CHEIS CHIYODA ENGINEERING INFORMATION SYSTEM について

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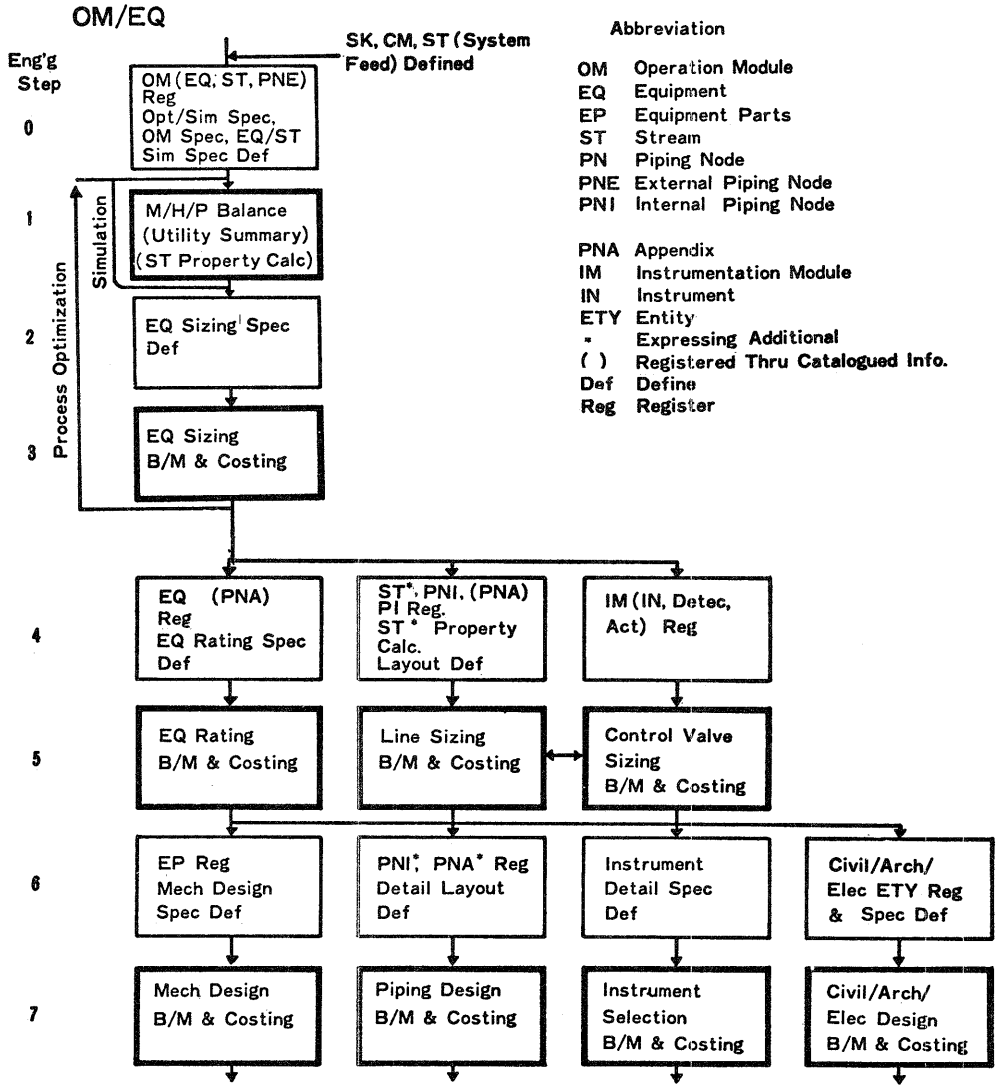
Engineering Steps in CHEIS-10



Abbreviation

OM	Operation Module
EQ	Equipment
EP	Equipment Parts
ST	Stream
PN	Piping Node
PNE	External Piping Node
PNI	Internal Piping Node
PNA	Appendix
IM	Instrumentation Module
IN	Instrument
ETY	Entity
*	Expressing Additional
( )	Registered Thru Catalogued Info.
Def	Define
Reg	Register

Three Stages of Computer Applications to Process Analysis and Design

Stage	Application	Supporting Software Technology
1st	Simple Calculation (HE Check Calc, Distillation, Phys. Property)	Compiler Language
2nd	Complicated Calculation (Simulator, Optimizer)	Task Management Data Management
3rd	Integrated Information System	Data Base POL Dynamic Job Supervision

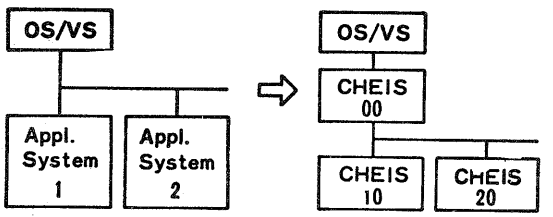
Requirement for The Large System

(1) Easy to Use
- User Oriented Subset & Tutorial Help
- User Catalogue & Standard Catalogue
- POL (UOL)

(2) To promote Users Originality
- New Combination (Dynamic Link)
- New Module (Host Language)

(3) Easy to Develop & Maintain
- Open Ended (Program, POL, Information)
- Indepence (Device, Input Form, Data, Program)

Two Level Structure



(a) Traditional System (b) CHEIS

CHEiSOO — System Development and Operation Support

(1) Data Base(P,U) Data Structure, Generation, Catalogue, Reorganization, Protection

(2) Dynamic Link(P,U)

(3) POL (UOL) (U)

(4) User Catalogue (U)

(5) Report Writer (P,U)

(6) Unit Conversion(P)

(7) Diagnostic Processing (P,U)

(8) Tutorial Help (U)

The Features of Data Base

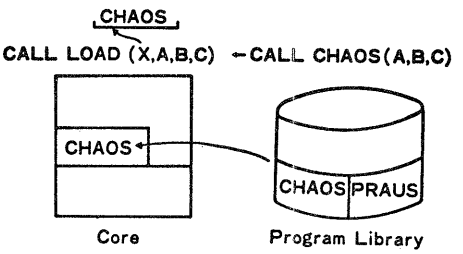
(1) To have explicit file description

(2) To store information for various number of entities of many entity types—Many subfiles are provided

(3) To express entity relationships—Entity pointers are provided

(4) To express the record structure for an entity—Record pointers are provided

Dynamic Job Supervision



c.f. 100.0

Y=2.5*EXP(1.2*X) ← Y=2.5*EXP(120)

POL v.s. Procedure Language

	POL	Procedure Language
Users' Responsibility	Describe the Problem	Direct how to Solve the Problem
example	CSMP GPSS CHEIS (UOL)	FORTRAN ALGOL PL/I

User Catalogue Facility

User catalogue functions are supplied by

(1) Private file storing sets of user commands

(2) Standard commands loading default data

(3) Object Data Base storing registered data

Application System Model

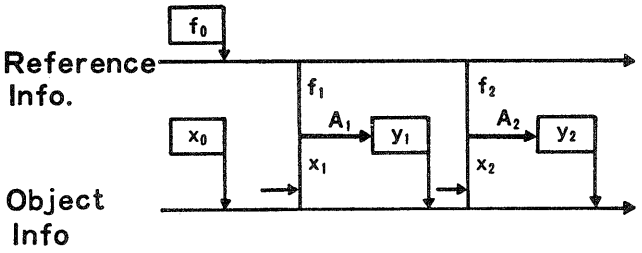
(1) Information Processing Model

(2) Information Structure Model

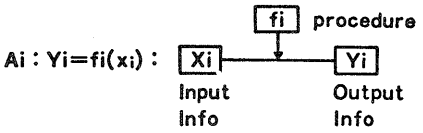
(3) Data structure Model

Abstract Information System from CHEiSIO

(1) Information Processing Model



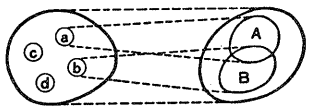
Activity — Information Processing Unit



Object Information : Xi, Yi
Reference Information : fi

(2) Information Structure Model

1) Entity (事象) ; Enployee(NO. 1000)
   Attribute (属性) ; Age, Section
   Value (属性値) ; 30, Accounting
2) Attribute(E), Attribute (V)
3) Entity Type, Entity Attribute Set, Value Set

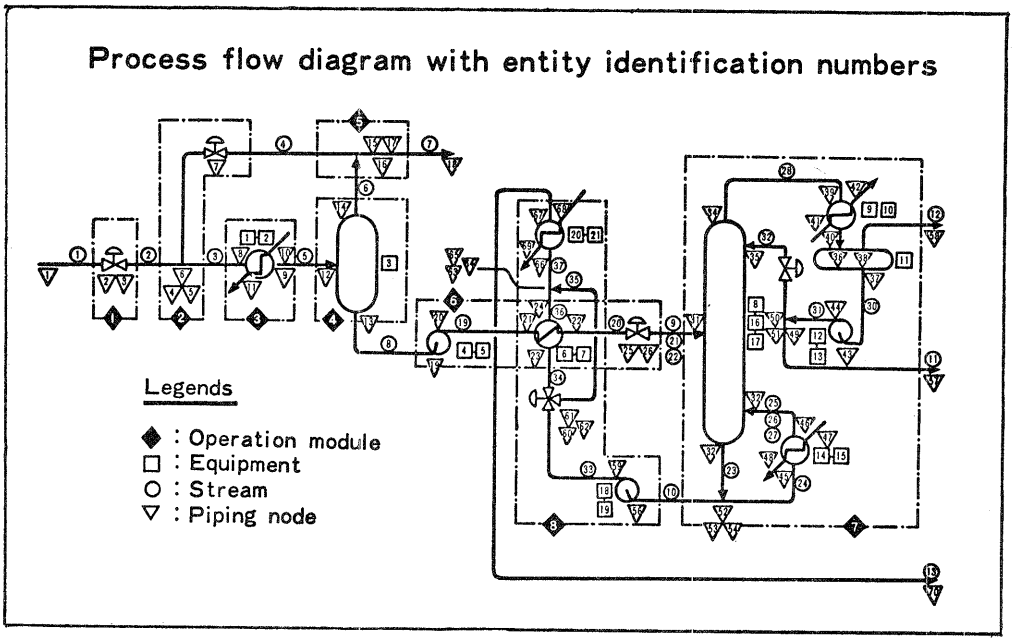


EQ { Tower(a)→Tower Dia ∈A
   { Pump (b)→Pump Head ∈B

Process Engineering Informations

(1) Expressed on diagrams → Relationships of entities

(2) Expressed on data sheets → Descriptions about entities



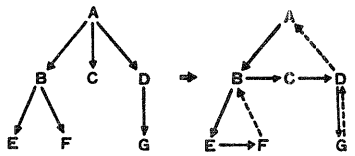
4) Entity⟷Identifier=Value (Key Attribute)

5) GATR (General Attribute)
SATR (Simple Attribute)
CATR (Classified Attribute)
TATR (Composite Attribute)
XATR (Complex Attribute)

6) Attribute Set

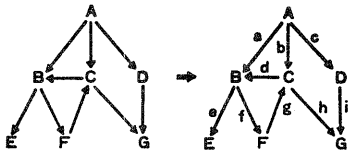
7) Entity Relationship

Tree Type



A:B, *
B:E, C
C:*, D
D:G, −A
E:*, F
F:*, −B
G:*, −D

Network Type



a:A, B
b:A, C
c:A, D
d:C, B
e:B, E
f:B, F
g:F, C
h:C, G
i:D, G

Entity Type in Entity Relationship

C & C Type ; Manager — Engineer

P & C Type ; Section — Enployee

Multi-C Type ; PO — EQ, Pi, PN, IN

Multi-P Type ; EQ, ST — PN

8) Attribute System, Attribute No.

ODB in CHEiSIO 1~800

9) Attribute of Attribute

Attribute No.	23
Attribute System Code	AT 50
Entity Type Code	Enployee
Length	4
Attribute Name	AGE
Value Code	I
Standard Unit	*

10) Information

Value(jAT) for Value(Key Attribute)

(3) Data Structure Model

1) Data Base

Multi-Entity Type

GATR, SATR, CATR, TATR, XATR

Entity Relationship

2) Entity Record, Record, Subfile

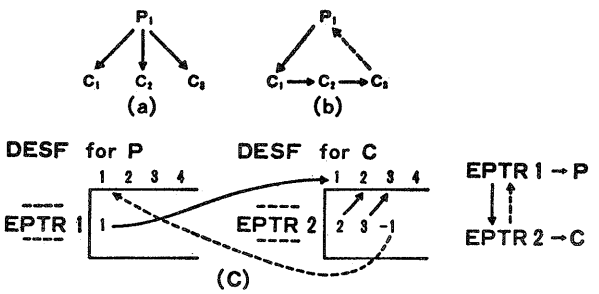
Entity Record—Entity Attribute Set
Record —Attribute Set

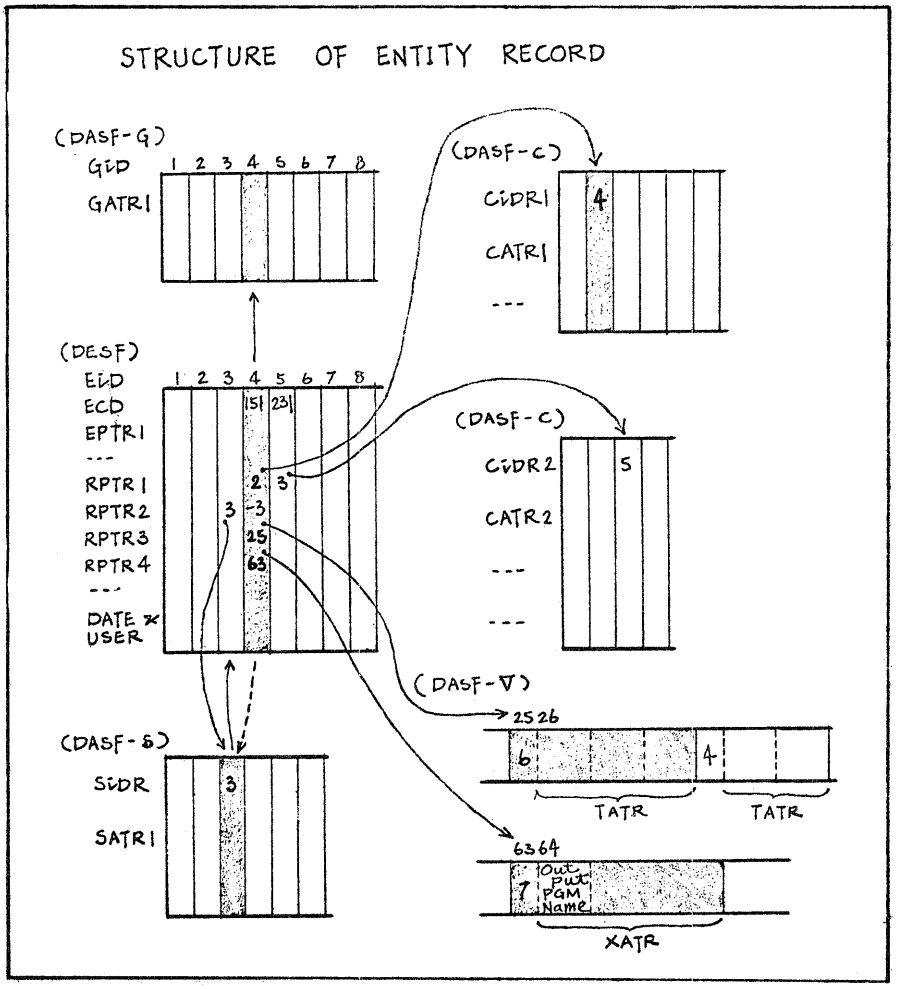
DASF- G—GATR
S—SATR
C—CATR
V—TATR, XATR

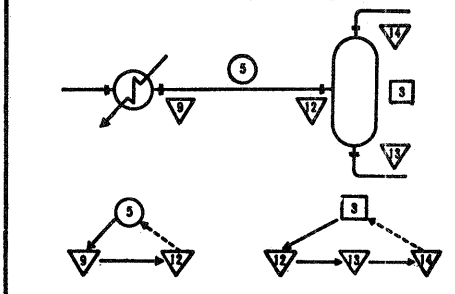
DESF —RPTR, EPTR, EiD, ECD, DATE, USER

DESF —Entity Type
DESF Record—Entity

3) EPTR-Entity Pointer







Contents of the Project Data Base

SF for Stream

ID	5	
ST→PN	9	

SF for Equipment

ID	3	
EQ→PN	12	

SF for Piping Nodes

ID	9		11	12	13	14	
PN→PN/ST	12			-5			
PN→PN/EQ				13	14	-3	

4) RPTR-Record Pointer

5) BATR, EATR

BATR—Block Attribate

EATR—Elemental Attribute

6) Data Base Generation

Attribute System
Subfile Attribute Set
No of page

Open Ended
Easily Reorganized

7) Data Base I/O

CALL DBi (iDB, jAT, iD, iVAL)
CALL DBO(iDB, jAT, iD, iVAL)

CALL iDFND(iDB, jAT, iVAL, iDT, N)

8) Entity Management

CALL PTOC(iDB, jAT, iDP, iDC, iORD)
CALL PTOCA(iDB, jAT, iDP, iDCT, N)
CALL CTOP(iDB, jAT, iDP, iDC)

Five Classes of Input Commands

(a) Data Base Management

To generate, close and recover the data base.
To transfer data between data bases.

(b) Entity and Record Registration

To get spaces for the entity and records registered and to store ID. number, record pointer, ID for return and data in them.
(Values for some attributes of the entity may remain undefined)

(c) Execution

To execute engineering calculation such as process simulation and equipment rating.

(d) Report Writing

To generate reports on printers from data bases.

(e) Auxiliary Processing

To initiate computer jobs.
To set command level.

Class (b), (c) and (d) Commands and Operating Environment