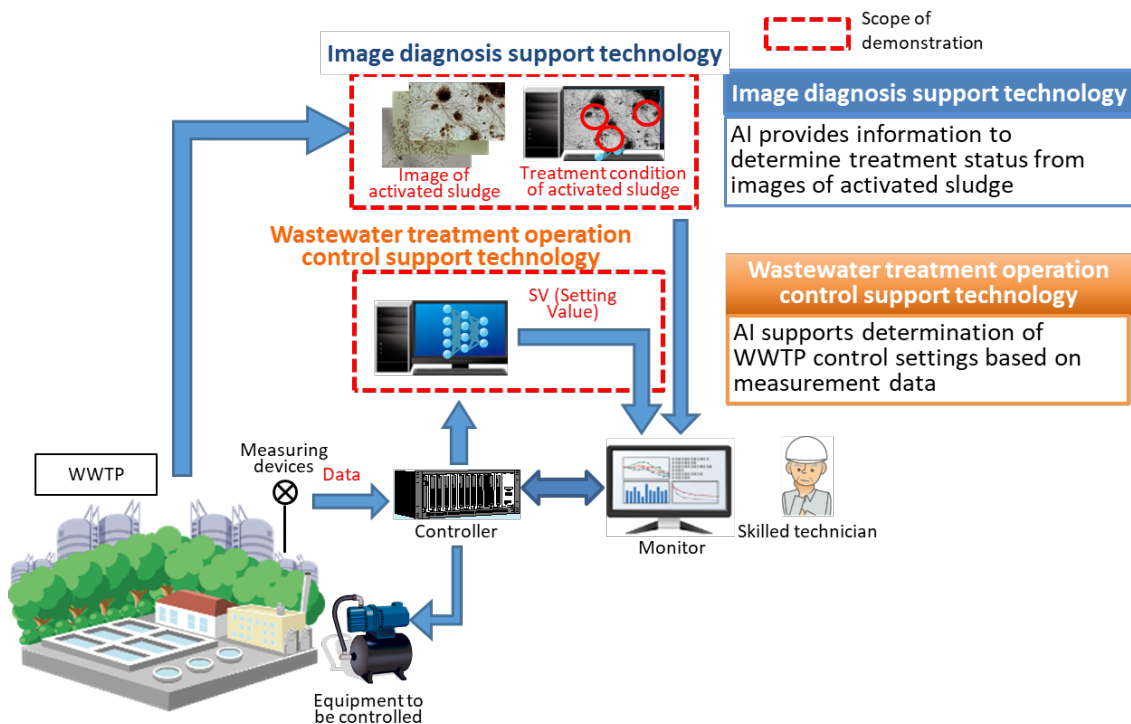# Feasibility Study on Wastewater Treatment Operation Management Supporting Technology Using AI

Implementer: The consortium of YASKAWA Electric Corporation, Maezawa Industries, Inc. & JS

Using AI to support the operation of wastewater treatment facilities to improve efficiency and labor saving in operation management and address the shortage of skilled engineers

Technology Overview

- **Wastewater treatment operation control support technology**: Random forests provide guidance by estimating the operation control setting values (e.g., aeration volume, excess sludge withdrawal volume, etc.) of a WWTP based on a number of measurement data.

- **Image diagnosis support technology**: Identify and count specific microorganisms (e.g., protozoa and micro metazoan) by image recognition using deep learning for microscopic observation images of activated sludge.

Image diagnosis support technology

Image diagnosis support technology
AI provides information to determine treatment status from images of activated sludge

Wastewater treatment operation control support technology
AI supports determination of WWTP control settings based on measurement data

Scope of demonstration

Achievements:

1) Wastewater treatment operation control support technology

The model for predicting aeration volume and excess sludge withdrawn amount achieved a prediction accuracy satisfying the setting values (**annual average error rate of 10% or less**)

2) Image diagnosis support technology

Three representative types of microbial image data provided a recognition accuracy **satisfying the setting value (>80% fit)**