

CS-236

## A Study of CALS in the Operation Phase

### --- An application system of drainage pump stations ---

Public Works Research Institute, Ministry of Construction	Member	Tatsuya HATTORI
Public Works Research Institute, Ministry of Construction	Member	Toshimitsu MURAMATU
Economic Affairs Bureau, Ministry of Construction		Akira WATANABE
Lower Kiso River Construction Office, Ministry of Construction		Makoto NAGAYA

#### **1. Introduction**

Since 1995, the Ministry of Construction has been engaged on Construction CALS/EC (Continuous Acquisition and Life-cycle Support/Electric Commerce) in order to make public works projects more efficient. The scope of this work has been the entire construction project processes (Plan, Design, Construction, and Operation).

Drainage pump stations, river gates, and other river management equipment for emergency use are required full reliability of function during flood periods. Therefore, the introduction of CALS, which will support and ensure daily inspections and respond to malfunctions to the operation and management of river management equipment will increase reliability, improve efficiency, and reduce costs.

This study was undertaken to position operation and management CALS and to organize related research themes.

#### **2. Role of Operation CALS**

The major role of the operation CALS will in the field of river management machinery and equipment will be as follows:

- It shall ensure the more prompt completion of maintenance, repair, modification, and accident response by real-time information sharing by river management authorities and management companies.
- It shall make the authorities ready to inform adequate operating information to the public and concerned organizations.
- It shall secure appropriate revisions to manuals etc. and will simplify referencing them.

Figure 1 shows a diagram of operation CALS in managing drainage pump stations.

#### **3. Awaiting Challenges of Operation CALS**

The followings are challenges that must be overcome to construct operation CALS .

- (1) Standardization of the exchanging operation and management information
  - Organization of required functions
  - Study of a standard of protocol for data transmission and exchange using CALS terminals
- (2) Establishment of an operation and maintenance information data base (DB)
  - Organization of the functions and the operation work flow based on the DB management methods and network formation with analysis of the items, management methods, storage cycle
  - Methods of linking the DB with the data of construction work
- (3) Conversion of equipment information into electronic media to share the information
  - Study of organizing data storage forms abstracting data for operation and maintenance

- Standardization of formats for submitting and storing documents
- Study of methods for linking with the DB
- (4) Conversion to electronic media and the effective use of work execution information
- Abstraction and standardization of data for operation and maintenance
- Study of methods for linking with the DB
- (5) Security
- Security analysis of the DB in the Ministry of Construction Intranet and the open network

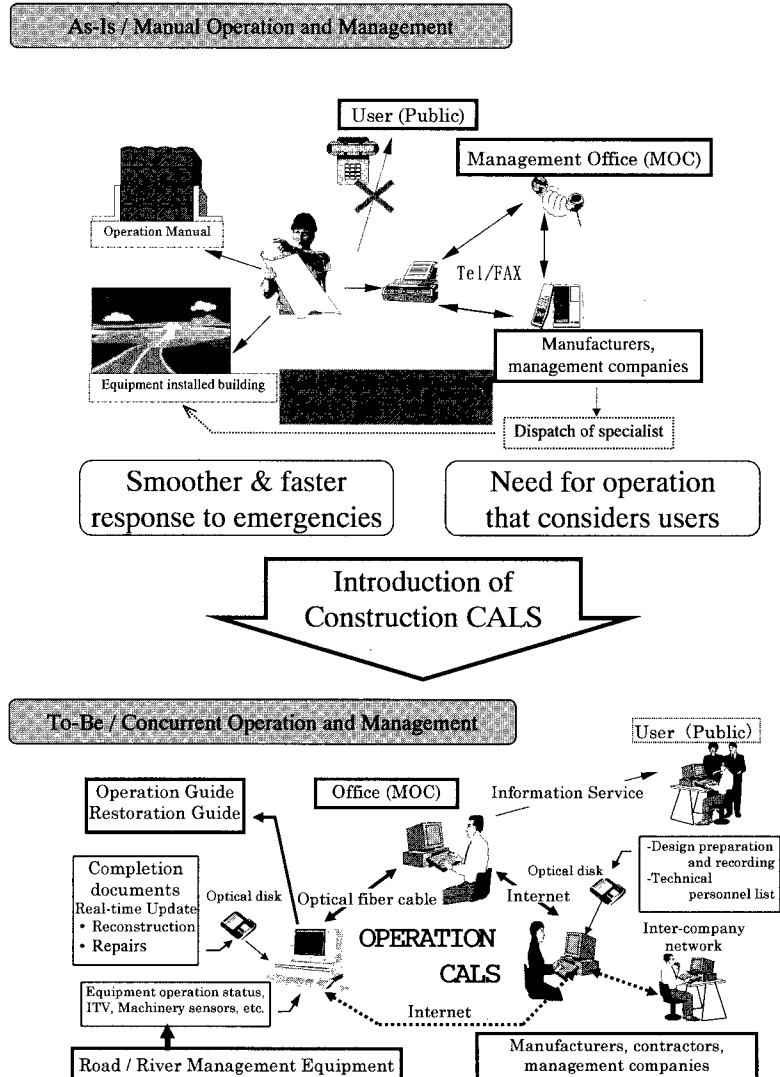


Fig.1 diagram of operation CALS in managing drainage pump stations

#### 4. The Future

A pilot trial of operation CALS is

scheduled to begin in 1999 at the Lower Kiso River Work Office of the Chubu Regional Construction Bureau of the Ministry of Construction. This trial will proof efficiency of operation CALS and effect of the standardization and security. The results will contribute to organize the better operation CALS system and the future system.

#### 5. References

- (1) Toshimitsu MURAMATSU, "Pump Station Equipment & CALS : Introduction Construction CALS for Operation Phase", PONPU No 15, pp.14-16, 1996