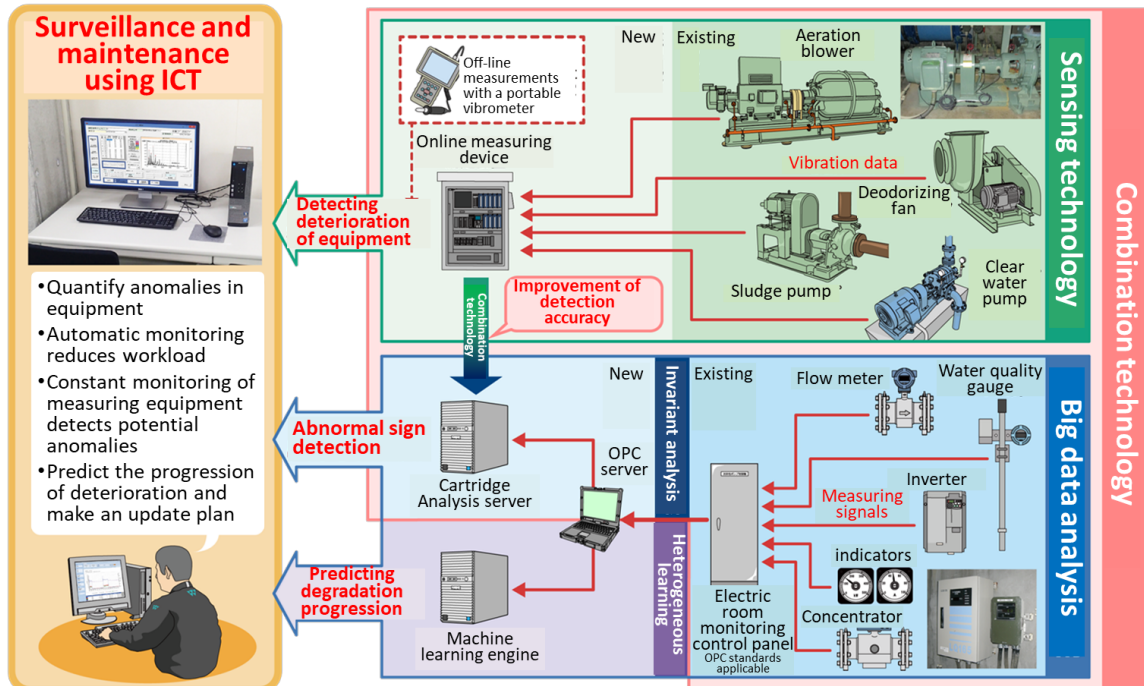


# Demonstration of Diagnosis Technologies Applied for Conditions of Deteriorated Sewage Treatment Utilities Using Vibration Data Sensing and Big Data Analysis

Implementer: The consortium of Water Agency Inc., NEC Corporation, Asahi Kasei Engineering Corporation, JS, Moriya City and Hidaka City

**Sensing Technology** using ICT and **Big Data Analysis** to monitor and analyze the deterioration of sewerage facilities quantitatively. Knowing the signs of abnormalities in equipment and facilities in advance allows preventing sudden equipment failures and abnormal conditions.



## Technology Overview

- Sensing Technology: Remote monitoring of equipment degradation trends based on vibration sensor's information,
- Big data analysis (invariant analysis and heterogeneous learning): Monitoring of anomalies and prediction of the equipment degradation's progress based on the existing sensors' information
- Combination technology of sensing technology and invariant analysis

## Achievements

- Failure prevention **reduces failure frequency by 5.8%**
- Extended inspection cycle reduces costs; **1.2 times the disassembly cycle** and **1.1 times the equipment replacement cycle**
- Number of instrumentation requiring inspection is **reduced by 72%** by reduction of workload and time, substituting inspection work, etc.
- A combination of technologies **detects minute signs of anomalies** such as residues blockage and V-belt degradation
- Monitoring data accumulation and modeling to **predict the progress of sewage main pump deterioration**
- Verify that the durability of vibration sensors and signal converters is **more than 3 years**