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C I — N E T

Construction Industry Network

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Preface

During the process of implementing the projects
in the construction industry, it is necessary to
exchange the most appropriate information among the
partners involved within a short time. Furthermore,
during this process, numerous papers which the general
contractors in the construction industry should report
to the government authorities in carrying out their
projects have to be made repeatedly.

In building sectors today, we are experiencing
a rapid extension of data processing not only between
general contractors and subcontractors but also between
contractors and other companies in such different
industries as trading companies, building material
suppliers, banks, etc.

CI-NET, which is called an information network of
the Japanese construction industry, is planning to
make good progress in exchanging the information among
those involved using computers and networks.

However there are many kinds of problems to
establish the information network in our construction
industry. And we must solve them step by step while
considering the characteristic features of the
construction industry.

Objectives of CI-NET

In February, 1988 a committee was set up to study the feasibility of an information network in construction industry, named as CI-NET. Members of the committee are general contractors, trading companies, building material suppliers, banks, computer centres, network providers, research establishments, government departments and so on.

In this committee at first members would exchange business transactions electronically in odering and accepting materials between general contractors and material suppliers using the value-added network, but soon after they started mutual discussion, they had to give up that idea. Because they found there was not much need for exchanging business transactions in ordering and accepting materials for the general contractors, and the growth of using computers among the contractors was not enough to communicate electronically.

There are more than 500,000 contractors in Japan, and almost all of them are small-to-medium-sized enterprises having no computer yet.

Considering this situation the committeemen concluded that the most important undertaking was to make computers much popular among the contractors and then the network forming began effetively.

Objectives of CI-NET are not only to establish the information network but also to promote the use of computers among the contractors.

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│   Objectives  of  C I — N E T                │
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┌───────────────────────────────────────────┐
│ To  establish  the  information   network  │
│ in  construction  industry                 │
└───────────────────────────────────────────┘
            │                    │
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│ To  promote   the  use  of  computers      │
│ among  the  contractors                    │
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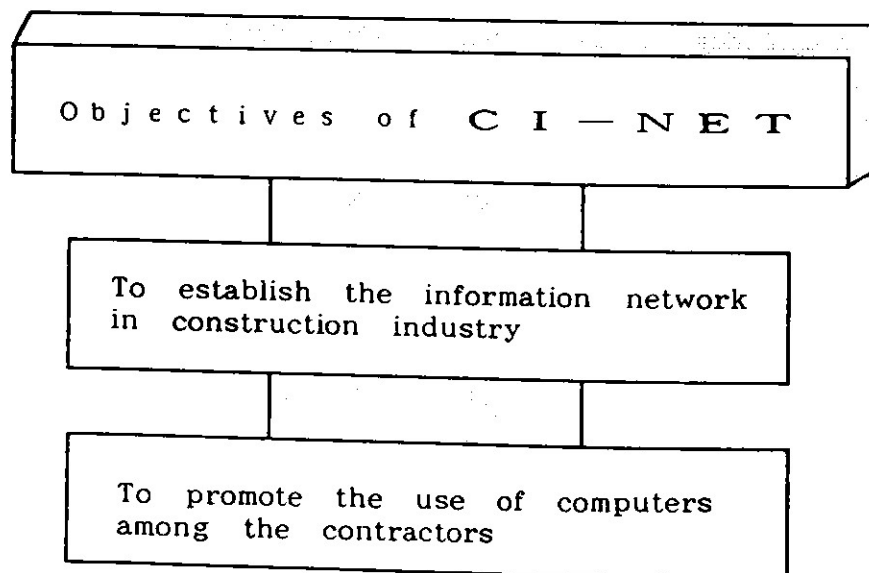
Applications of CI-NET

In march, 1989 the committee of CI-NET suggested the following five applications of CI-NET to the construction industry.

1. Electronic data exchanging system between general contractors and subcontractors.
   For example, estimating data, accounting data and ordering or accepting data.
2. Electronic data exchanging system in odering and accepting materials between general contractors and material suppliers.
3. Computing services for small-to-medium-sized contractors.
   For example, estimation, CAD and accounting.
4. Information services in local areas.
   For example, advertisement for bids and location to lay excavated materials.
5. Information providing system for relating organizations.
   For example, offering documents to government authorities, clients and architects.

EDI in the Japanese construction industry

While studying the information network, the committee of CI-NET became aware of the concept of EDI(Electronic data interchange), and examined how EDI could be applied to CI-NET and then described the strategy adopted by CI-NET to facilitate its development.

The first and the second application which are suggested by the committee of CI-NET depend on the concept of EDI, therefore the committee of CI-NET is first of all going to introduce EDI into the Japanese construction industry.

EDI is the computer-to-computer exchange of formatted business documents between enterprises.

And the principal potential benefits of EDI which are desired in our construction industry are the following:

a) Improving productivity and profitability
b) Time flexibility
c) Dissolving differences in distance
d) Reducing expenditure in data processing.

At present, EDI becomes the major subject in CI-NET.
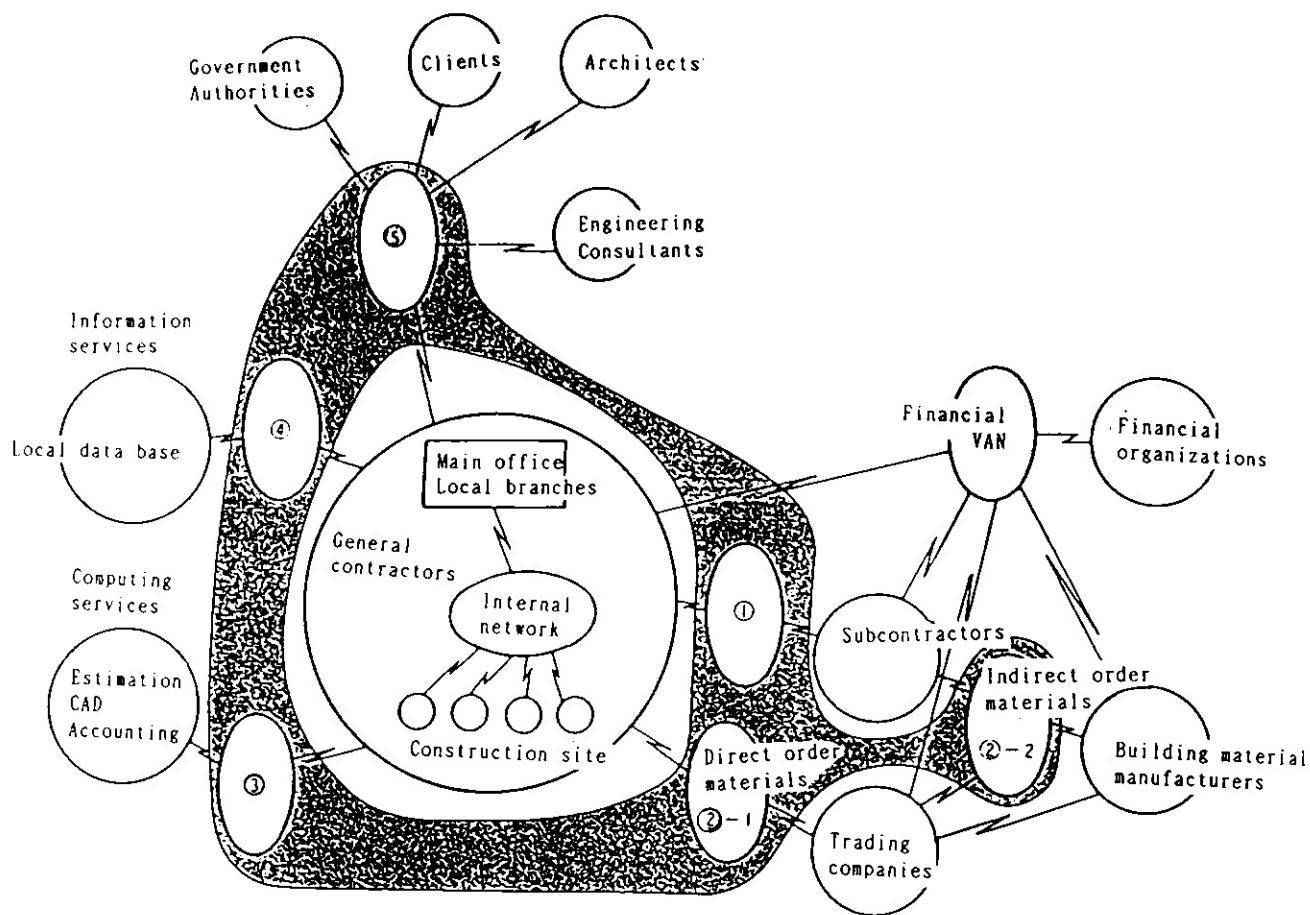
APPLICATIONS OF C I — N E T

1	Electronic data exchanging between general contractors and subcontractors
2	Electronic data exchanging in ordering and accepting materials between general contractors and material suppliers
3	Computing services for small-to-medium-sized contractors
4	Information services in local areas
5	Information providing for relating organization

In march, 1990 the committee proposed the outlines of implementing EDI in our construction industry, and developed three trial systems for understanding EDI in CI-NET. Three trial systems are:

1. Data exchanging system for estimation between general contractors and subcontractors
2. Ordering and accepting information system about ready-mixed concrete on site
3. Ordering and accepting information system about reinforced bar.

First of all data formats used for exchanging electronic data between different enterprises are designed, and then they are applied gradually to practical works. Probably the implementaion has begun at such easier areas as estimation which software has already been developed and put in use by some contractors.

Standardization for EDI in the construction industry

Once we decide to implement EDI, the success of EDI depends largely on a standardization system. However the major problem in setting a standard is to get a consensus of opinion among companies involved, when we would develop the standardization system.

At present there are already a number of standards which are used by individual construction companies. We have no public organization promoting a standardization system, and we have no united standardization system in our construction industry.

Taking an opportunity of using computer technology, it is increasing to have discussions about a standard among contractors. However it is difficult to adjust many types of standards and to develop our standardization system. Furthermore, there is difference between major companies and small-to-medium-sized companies in their computerization.

After studying EDI in our construction industry, members of CI-NET determined to make only one standard in the first place, that is data formats, which are indispensable for exchanging an electronic data between enterprises. There are other standards relating EDI, such as communication protocol, document's form, code number of building materials, etc. In CI-NET these standards are to be examined in the next place.

Data formats used for CI-NET

The committee of CI-NET has adopted an idea of EIAJ (Electronic Industry Association of Japan) and has been designing data formats in the construction industry in accordance with EIAJ's standards.

EIAJ's standards are open to the public and they are going to provide basic principles when national EDI data standards are developed as one of JIS(Japan Industrial Standards). In the near future national EDI data standards are to be related with international EDI data standards, EDIFACT.

Data formats of EIAJ are variable as concerns both record length and record sending, so that they can provide the flexibility required for effective network growth. The flexibility is also needed for data formats of CI-NET. Because there are already many various standards used among Japanese contractors, and an environment in which each contractor must do daily data processing by computers is different individualy.

The committee of CI-NET are thinking to provide more flexible standards and improve them gradually by experiencing data interchange.

CI-NET activities of today

From April of this year the committee of CI-NET was changed to a new organization, and three subcommittees were established to promote CI-NET.
They are:

1. Promoting activities of CI-NET, especially EDI in construction industry
2. Designing EDI data standards for CI-NET and introducing them to practical works
3. Campaigning of publicity for CI-NET and EDI in construction industry.

CI-NET activities have just started now to carry forward electronic communications in our construction industry. We think that computers and networks will become an infrastructure in our construction industry. Therefore the committee of CI-NET desires that computers and networks would be more popular in our construction industry by promoting CI-NET.