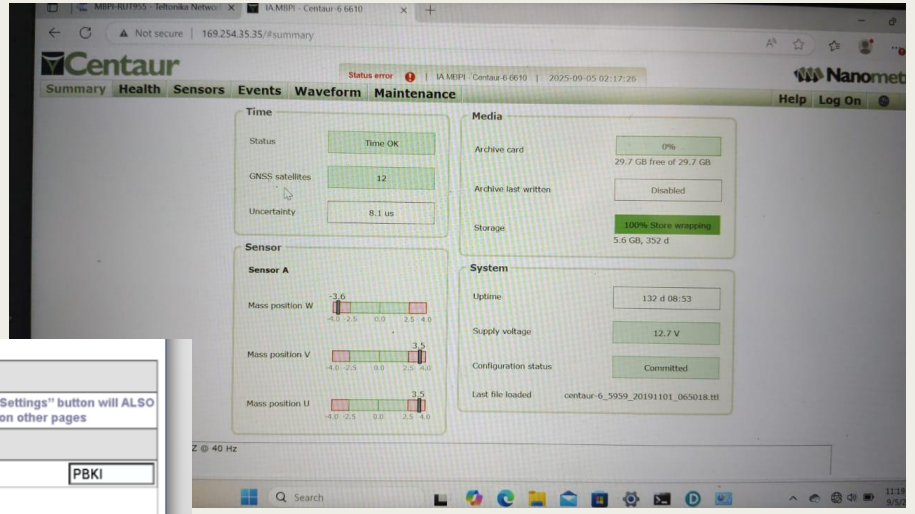
## The Challenge in Indonesian Seismic Network Maintenance

Maintaining optimal performance in large, diverse seismic networks.
**Fragmentation**: Different manufacturers use incompatible interfaces.
**Inconsistent Monitoring**: Manual data collection and health checks are inefficient and unreliable.

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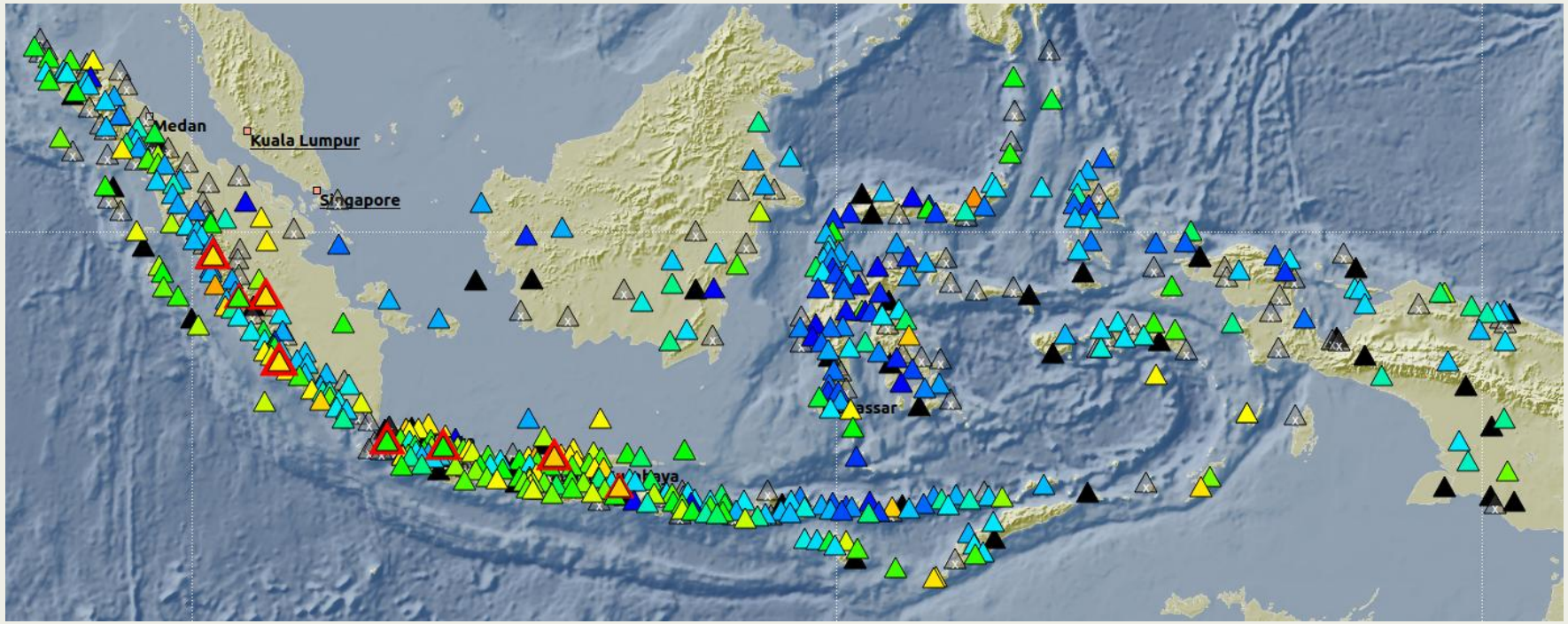
## The Challenge in Indonesian Seismic Network Maintenance

**Geographic Scale**: Large networks like Indonesia's exacerbate these challenges.




Indonesian Seismic Network Consist of 552 stations

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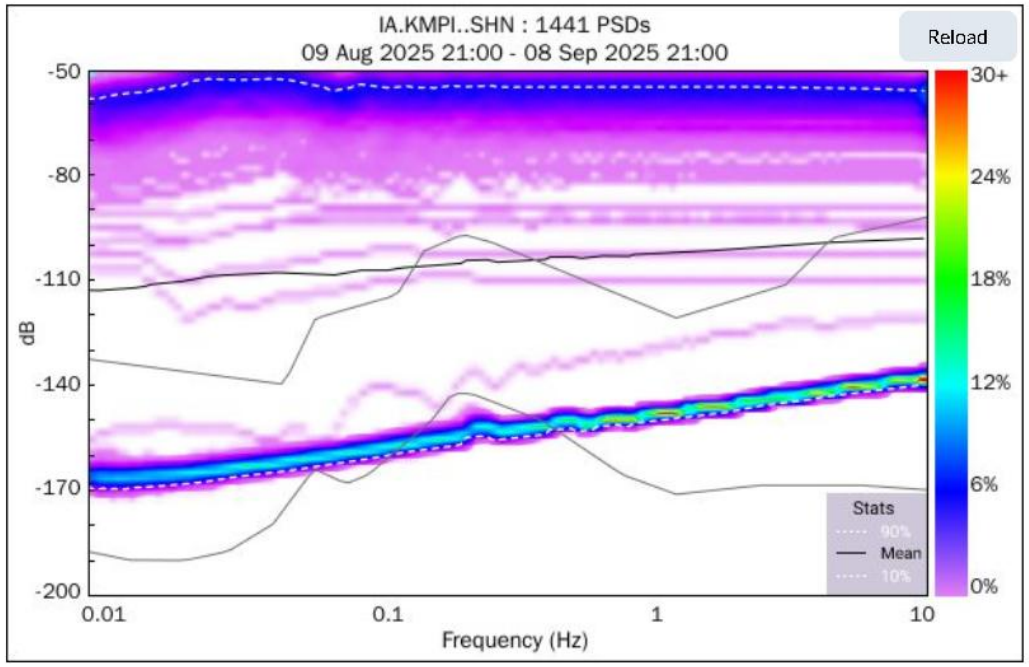
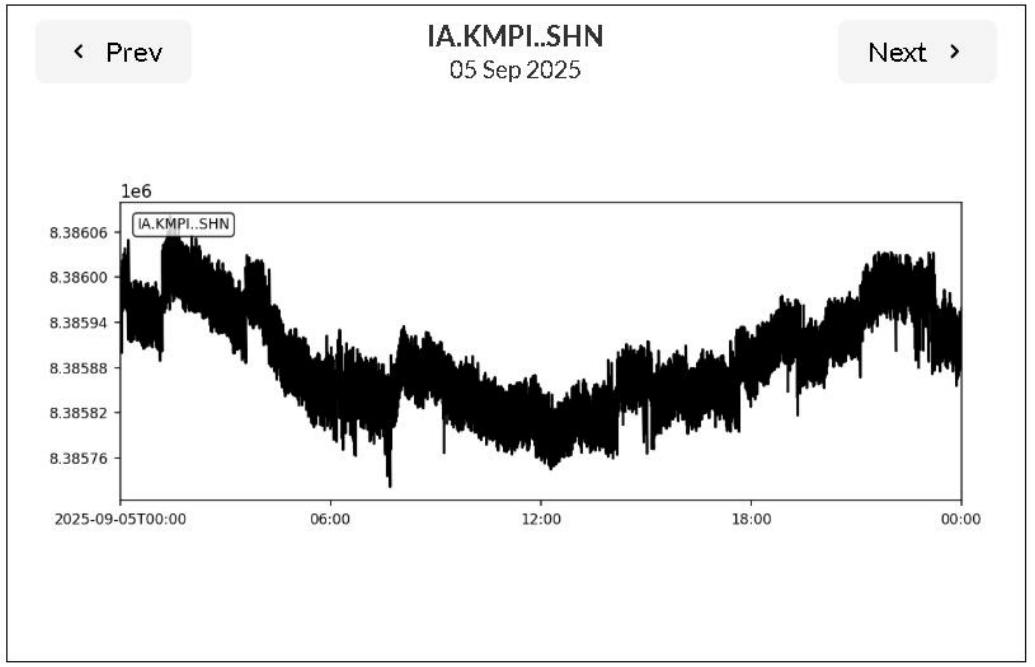
## The Challenge in Indonesian Seismic Network Maintenance

**Core Issue**: Compromised sensor mass position leads to poor seismic data quality.

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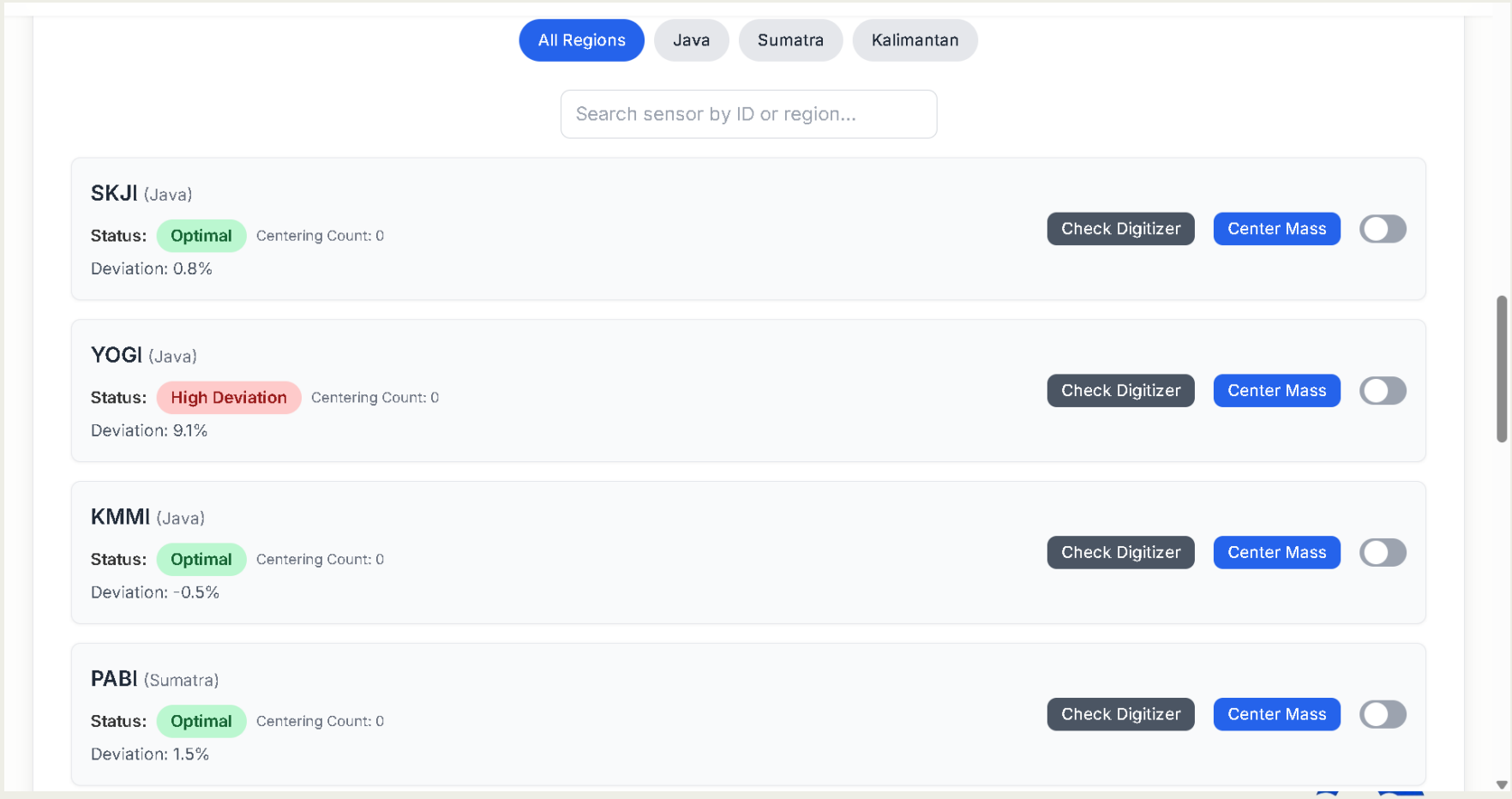
## System Integration as alternative solution

A Web-based dashboard utilizing HTTP to get data and post commands from the Digitizer's web-based GUI.

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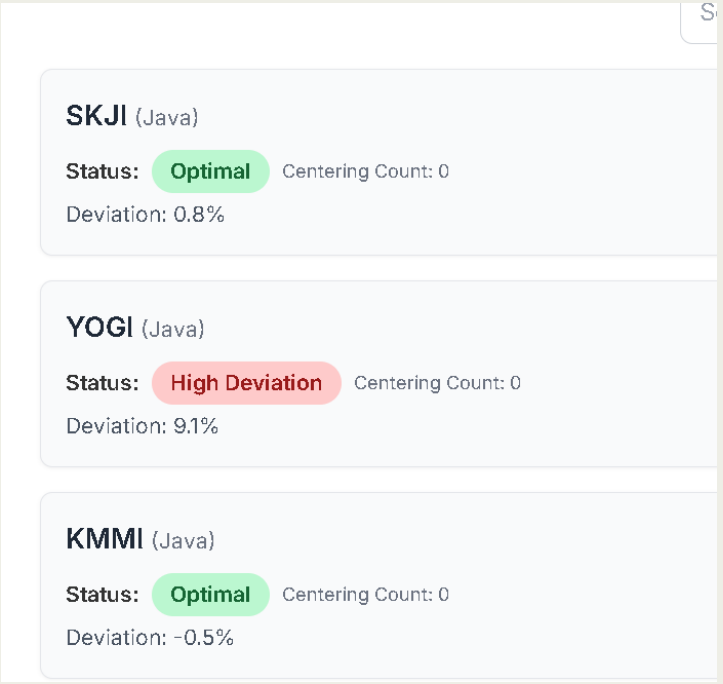
## System Integration as alternative solution

**The Unified Dashboard** is a web-based platform that brings together critical data from all digitizer interfaces, transforming disparate information into a cohesive, centralized view. This dashboard allows for real-time monitoring of sensor health and mass position, with intuitive data visualization that enables users to instantly identify trends and anomalies. Additionally, its filtering capabilities provide the flexibility to explore data by specific regions or individual sensors.

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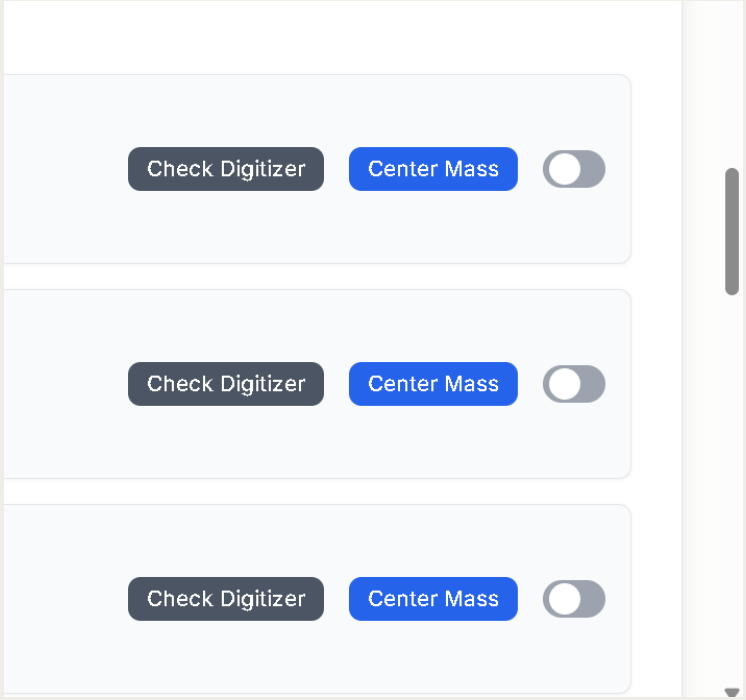
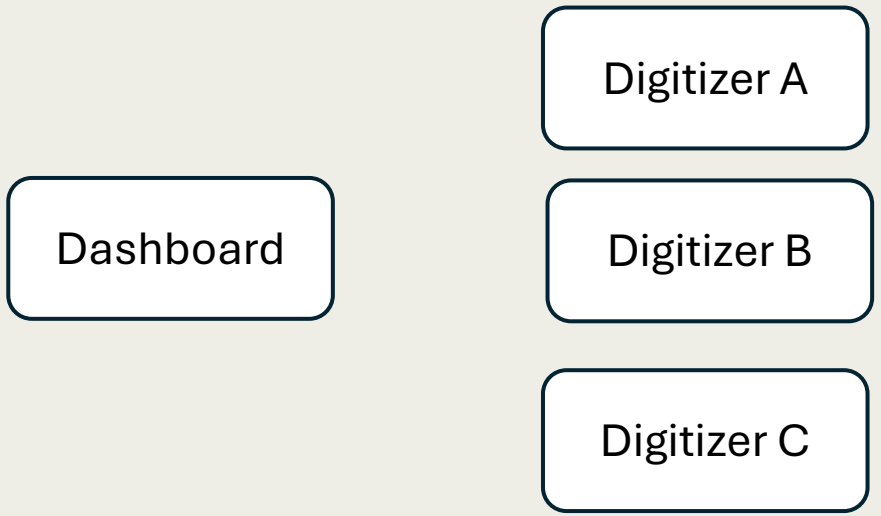
## System Integration as alternative solution

The Integrated Controller is an intelligent system designed to automate key maintenance tasks, shifting the process from reactive to predictive. It features an automated re-centering function that automatically adjusts the sensor mass position when a deviation is detected, thereby preventing data quality issues before they can occur. This system significantly reduces the need for manual, on-site interventions, saving valuable time and resources.

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## Proposed Advantages and Challenges

Maximizing Efficiency, Data Quality, and Reliability.
**Enhanced Operational Efficiency:** Centralization and automation streamline processes.
**High-Quality Data:** Ensures the integrity and reliability of seismic signals.
**Minimized Downtime**: Proactive maintenance prevents costly and time-consuming repairs.
**Scalable Blueprint**: A proven model for optimizing any multi-vendor seismic network globally.

Challenges:
HTTP lacks  in security and poses a risk for network attack. A better protocol with encryption is desired.

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