

*Presentation at the*   
*Asia Pacific legal Metrology Forum*

*Legal Metrology Activities  
in Korea*

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**Korean Agency for Technology & Standards**

# Contents

I Overview of KATS

II Activities in Korea

III Future Task



# I Overview of KATS

- (1) Organization of Government
- (2) Organization of KATS
- (3) Mission of KATS
- (4) Mission in Legal Metrology

# Organization of Government

- **Korean Agency for Technology & Standards(KATS)** is an Agency of Ministry of Knowledge Economy



# Organization of KATS

Ministry of Knowledge Economy  
Vice Minister for Industry and Technology

**KATS** Korean Agency for  
Technology and Standards

General Services Division



# Mission of KATS

To develop standards  
needed by industry

To promote technology  
development

To conduct research and  
development to support  
standardization

KATS

To protect consumers  
through safety control  
of industrial products

To develop and operate  
national accreditation  
system

To control legal metrology  
for fare transaction & to  
boost  
measurement industry

# *Mission in Legal Metrology*

- **KATS** is responsible for ensuring that businesses and consumers receive fair and accurate measure in transactions involving the trade goods based on measurement
- **Main Mission**
  - Manage Measures Act
  - Certify technology standards(Type approval, etc)
  - Coordinate market & field surveillance plan
  - Recognize organizations to perform type approval, verification, training and assess conformity for prepackaged goods, etc



## Activities in Korea

### (1) Technical Requirement Review

1-1. Meter With Electronic Devices

1-2. Seal on Fuel Dispenser

### (2) Measurement Instrument in Service

### (3) Management of Prepackaged Goods



# 1. *Technical Requirements Review*

## ● **Background**

- Development and dissemination of smart meter (including meters with electronic devices) technology require a revision of existing technical requirements on classic meter
- With rising energy prices, another kind of fraud is raised

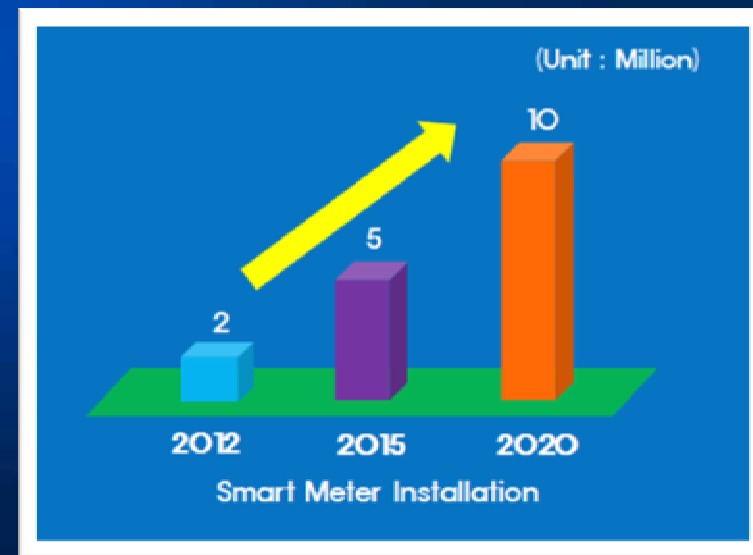
## ● **OIML references**

- OIML D 11 (General requirements for electronic measuring instrument)
- OIML D 31 (General requirements for software controlled measuring instruments)

# 1-1. Meter with Electronic Devices

## ● Environmental Condition

- Strong interest for the Smart Meters
- Widespread high-rise residential complex apartments require the development of meter with automatic reading



# *Latest Issues & Activity*

## ● **Latest Issues**

- Many of the newly developed meters with electronic devices have been found to be highly vulnerable to external influences (ex. Magnet, Fraud)
- Especially utility meters are affected by magnets

## ● **Method to Solve**

- Applicable OIML Standards for solving

“OIML R 49-1(Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements)”

### **6.2.8 Static magnetic field test**

The water meter shall undergo a test for the influence of a static magnetic field. This test shall apply to

all water meters where the mechanical components may be influenced by a magnetic field, and for all meters with electronic components.

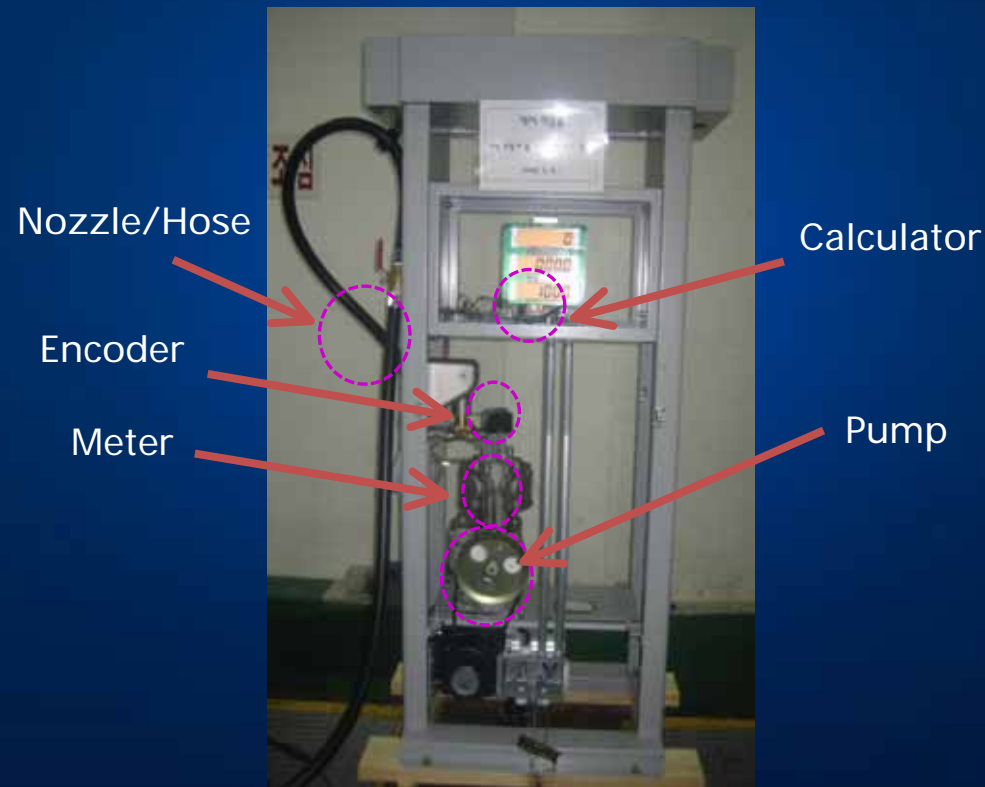
# *Before & After*



## 1-2. Seal on Fuel Dispenser

### ● Necessity for Seal

- Many parts of Fuel dispenser can affect the accuracy
- But there is limitation on the seal



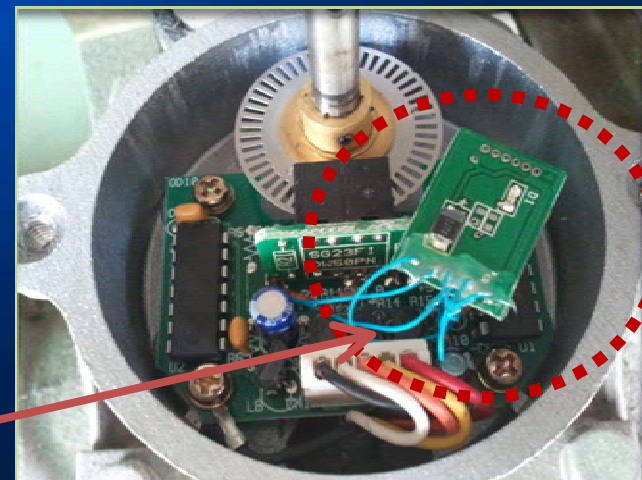
# *Fraud on Fuel Dispenser*

## ● Background

- As fuel price between gas stations become competitive, a few owners of gas stations were to fall into the temptation of illegal meter manipulation
- Encoder consisted of electronic devices is the major target for fraud



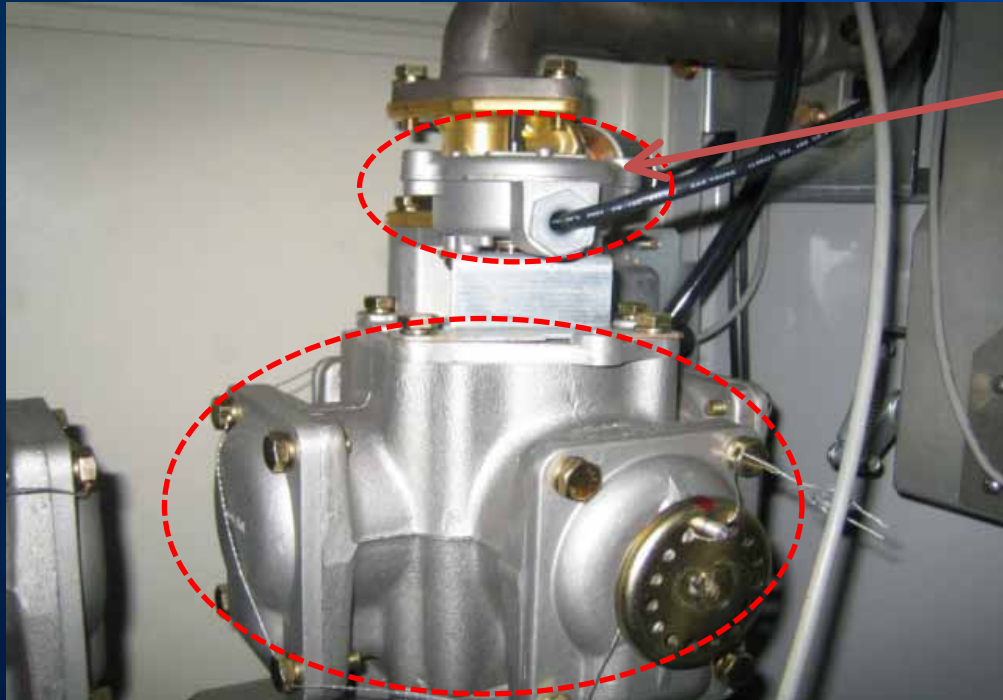
Remote  
Controller



illegal Controller

# *Way for Fraud prevention*

- Seal is added to the encoder
- Physical or electronic seal are accepted



Encoder

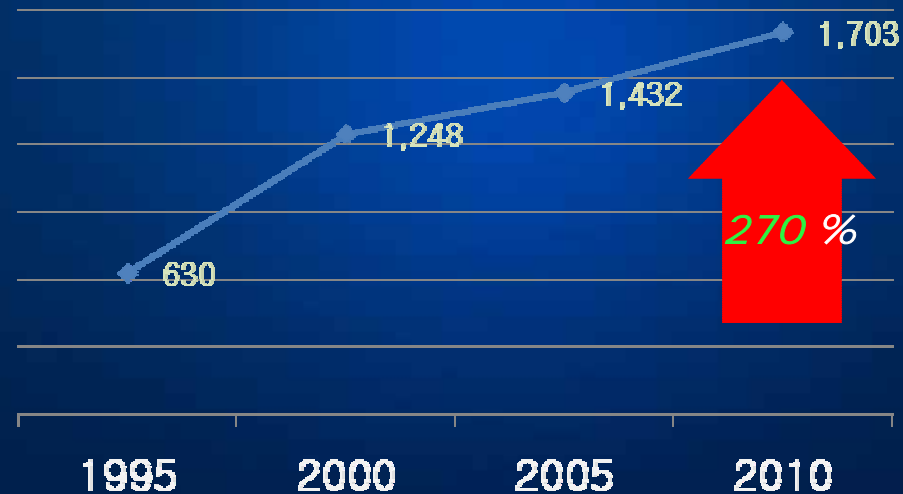


## 2. Measuring Instrument in Service

### ● Background

- Rise of global oil prices causes consumer complaints about the fuel dispenser

**Gasoline Price(Won/L)**

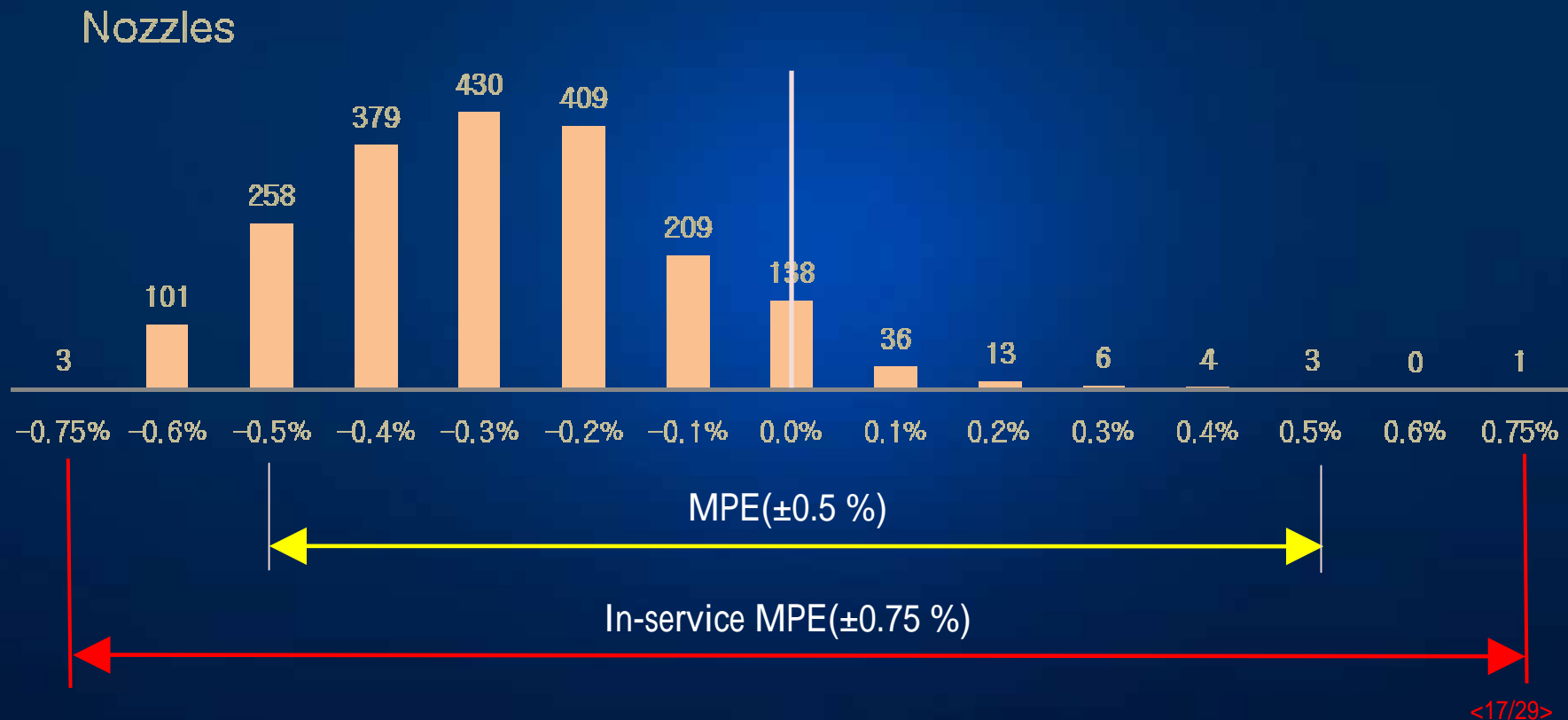




# Investigation for Fuel Dispenser(2009)

## ● Market monitoring

- Inspected on 972 fuel dispensers at 492 gas stations



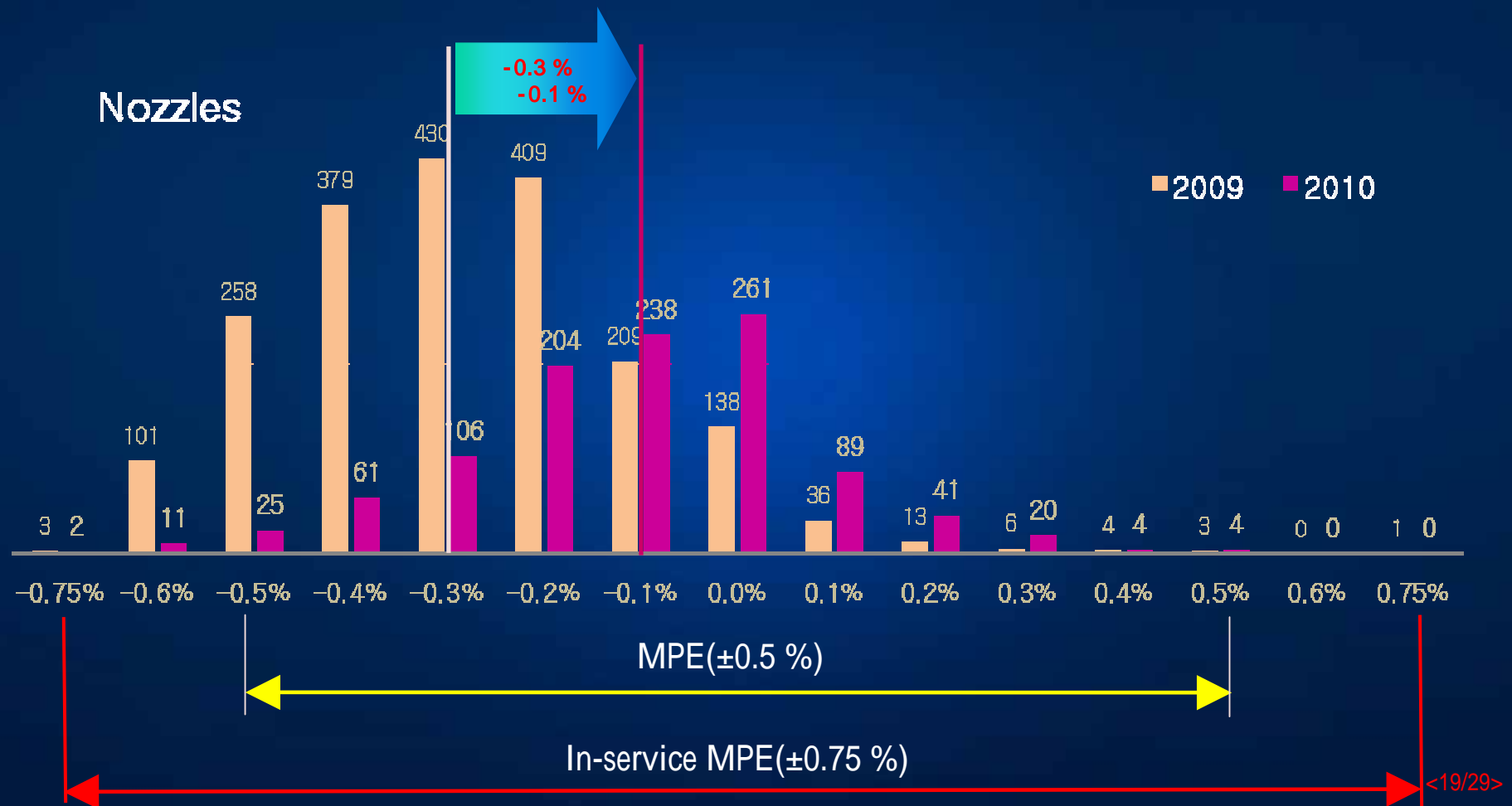
## *Collective Action*

- **The MPE was the same(didn't changed) :  $\pm 0.5$  %  
[Initial or Re-verification]**
- **Revision of verification technical requirement**
  - **Any bias away from zero error is not permitted**
  - **Instruments should always be adjusted and corrected so as to ensure that any indication errors are as close to zero as possible**

# Measuring Instrument in Service(2010)

## ● Market monitoring in 2010

- Inspected on 1 066 fuel dispensers at 538 gas stations



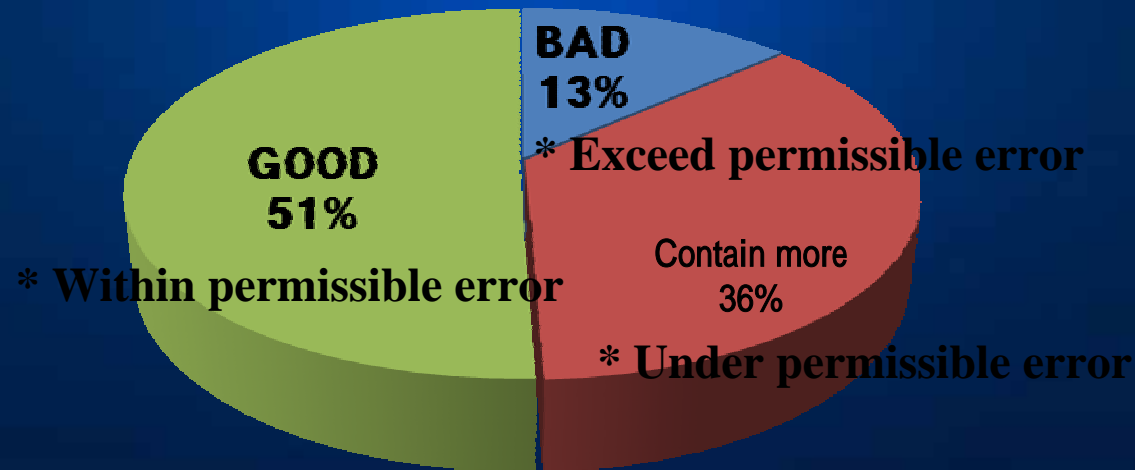
### 3. *Management of Prepackaged Goods*

- Prepackaged goods are daily necessity
- Consumers are always doubt about “**Do they really contain actual quantities?**”



## *Result of investigation*

- **KATS investigated actual quantities of prepackaged goods in 2005**
  - Number of investigation items : 508
- **About 13% of the investigated items exceeded permissible error (Annual consumer loss : \$ 0.2 billion)**

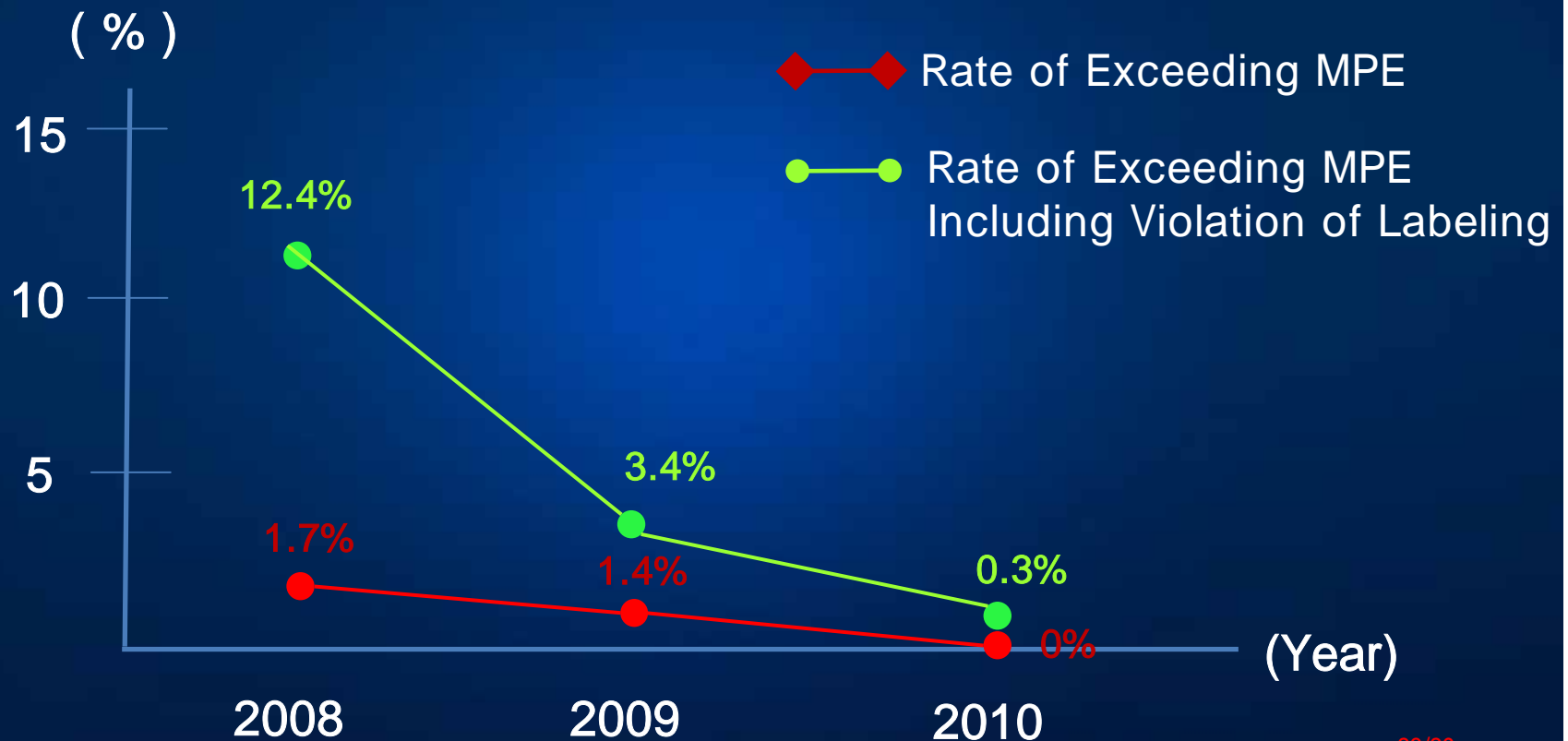


# *Methods to improve compliance*

- **Making an annual master plan for field surveillance**
  - Who to do, What to do, When to do, etc
- **Periodically investigating prepackaged goods**
  - Investigate at least 500 items per year
- **Choosing cost-effective items**
  - Choose items getting many consumer complaints
  - Choose items produced by manufacturers who have a violation history
- **Sharing the investigation results with media**

# Surveillance Results

- The number of items exceeding permissible error reduced rapidly





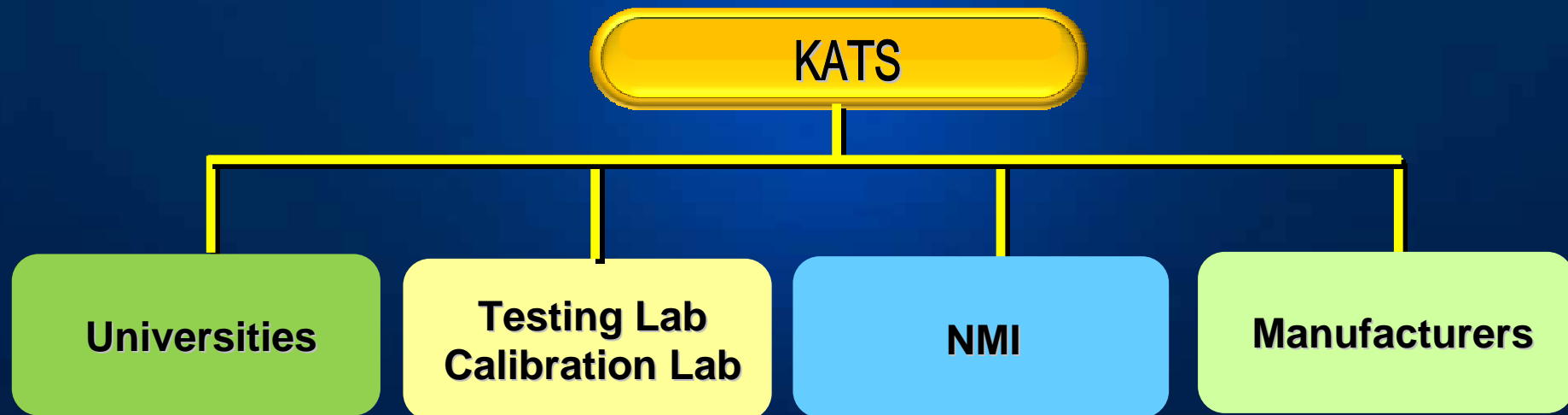
## Future Taks

- (1) Strategy Plan in Measurement
- (2) Information Management System



# 1. Strategy Plan in Measurement

- KATS is running a project “Development Strategy in Measurement”
- The project is expected to be completed in the end of 2011



\* 31 Personnel participating in the project

# *Strategy Plan in Measurement*

## ● **Purpose of the Project**

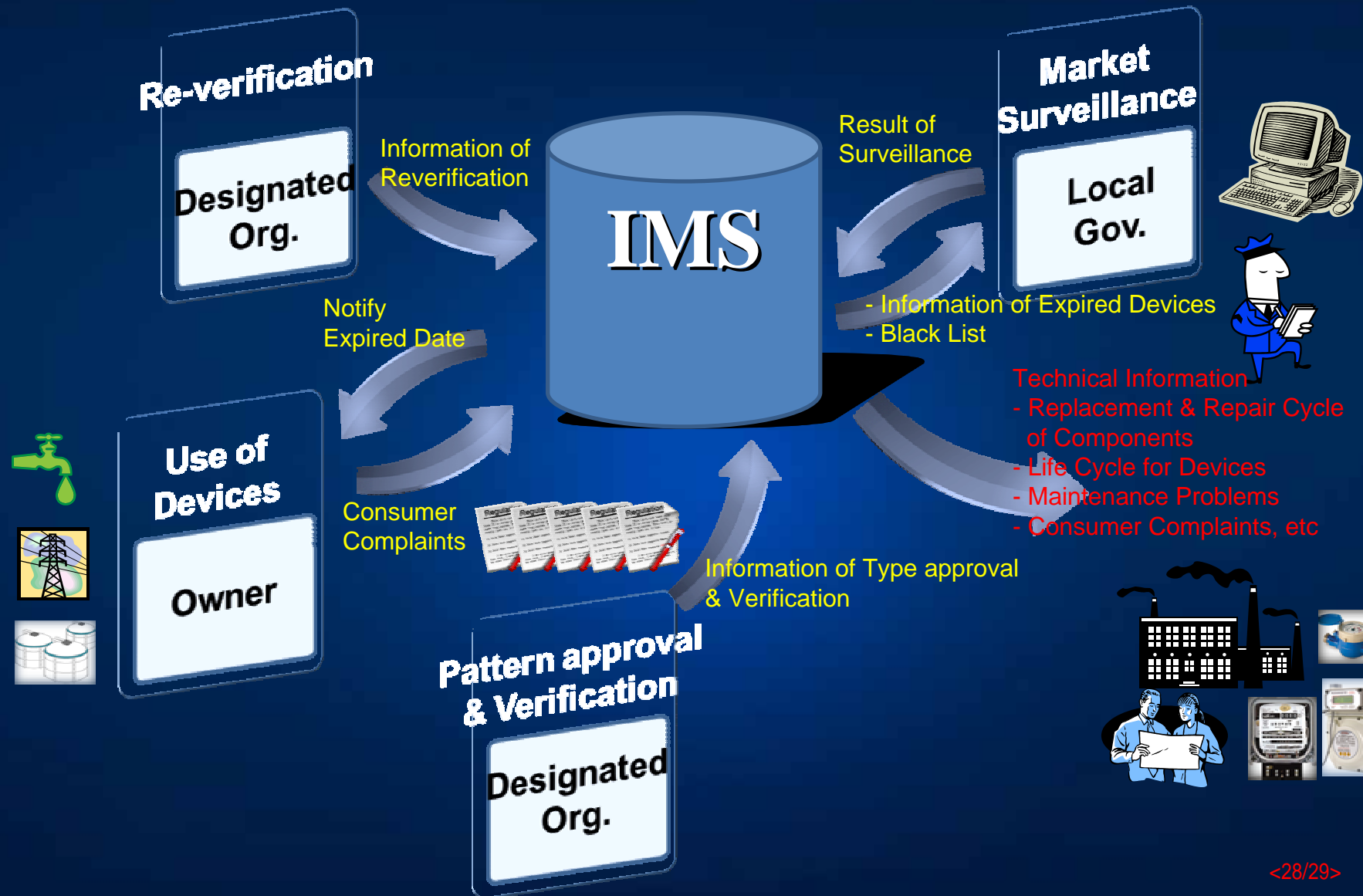
- To find out method to boost measurement industry (including legal metrology area)
- Item adjustment : adding smart meter, EV charger, etc as legal metrology item
- Adopt voluntary & mandatory Recall and improvement enforcement of defected metrology devices, etc

## *2. Information Management System(IMS)*

### ● **Purpose of the System**

- To make a communication network based management system for legal measuring instruments used in domestic
  - \* Use for : Identify near overdue(expired) devices & notify the information to owners of the devices, etc
- To boost a development of new technologies by giving a technical information to manufacturers of measuring instruments through IMS

# Information Management System



The background is a dark blue stage with several spotlights at the top. A glowing blue ring is on the floor. The text 'Thank you' is in a large, bold, orange font.

# Thank you

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