

**Development of Middleware Supporting Interactive Data Measurement and Record  
System for Facilities Maintenance**

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For most of the facility maintenance inspections, responsible personnel hand-carry some types of measurement tools or testers, and other associate members will record the inspection results. Normally, they only register the result of the inspection at the field, and input the inspection data into PC after returning to their office, based on maintenance management systems to analyze the data and judge the requirements for appropriate actions.

In this report, we describe an interactive data measurement and recording system which we have developed in order to support maintenance workers on site during their inspections. Particular focus is on the middleware, which is a software platform for controlling various sensors attached to the system as well as handling complicated human-machine interactions. We applied this middleware to our rail gap inspection support system which automates rail gap measurement as well as provides maintenance workers of useful information and warning messages in a timely manner during their inspections.