

JCCS
Construction information
Classification System in
Japan

Key Technology to advanced IT practices

Tatsuo Terai

Chiba Institute of Technology

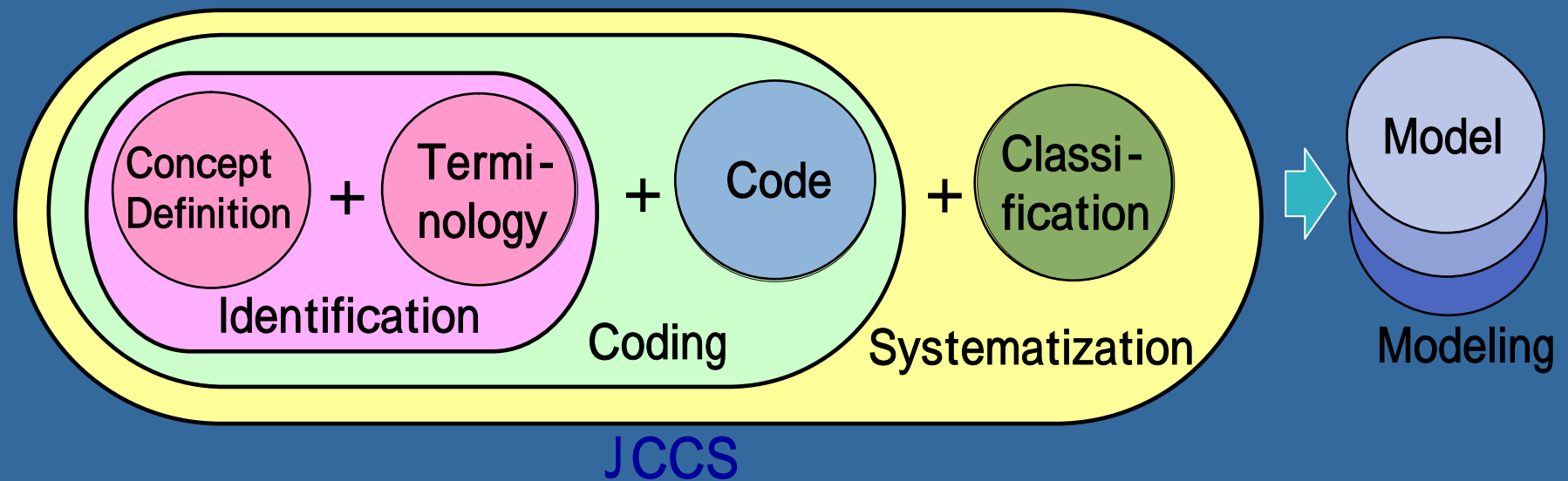
JCCS

abbr.

Construction information **C**lassification **S**ystem in **J**apan

Standard of utilization of unit information

Fundamental basis for common use and linkage of information



Major Technologies relating to CALS/EC

XML (Tag-set)

Metadata

DM-CAD-GIS

GDB (General Database)

Object oriented approach

CAD layering system

Electronic Specification

LCS (Life-cycle Support)

Web Technology (Semantic Web)

Model (Project/Product/Process)

R&R/LCDM

CAD Property-set



They don't work efficiently/practically without JCCS

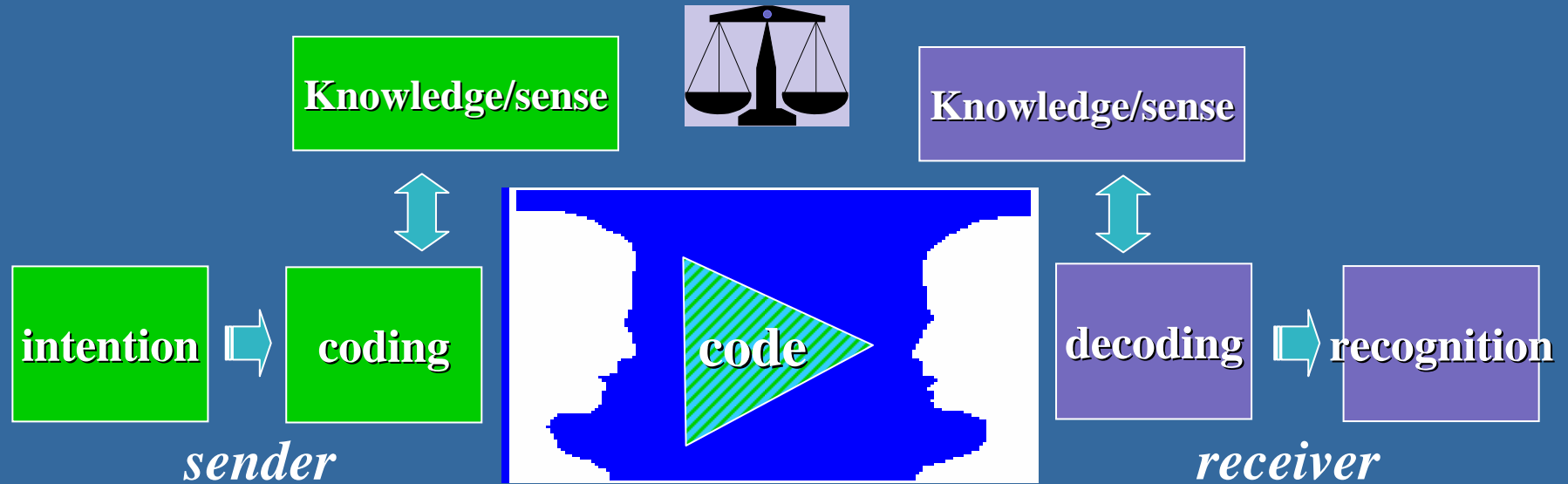
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```

POSC/RDL (XML)

Communication



Problems against Standardization of Terminology

{ Problem 1 } : **SYNONYM** (Multiple Terms to One Concept)

· example: column = pillar

· difficulty: easier to cope with

COLLECTION OF TERMS is only a starter of
JCCS development,

IDENTIFICATION OF CONCEPT is a key task to
JCCS implementation.

· definition: indispensable

· solution: library/dictionary with usage &
definition

Problems to be solved / Issues to be challenged

- Each domain member/system is liable to regard their domain to be the whole world, and doesn't like to change the way how to use their own terminology and concept definition.
- Existing systems are mostly developed with self-contented core technologies like coding and/or classification systems to be difficult or impractical to be changed afterwards .
- Many Japanese people are not accustomed to strict semantic consideration.



Development of standardized classification system based on object-oriented framework to be used as intermediate translation/mapping system to stay existing systems in practice

International Situation relating to Standardization of Classification in AEC

- **UDC, ABC, CI/SfB, CIB/Master List** :
Classification systems based on traditional documentation handling method
- **ISO 12006-2** : IS of standardized framework for classification of construction information
- **ISO 12006-3** : IS of standardized framework for construction information based on object-oriented technology
- **Uniclass** : UK standardized classification system based on ISO12006-2
- **OCCS** : North American standardized classification system based on ISO12006-2
- **IFD** : International Framework for dictionary based on ISO 12006-3

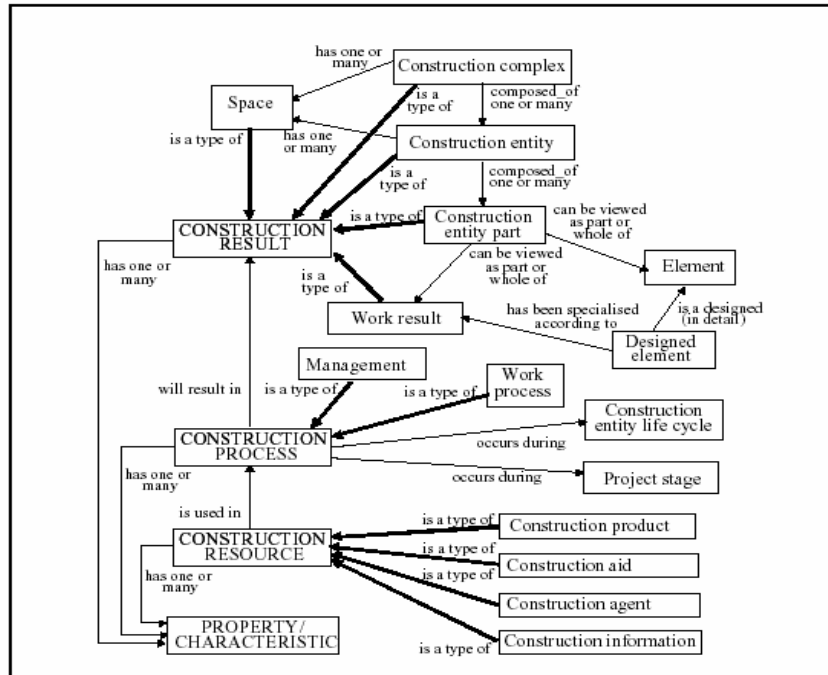
ISO-12006

Organization of information about construction works

ISO 12006-2

Part 2: Framework for classification of information

to specify the way how to prepare classification tables based on the RESOURCE-PROCESS-RESULT concept.



Figur 5. Relationer mellan resultat, processer och resurser (ISO/TC59, 1997)

ISO 12006-3

Part 3: Framework for object-oriented information exchange

to specify the way how to tackle with classifying various information by OO approach

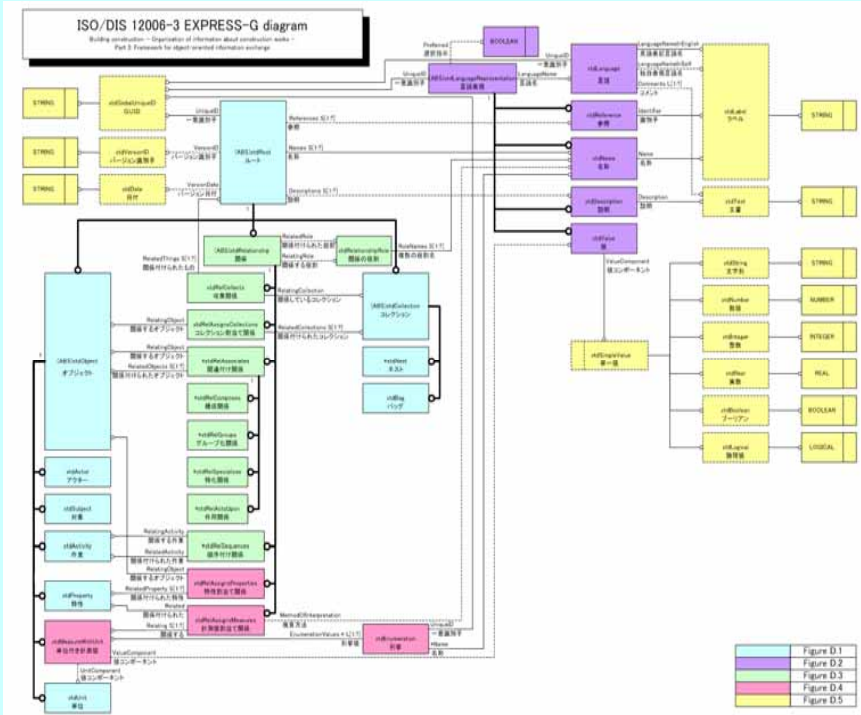


Figure 0.1
Figure 0.2
Figure 0.3
Figure 0.4
Figure 0.5

IFD International Framework for Dictionaries

The four layers of the Dictionary

External libraries

Sources of information based on RDL objects or existing structures mapped to RDL objects through templates

Knowd.lib

Knowledge libraries, standards...

Product libraries

GDL, object lib, picedb..

Project libraries

Briefing, FM, program...

APIs for query / update data according to templates and external formats (nnXML, P21...)

Templates (mapping)

Provide mapping between neutral objects and different ways to represent/present them

Ifc template

Ifc-RDL mapping

Product template

Product properties..

Search template

Advanced search, etc.

Template generators, APIs for storing / reading RDL objects

National Dictionary

Language independent reference objects (RDL object) and relationships with unique ID's.

BARBi method

Norwegian names and descriptions

LexiCon method

Dutch names and descriptions

Edibatech method

French names and descriptions

... Names and descriptions in other languages

Submission checker - Rules for population of Reference Data Libraries based upon ISO/PAS 12006-3 I. (EXPRESS/EXPRESS-X)

ISO/PAS 12006-3

Framework for object oriented data exchange. EXPRESS data model giving the framework for reference libraries.

IFD: International Framework for Dictionaries

- Developed and maintained by ISO/TC 59/SC 13/WG 6
- EXPRESS model standardized in ISO12006-3
- IFD requirements:
 - Definition of terminology
 - Classification of terminology based on ISO12006-3
 - Relationship between terminologies
- Libraries under development
 - BARBi (Norway)
 - SDC (France)
 - Lexicon (Netherlands: STABU)

Example: LexiCon specification of a door

The screenshot displays the LexiCon software interface, which is used for specifying building components. It is divided into three main panes:

- Left Pane (LexiCon Tree View):** Shows a hierarchical tree structure of building systems. The path is: System > Bedrijfsystemen > Constructie > Deur > Deurset. The 'Deurset' node is selected.
- Middle Pane (LexiCon Tree View):** Shows a more detailed tree view of the selected 'Deurset' component. It lists various construction types such as 'Property modifying additive', 'Signal system', 'Space accommodation system', 'Access construction', 'door set', 'Folding sliding door', 'Revolving door', 'Special door', 'Stable door', 'Gate', 'Hatch', 'Arch', 'Screen', 'Slip door', 'Light entrance construction', 'Opening retaining construction', 'Penetration construction', 'Wall', 'Span construction', 'Strengthening construction', 'Support construction', 'Surface providing construction', and 'Transportation construction'.
- Right Pane (Details):** Shows the 'Associations' for the selected 'Deurset' component. It lists various properties and their values, including:
 - Components: Glass, architrave, Frame, Ventilation unit, door leaf, Sub frame, panel, cavity closer
 - Collections: [Sound barrier], [Security barrier], [Climatological barrier], [Fire barrier], [Fire resistance related to separation function] (result: [NEN 6052]), [Fire resistance related to collapsing] (result: [NEN 6052]), [Fire resistance related to collapsing] (result: [NEN 6052]), [Smoke tightness], [Radiation barrier], [Thermal barrier], [Physical barrier], [Structural function], [Life cycle related properties]
 - Properties: Thickness(1) Co-ordinating thickness [Linear dimension measure], Thickness(2) Doorset thickness, Breadth(1) Co-ordinating width, Breadth(2) Doorset width, Breadth(3) Joint clearance, Height(1) Co-ordinating height, Height(2) Doorset height, [Internal/external beater], [Country of origin], [Availability], [Product name]

Interface example

Norwegian input



Norwegian concept
WINDØW

Translation by
GUID -> concept -> language representation

This concept carries the same unique
identification in every language:

78AF4E98C8D4406B873DBB85E1FE7DB

BARBI - Norway

78AF4E98C8D4406B873DBB85E1FE7DB

Properties



Concept
Name:
WINDØW

LexiCon - Nederland

78AF4E98C8D4406B873DBB85E1FE7DB

Properties



Concept
Name:
RAAM

Dutch output

Same GUID: 78AF4E98C8D4406B873DBB85E1FE7DB

Same concept

Same properties

Same WINDØW

But with

Dutch name:

RAAM



Specification of JCCS

Standardized Terminology/Concept System for AEC domain
in Japan

IFD of Japan (based on ISO)

Foundation of CALS/EC (Linkage with CAD, GIS, e-
Delivering, etc.)

Co-existence with Legacy terminology/classification systems

Collaboration with academies and public organizations

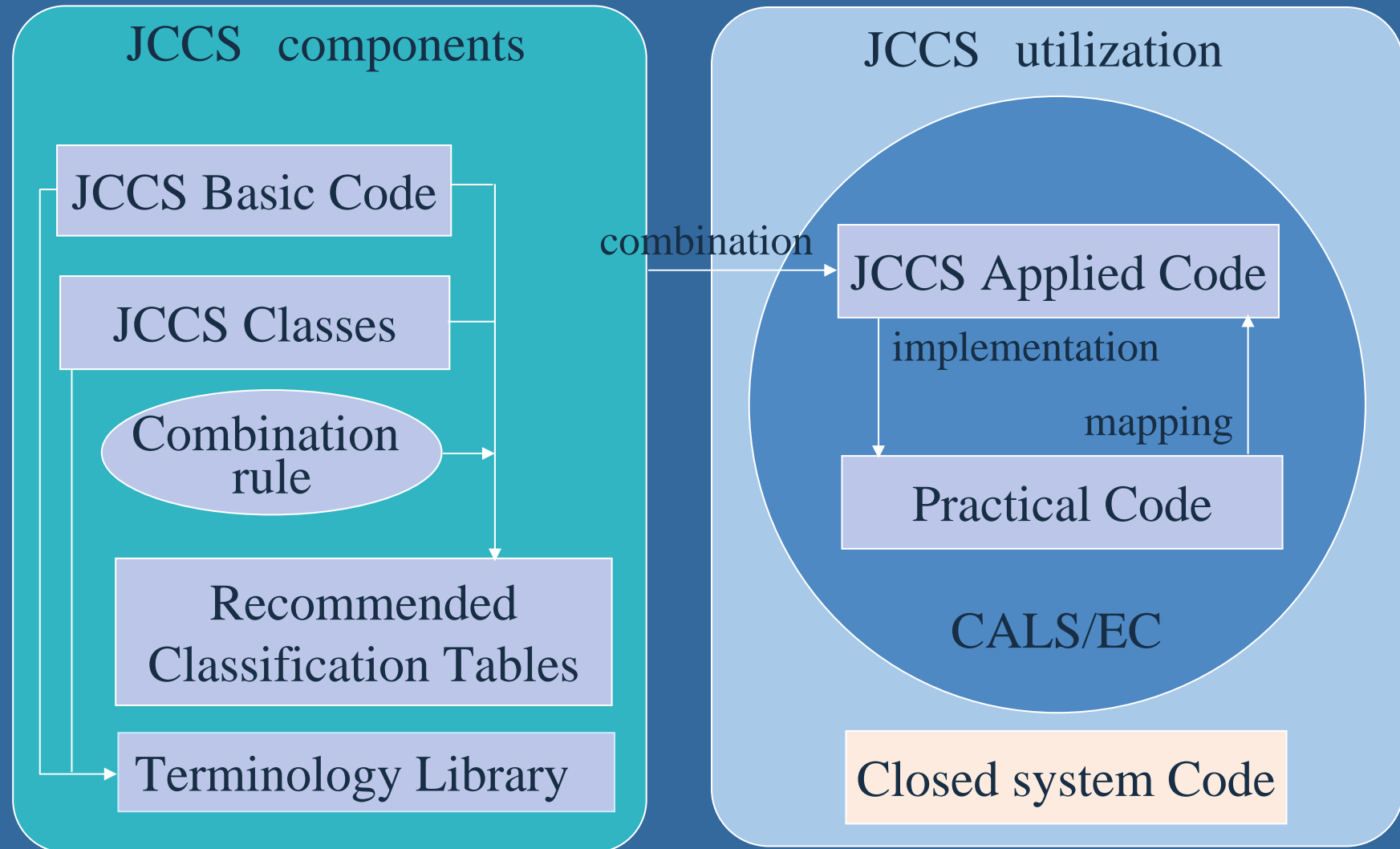
Neutrality from referring systems and information

Clearly organized relationship with related terminologies

Clear identification of concepts/terms

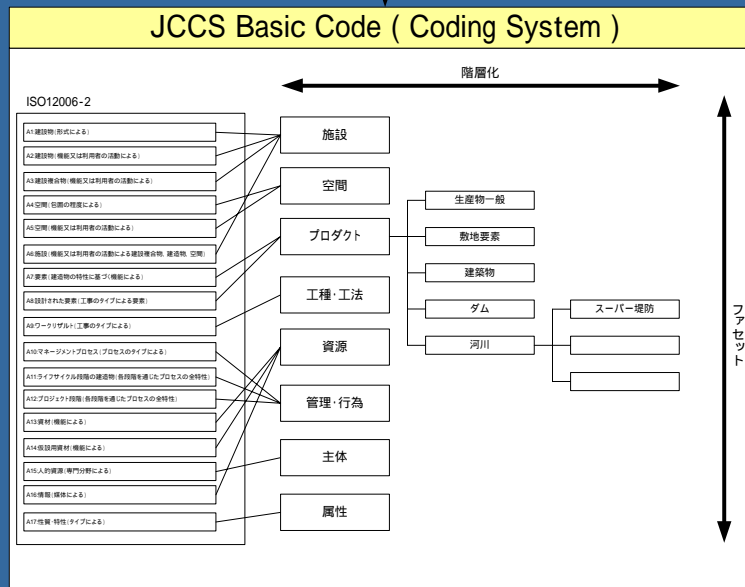
Equipped with responsible maintenance system

JCCS Architecture

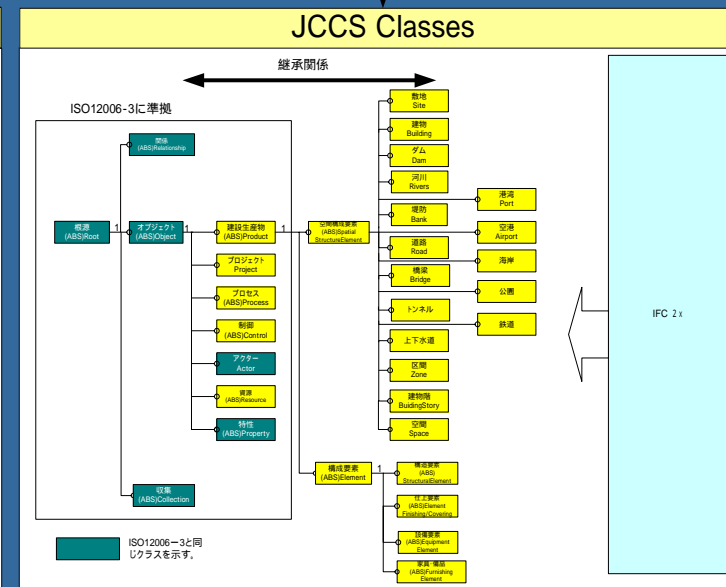


Recommended Classification Tables

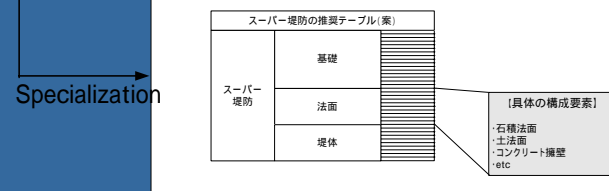
Classification Approach in relation to ISO12006-2



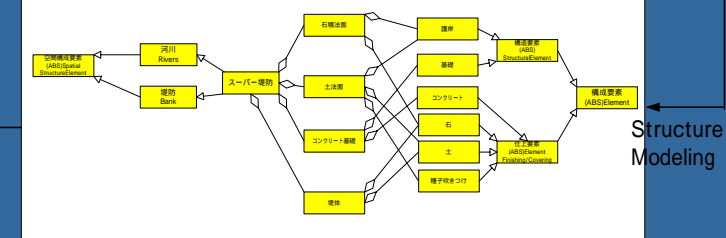
Object-oriented Approach in relation to ISO12006-3

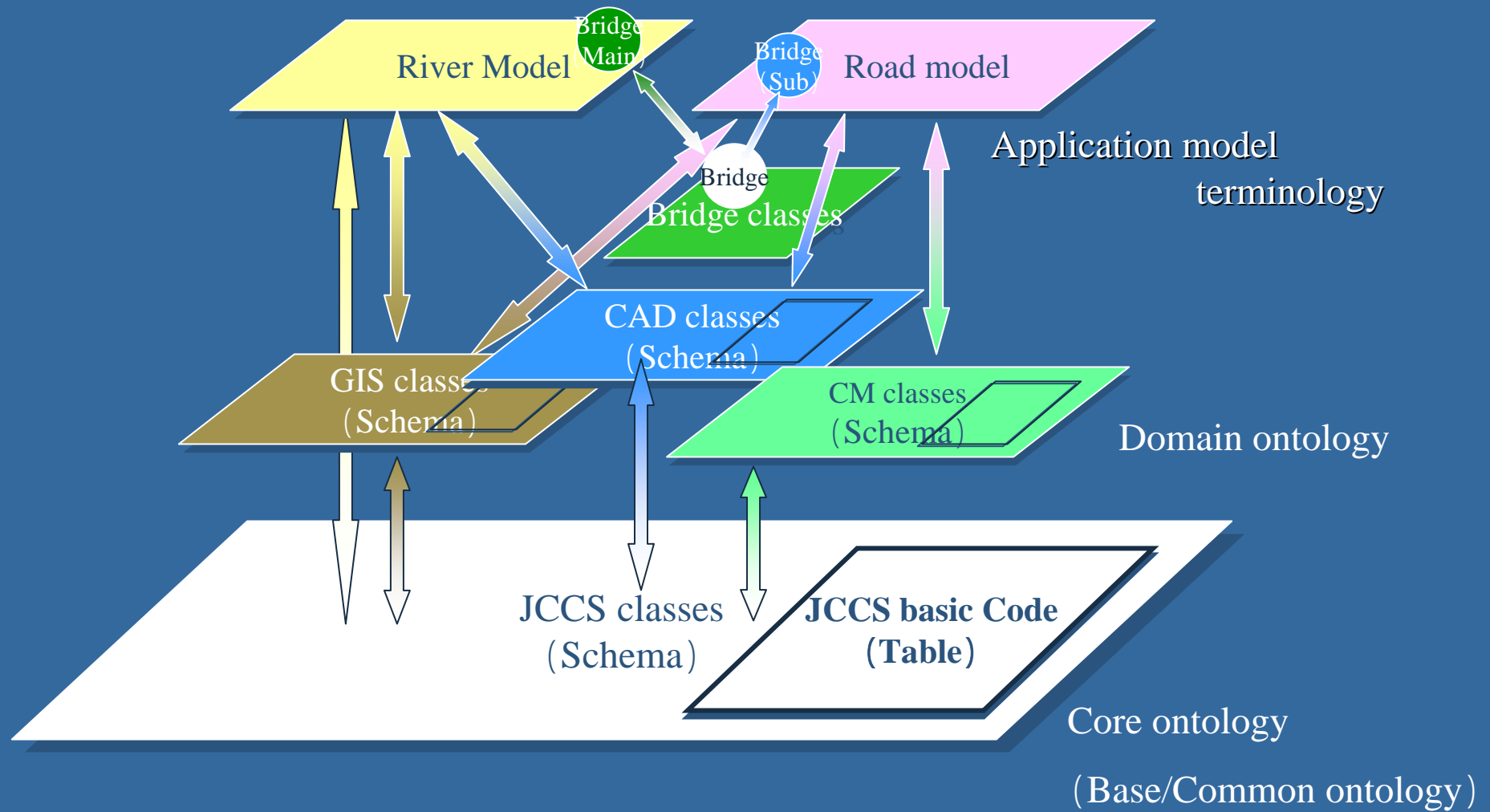


JCCS Recommended Table from practical point of view



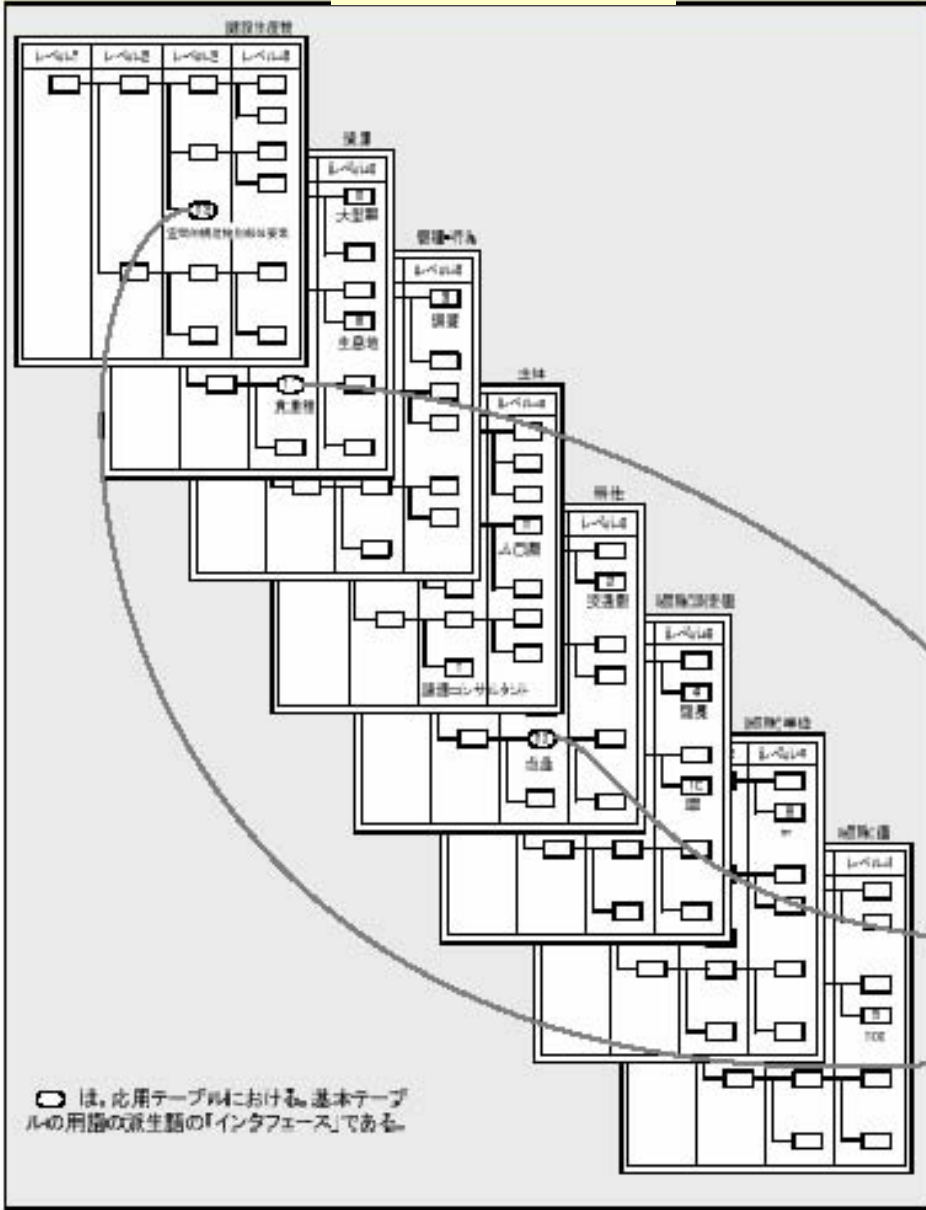
Specific Class diagram from JCCS Class





■基本テーブルと応用テーブルの関係

Basic Tables



Application Tables

インターフェース	建設生産費+在庫+仕入
	基本テーブルの用語をそのまま利用 建設コスト 建設コスト 建設コスト+在庫+仕入
	基本テーブルの用語を結合 管理 + 作業 建設コスト+管理+作業
	管理 + 出庫 + 仕入 建設コスト+管理+出庫+仕入
	基本テーブルの用語と、インターフェースの用語から抽出した用語を結合 管理 + 出庫 + 仕入 建設コスト+管理+出庫+仕入+在庫+仕入
出庫	管理 + 出庫 + 仕入 建設コスト+管理+出庫+仕入
出庫+仕入	管理+出庫+仕入 建設コスト+管理+出庫+仕入
出庫+仕入+在庫	管理+出庫+仕入+在庫 建設コスト+管理+出庫+仕入+在庫
出庫+仕入+在庫+仕入	管理+出庫+仕入+在庫+仕入 建設コスト+管理+出庫+仕入+在庫+仕入

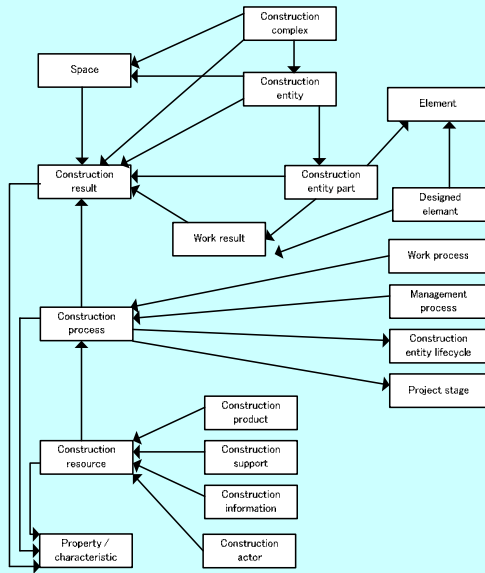
Existing Codes

建設コスト	建設コスト
管理	管理
出庫	出庫
出庫+仕入	出庫+仕入
出庫+仕入+在庫	出庫+仕入+在庫
出庫+仕入+在庫+仕入	出庫+仕入+在庫+仕入

JCCS base on ISO 12006-2

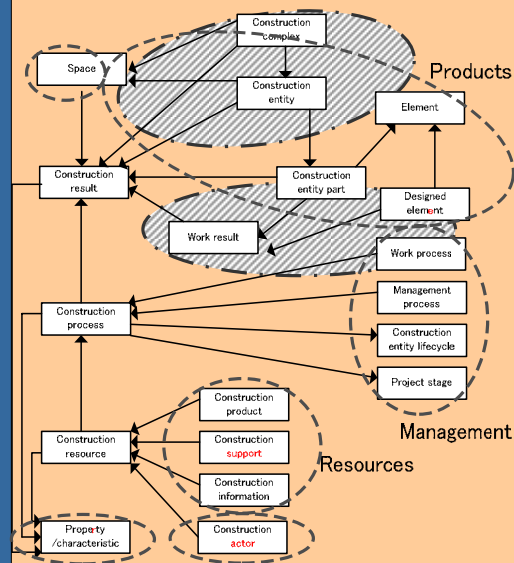
ISO 12006-2

What specified the way of tackling which defines the framework and composition of construction information which exist in the flow which makes "construction resources" a "construction result" according to a "construction process", and expresses it in table form.



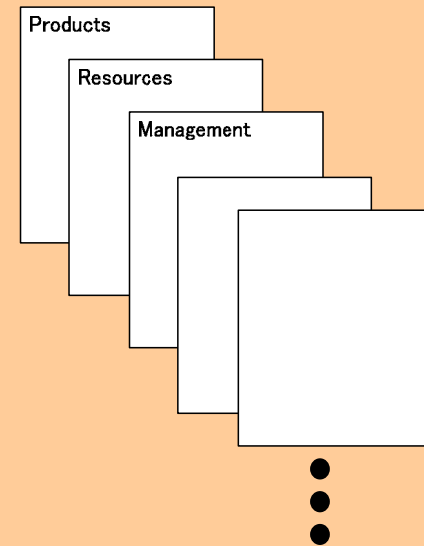
It is not a formal diagram.

It unites with construction information (Japan) and is table-ization about information.

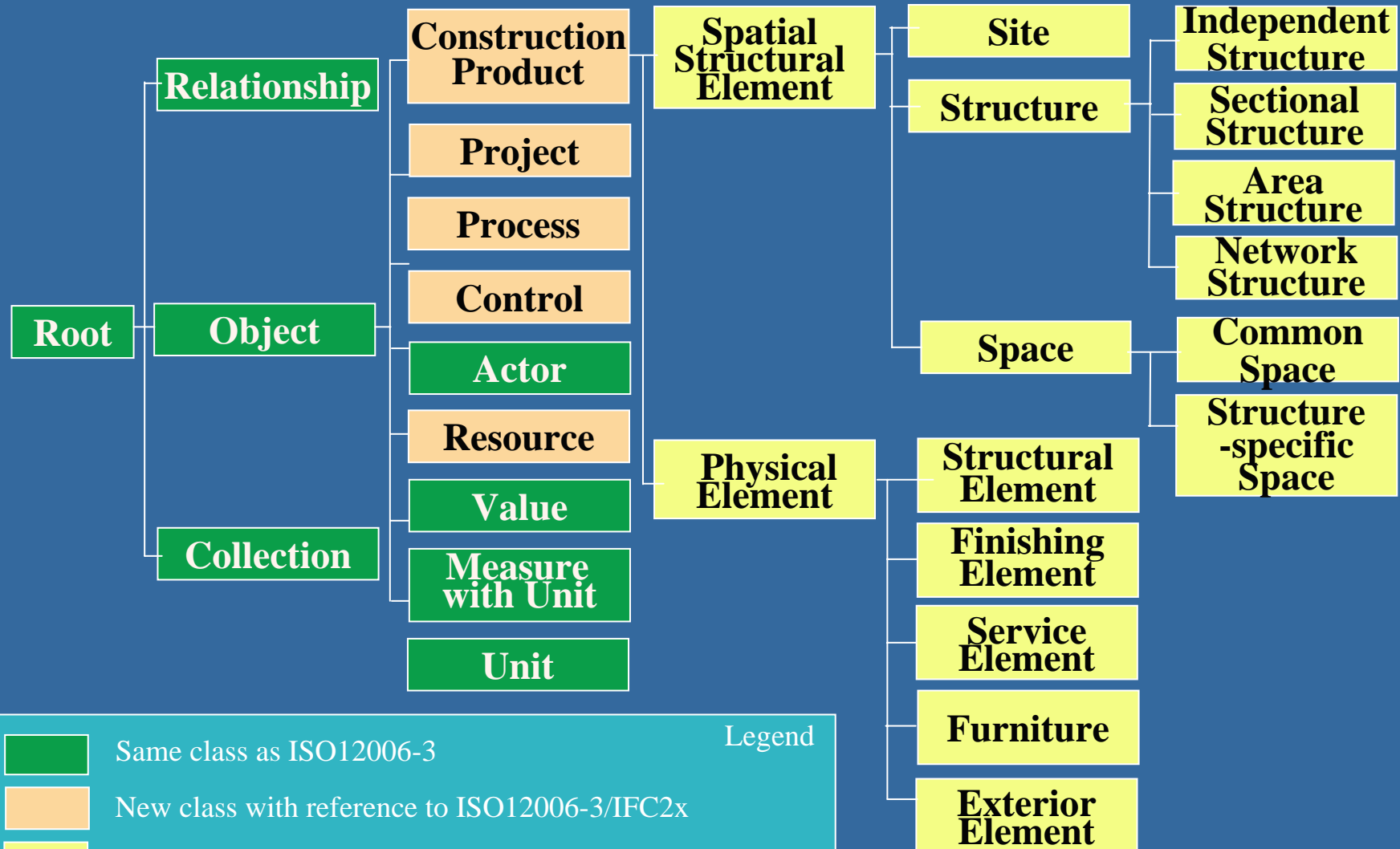


Preparation of JCCS basic table

What classified the information about construction according to table form from two or more viewpoints in consideration of the construction situation of our country.



JCCS Classes



Legend	
	Same class as ISO12006-3
	New class with reference to ISO12006-3/IFC2x
	New class with reference to ISO12006-3/IFC2x and others

Registration of basic terms (JCCS basic tables)

around 9,000 terms have been registered (in May 2005)

Table	terms	Referenced documents
Construction Product	~1,000	<ul style="list-style-type: none"> · AIJ coding system WG (Draft) · Building Design Datasheet/Unit Space · CORINS / TECRIS
Resource	~3,000	<ul style="list-style-type: none"> · AIJ coding system WG (Draft) · Construction machinery cost table · Construction Cost DB
Process/Management	~1,000	<ul style="list-style-type: none"> · AIJ coding system WG (Draft)
Actor	~1,000	<ul style="list-style-type: none"> · AIJ coding system WG (Draft) · Japan Industry Classification Standard · CORINS / TECRIS
Attribute	~3,000	<ul style="list-style-type: none"> · AIJ coding system WG (Draft) · Construction Cost DB · CORINS / TECRIS
Value	TBD	
Mesure with Unit		
Unit		

Thank you for your attention.



END

OCCS : 12 (+) 構築環境情報ファセットのテーブル群

- 01 Facilities
- 02 Construction entities
- 03 Spaces
- 04 Elements
- 05 Work results
- 06 Products
- 07 Process phases
- 08 Process Services
- 09 Process Participants
- 10 Process Aids
- 11 Process Information
- 12 Attributes

検討組織

- WG0 : 全体調整
- WG1 : Facilities ~ Spaces
- WG2 : Elements ~ Products
- WG3 : Process (表07 ~ 11)
- WG4 : Attributes, Terminology

- ・個別クラスは一箇所にもみ現れる。
- ・オブジェクト列挙の規定要素：
 - 1) complexity of the object
 - 2) its desired level of granularity
- ・精緻な分類は複合による。

例： steel suspension footbridge

Tab01:2111 : 運輸施設/橋/Foot

Tab02:3400 : 橋/Suspension

Tab12:12170 : 材料/金属系/Steel

(01) 2111 : (02) 3400 : (10) 12170

Uniclass : 1 5 建設情報ファセットのテーブル群

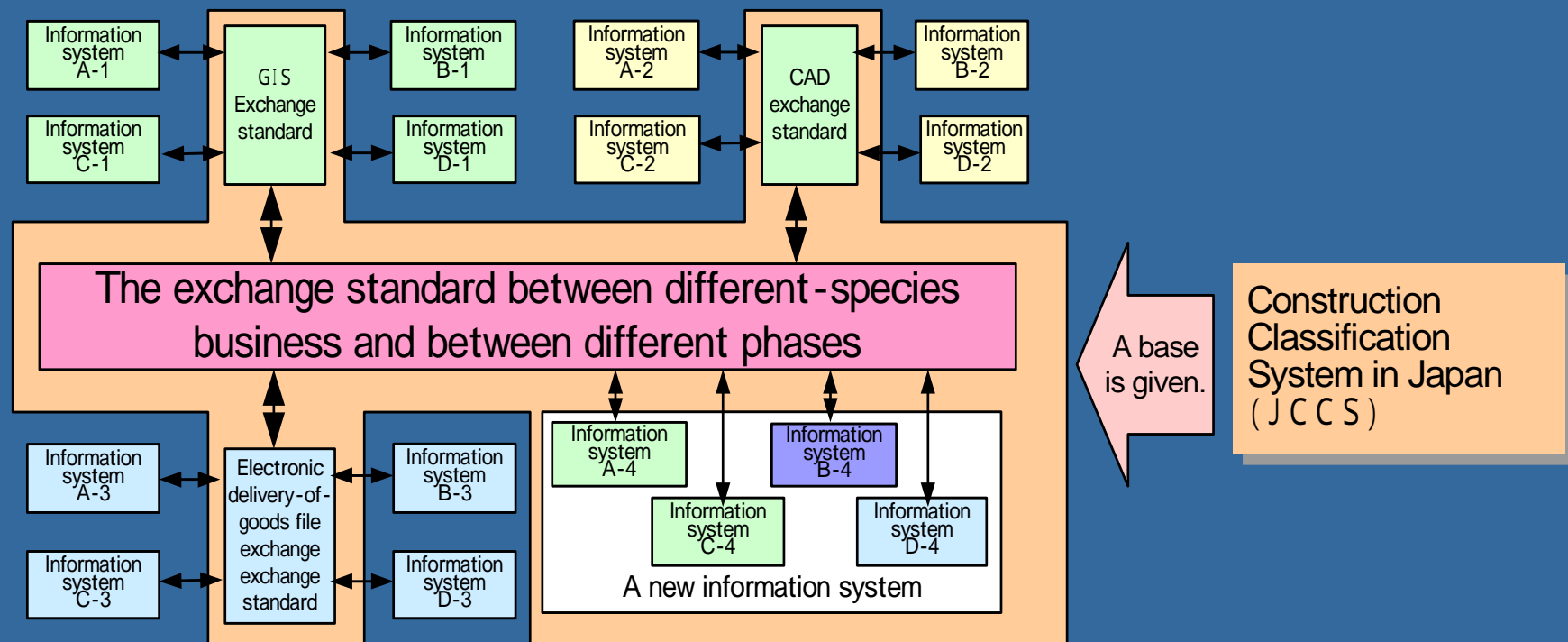
A	Form of information
B	Subject disciplines
C	Management
D	Facilities
E	Construction entities
F	Spaces
G	Elements for building
H	Elements for civil engineering works
J	Work sections for building
K	Work sections for civil engineering works
L	Construction products
M	Construction aids
N	Properties and characteristics
P	Materials
Q	UDC(Universal Decimal Classification)

Ex. **Ducts**

as element for building	G631
as entities	E73
as products (HVAC)	L7561
as worksection	JY3

Role of JCCS

Basis of information exchange between different type of industries or operating phases



建築CADレイヤ標準ISO13567-2の基本構成

Mandatory (必須)

A	1	B	1	2	3	-	-	C	-
---	---	---	---	---	---	---	---	---	---

Presentation (表現)

Element (構成要素)

**Agent
responsible (責任主体)**

Optional (任意)

N	B	1	0	1	3	1	F	P	C
---	---	---	---	---	---	---	---	---	---

Work package (生産要素)

Scale (縮尺)

Projection (投影法)

Phase (適用時期)

Sector (領域)

Status (状態)