Feature

Information Infrastructure of Technology Center

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1. Introduction

Modern technologies have been built into the information infrastructure in Sanyo Denki Technology Center (abbreviated as Technology Center), which is the key center for technical development.
Not only must the latest technical information be used within the design and development departments, but various information must also be exchanged between departments, throughout the company and also with outside organizations in order to maximize business efficiency by using appropriate information management systems such as PDM (Product Data Management).
We outline here the information infrastructure of Technology Center, which is highly advanced, and how it will be effectively used in the future.

2. Main Functions and Missions

The main functions of the design and development departments using the advanced information infrastructure of Technology Center are shown below, together with the purposes of Technology Center.
(1) Functions

- Creation of drawings using optimum CAD system
- Control and usage of technical information including drawings
- Provision of technical information to other departments
- Elimination of need for trial production and analytical simulation during development and trial production
- Information exchange within and outside our company

(2) Missions
- To conduct design and development work efficiently through innovation using the information infrastructure
- To unify the design and development departments with the business unit and sales departments that are geographically located far apart
- To exchange economic information and data through an open network for EC (electronic commerce) and CALS (commerce at light speed), and to extend their scope

3. Outline of the System

3.1 System Configuration

The information infrastructure of Technology Center and network configuration both within and outside the company are shown in Fig. 1.

(1) TDM

Technology Center is connected with our Midorigaoka Works (abbreviated as MW hereafter) by an exclusive 1.5 Mb/s optical fiber, TDM (time division multiplex) cable suitable for traffic arbitration.

(2) Router

Routers are installed in each network so that data within Technology Center and in the business unit and sales departments are handled separately.

(3) PBX

The multi-media private branch exchange supports various new forms of information through the multi-media communication network.

- Telephone numbers are shared with Technology Center and MW using the common channel signaling system. Communication using PHSs that are unique to Technology Center and MW is possible at each site.

- A large-scale cordless telephone PHS network is supported to allow high speed communication even while moving between MW and Technology Center.

(4) Super Hub

High speed communication becomes possible by controlling the trunk line between the super hubs and the switching hubs by ATM (asynchronous transfer mode) at 155 Mb/s and between servers at 100 Mb/s.

(5) Switching hub

High speed communication between the host super hubs by ATM at 155 Mb/s is possible and between the lower hubs at 10 Mb/s.

The trunk line can be used for multi-media containing picture data.

(6) Servers

Various servers such as mail, PDM and drawing servers are installed in accordance with the respective applications in each business unit department. These servers have RAID5 disk arrays and DAT systems for backing up data in case of emergency and to improve system reliability.

3.2 Outline of Main Functions

(1) CAD

The CAD system can handle three-dimensional data. Each product designer and mechanical designer can access the CAD system at all times, and other company staff and designers who could not use the CAD system in the past can now use CAD economically through the network thanks to the new floating license system. Approval of drawings can also be done using the CAD system through the network, so inspection and approval works can be done electronically, rather than on the conventional paper basis.

The three-dimensional CAD offers 100% data compatibility with two-dimensional CAD by the introduction of additional modules. The three-dimensional CAD system is also used in the design sections of each business unit department on a limited scale for prototyping, and for investigating the system structure and for analytical simulations.

Drawing control is integrated into the technical information management system in which inspection and approval works, and storage and design changes of drawings are done on-line. All of the information is centrally controlled by the drawing server of Technology Center, and can be used by the entire company under security

control protection. In future, drawings and data created outside of the design department such as by the production engineering department of each factory will also be controlled, so that all the drawings of the company are centrally controlled by a single system. This further reinforces PDM (product data management).
(2) Technical Information Management System (TIMS)
The technical information data is centrally controlled by the PDM server that forms the core of the product information.
The product information and the parts information that are registered by designers and developing engineers can be added to by the control department. Information retrieval and browsing can be performed from any location within the entire company over the network under security control.
The technical parts information of products can be sent to the production control system of each business unit department by the batch processing through the host computer.
(3) Network
The trunk network SS-NET provides various utilities as shown below.
(a) Electronic mail
Mail can be distributed throughout the company at high speed, to which re-usable electronic data can be attached. Electronic mail can also be distributed outside company over the Internet.
(b) Group-ware
Internal information of the company as listed below can be shared through the common database and client machines. Each employee is allocated his own client machine.

- Sales activity information
- Management information
- Customer claim information
- Internal company information A, B and C

(c) Internet
The Internet is used to send information to other companies, and the company's product catalog and technical product information are available on Sanyo Denki's home page.
(d) Intranet
Each department or individual employee can build their own home page. The innovation of office work has thus begun.

4. Future Challenges

As the center of technical development, Technology Center must continue to tackle the issues shown below to improve the information infrastructure in preparation for the coming EC/CALS and multi-media era to ensure that information can be exchanged smoothly within and outside company.
(1) Construction of high speed communication network suited for the locations of each factory
(2) Reinforcement of PDM and progress toward CE (concurrent engineering) by full use of the system. Elimination of need for trial production and analytical simulation during development and trial production. Shortening of development period by using CAM.

(3) Construction of open network and EC and CALS system by the exchange of electronic data
(4) The use of photos and graphic images in drawings and documents is expected to increase. Servers, networks and peripheral equipment must be upgraded to support the multi-media trend that users will demand.

5. Conclusion

We have outlined the information infrastructure features of Technology Center.
We will continue to support technical development work, upgrade our global information capabilities and promote innovation in our work.
Finally, we would like to express our sincere appreciation for the cooperation and advice we received during the construction of Technology Center information infrastructure.

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Computer System Control Dept. CAD Section
Worked on CAD operation of mechanical systems after working in design Dept.

Fig. 1 Outline of information network