

# Japanese Address System

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## Abstract

This paper introduces an overview of the Japanese Address System, address management bodies, related legislation, etc. The Japanese Address System is different from the Western style. When an international standard for address is developed, it shall be considered that address systems and address names are deeply related with cultural/historical/social/legal systems. Besides, it is noted that standardization of address system itself may not be so difficult in abstract level; however implementation and continual management of address database as an application of address standard may face challenges and difficulties.

## 1. Introduction

This paper introduces an overview of the Japanese Address System, address management bodies, related legislation, etc. It is also reported that current development situation of Japanese address databases by public organizations and private enterprises. Finally, the necessity of address standardization, which is the objective of this workshop, is considered.

## 2. Japanese Address System

### 2.1 Overview

Japanese address system is different from the street-based address system which is basically major in Western countries.

Basically, address consists of the 3 elements (except building names, room numbers, etc.) below.

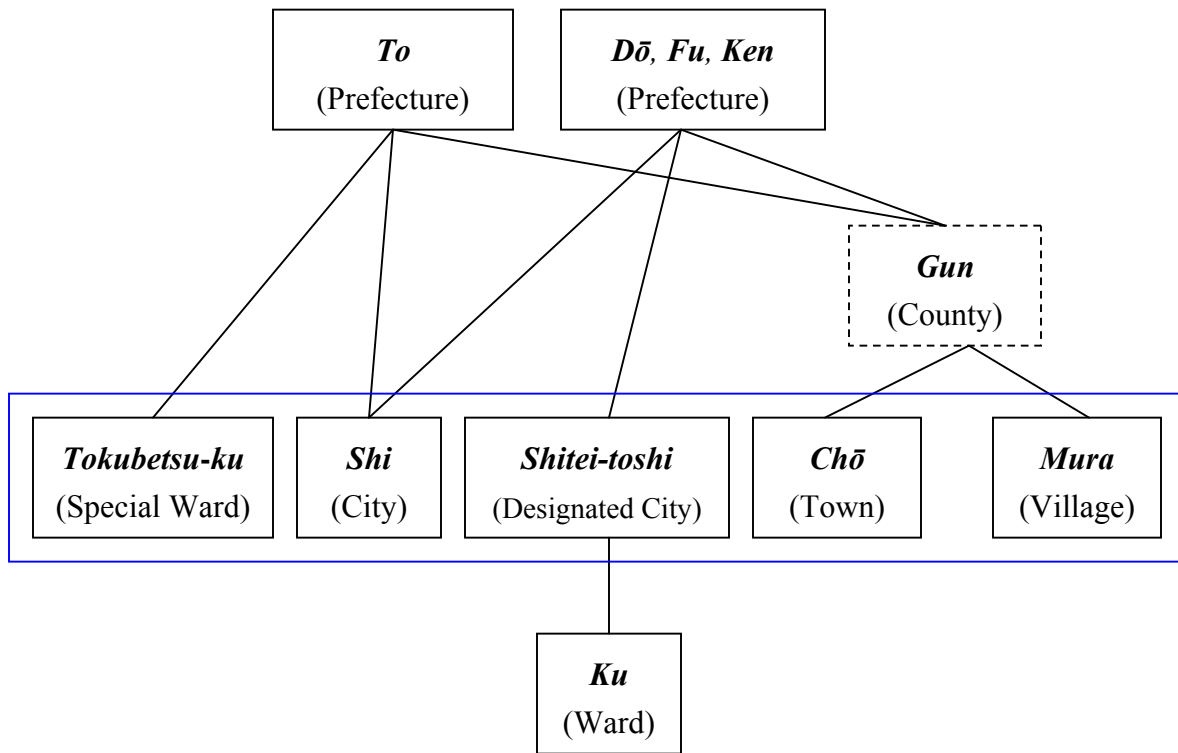
- (a) Administrative district names: Prefecture, Municipality, etc.
- (b) Area names: name of an area surrounded by roads, rivers, etc. and
- (c) Numbers.

In addition, the numbers are classified into:

- (1) Land Registry Referencing System
- (2) Systematic Numbering System

## 2.2 Administrative Area Name

A structure of administrative area in address is shown in Figure 1.



**Figure 1. Administrative District appeared in address**

The top-level administrative area is "prefecture" (47 prefectures). The second-level is "municipality", such as special wards, cities, towns and villages (23 special wards, 783 cities, 812 towns and 193 villages). Only Tokyo metropolis has the special wards. Major cities (Cabinet-order designated cities) have several wards (17 including Osaka and Kyoto, at present). In addition, towns and villages belong to one of counties. The counties had served as administrative units in the past. They are, however, not independent administrative units today. The county name is still used as a component of address.

## 2.3 Area Name

Area in an administrative district has a geographic name called "*Chō-aza*." *Chō-aza* is an area surrounded by roads, rivers, etc. *Chō-aza* is based on old community unit (hamlet). Sometimes the name comes from a history over one hundred or one thousand in some cases.

Recently, urban development works such as land readjustment arrange a new *Chō-aza* area and its new name. Municipal merger also sometimes modify names of *Chō-aza* and their area.

Many *Chō-aza* have zero (this means no *Chō-aza*) or a few hierarchical structures. However, sometimes a lower class *Chō-aza* (called "*Ko-aza*" in this case), which has unique number described in 2.4.1 in the upper *Chō-aza*, are omitted from the official address description. Municipalities manage the *Chō-aza* names for address description based on the Local Autonomy Law.

Some parts of Kyoto City, Sapporo City, etc. use historical popular names as address indication, even though the municipality defines the official *Chō-aza*. These cases are less commonly.

## **2.4 Number**

### ***2.4.1 Land Registry Referencing System***

Registry Office under the Ministry of Justice manages land properties assigning a numbers for each parcel on the Land Registry Book. The Registry Office also manages building properties. Basically, a building registry number is the same as the registry number of the parcel at which the building is located (Exceptional case: a building on the plural parcels, etc.)

Generally, addresses are not sequential numbers even though the parcel numbers are arranged along a series of numbers under each *Chō-aza* area, because only the parcel numbers with buildings are used for addresses. The number sometimes has a branch number (for example: 10-1, 15-2) based on the subdivision of a parcel. This address number is called "*Banchi*."

Because the land registry has more than 100 year history, there are sometimes changes of old *Chō-aza* area are and land development, etc. That sometimes results in a less-systematical and inconsistent structure.

### ***2.4.2 Systematic Numbering System***

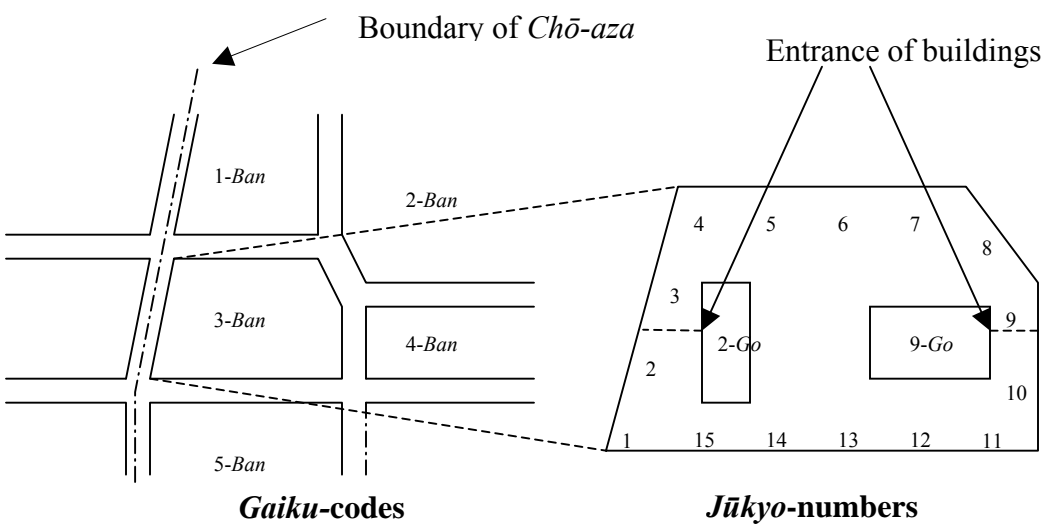
As stated in 2.4.1, large-scale development of land results in less-systematic system of address especially in urban area. That is a reason of address confusion.

For this reason, an act on development of building numbering system, which does not depend on the land registry system, was established in 1962 (Address Indication Act). Initially, this address indication system was mainly applied to the densely urbanized areas with confused address numbers. After that, this address indication system has been often introduced at the occasion of a large-scale land development such as land readjustment. Generally, it is applied to a part of the municipality, not whole municipal area.

New address indication shall be announced its name, number, date of implementation, etc. at its development. The law also specifies that *Chō-aza* names shall be named based on the existing names to a maximum extent. This is for retaining of historical geographic name. (The article was added at the act amendment because there were judicial trials for changing the geographic name in the past).

The act permits for municipalities to choice whichever block-based address system or street based address system.

Regarding the block-based address system, a *Gaiku* (block)-code is arranged to each smallest block surrounded by roads, railroads, etc. in the *Chō-aza*. The numbering is started from the base place such as a municipal government office, in order of 1, 2, 3, and so on. Each block also has usually numbers (1, 2, 3 and so on) or scarcely codes along its outer circumference, which is subdivided into regular distance (10 – 15m) in clockwise direction from the corner nearest to the base place. The numbering is started from the corner. Then, a closest number to an entrance or major gate of the building is identified as a *Jūkyo*-number (residence-number). (See Figure 2: this figure is modified from Change Request for enhanced admin structure definition capabilities, 2008.)



**Figure 2. *Gaiku*-codes and *Jūkyo*-number**

*Jūkyo*-numbers might not be sequential because the number is assigned at each regular distance of land frontage. Possibly the same *Jūkyo*-number might be assigned to the neighboring buildings fairly infrequently. It might be said that the block-based address system is a kind of linear reference system along the peripheral roads.

The act also permits the street-based address system; however, only about two municipalities adopt it.

**2.5 Identification of building**

All buildings, which need delivery services, display an individual name by a name-board or a name-plate near entrance door, on the gate or on the mail post. There are three types as follows:

- (a) Residences definitely have a name-plate. The name-plate displays at least the family name. In addition, it sometimes displays the given name of the head of family (Japanese family register system shall specified the head of family), the given names of all family members, and/or the address of the building. The number described in 2.4 does not often display on the name-plate. In case of apartment houses, a name-plate with the unit number display around or on the individual entrance door.
- (b) Apartment houses or multiple-tenant buildings definitely have an individual name, and these have a name-board at the entrance or an easily viewable place.
- (c) If a building occupies by one organization, the name of organization is displayed by a name-board.

Naming of building and its display or family name display is common. This may be to make up the poor address system in Japan. In fact, mails are not delivered without a name-plate or a name indication on the post, even if the address is correct. In case of plural buildings in a parcel or very large apartment houses in a *Gaiku* (block) which are not assigned to *Jūkyō*-number, buildings can only individually identified by building names.

Names of apartment houses and multiple-tenant buildings are commonly used in the Japanese address system for delivering services. The names sometimes can be omitted but sometimes cannot be omitted in the address. Family names are not a part of the address system but it works as a part of the address system from the viewpoint of an indication. A name-plate or a name-board instead of an address number is displayed. Therefore in practice those indications are sometimes indispensable for delivering.

Residential maps introduced in 4.5 is the one which displays family names and building names in shape of building footprint on large scale map.

### **3. Laws related with address**

#### **3.1 Civil Code**

Civil Code has the following clauses.

Article 22 The principal place wherein a person lives shall be his/her address.

Article 50 The address of a juridical person shall be at the location of its principal office.

That is, the place which person or juridical person mainly exists is "address."

#### **3.2 Local Autonomy Law**

The Local Autonomy Law specifies that, when a municipality (in blue box in Figure 1) creates or abolishes *Chō-aza* name and/or area, the mayor of city/town/village shall notify it to the prefectural governor after a congressional approval. The prefectural governor shall notice of it through the prefectural announcement after acceptance. In other words, municipalities manage

*Chō-aza* based on the law.

### **3.3 Immovable Registration Law**

Immovable registration of land/building is managed by Registry Office under the Ministry of Justice based on the Immovable Registration Law. The registry office notifies any change of land/building registration to the municipality based on the Local Tax Law. Therefore, municipalities can know the land/building numbers, which are essential for address management.

Conversely, creation or abolition of *Chō-aza* by municipality is reflected in the *Chō-aza* name on the land registry book. Occasionally the registry office adjusts, such as renumber or add some offset-number to the *Chō-aza* number when *Chō-aza* integration, etc. make a collision of numbers or confusion.

The registry office has completed the computerization of land registry books. Browsing and applying the land registry book are available through the Internet since 2005 (pay service). Digitalization of maps including cadastral maps, etc. is now undergoing.

### **3.4 Address Indication Act**

Address Indication Act was established in 1962 in order to improve the complex address in urban area. This act is applied to addresses or location indications of offices or other facilities in urban area.

Based on this act, municipalities specify ordinances and their enforcement regulations in order to establish more concrete procedures. The ordinances and their enforcement regulations are mostly same contents though there might be the differences of *Jūkyō*-number, the start point of *Jūkyō*-number, numbering distance intervals, building definition, etc.

However, municipalities have self-initiatives for creation of address indication. Sometimes this act is applied or not applied to each *Chō-aza* even though they are neighboring, because this act is applicable to each *Chō-aza* independently.

The municipality shall use the address system for their administrative services when applied. The municipality also shall provide the address indication plate at easily viewable places of the *Gaik*.

### **3.5 Others**

Municipality based on the Basic Resident Registration Law, municipalities develops basic resident registration books describing the name, birth date, sex, address, etc. of residence, in order to conduct services for residents. Previously, each municipality developed the basic resident registration book independently. Today, for the advancement of e-Government, the database of basic resident registration books in all municipalities was developed. Since 2002, the database has been shared among municipalities through the dedicated network. IC cards are distributed to

residents and used for electric application procedures, etc. However, the address database is not open to the public because of personal information protection.

## **4. Discussion on Japanese Address System**

### **4.1 Management of Address Information**

Municipality manages *Chō-aza* names based on laws because *Chō-aza* names are essential for providing resident management and services like basic resident registration book, etc. The law also specifies procedures of *Chō-aza* name. In the area where the Address Indication Act is applied, building numbers are assigned by municipality, and address numbers are also managed by municipality. In the area without application of the Address Indication Act, building (land) numbers managed by the Registry Office are used as address numbers.

As well as Europe, Japan has a long history so that addresses are assigned in whole country. Because *Chō-aza* names has a long history, there are rare alterations unless large-scale development, etc. Because of the government promotion of the municipal merger, the numbers of municipalities were reduced from about 3300 to about 1800 between 1999 and 2006. However, *Chō-aza* names are basically inherited.

### **4.2 Relationship with Postal Code**

*Chō-aza* is the basement of the postal code. However, sometimes several *Chō-aza* areas are integrated and assigned the same code. Sometimes, a postal code is assigned to a large building, private mailbox, etc. The latest postal code information is open to the public on the website.

### **4.3 Building Name and Street Name**

As stated in 2.5, apartment houses or a multiple-tenant buildings have an individual name in Japan. The building name is commonly used in the Japanese address system. Building names may not be used in address systems of some other countries.

On the contrary, street names are not commonly used in the Japanese address system. Though many of streets have an administrative name, people do not recognize the names except major ones. There are many popular alias street names in urban area but those names are not also used in the address system.

For utilization to the car-navigation system since around 1990, road links have been developed and updated as a database. Not all roads do not have name but all roads have unique codes.

For example, ISO/CD 17572 Intelligent Transport System (ITS) – Location Referencing for Geographic Databases in ISO/TC204 specifies the location referencing system. ISO/CD 17572 Part 3: Dynamic Location Reference (Dynamic Profile) specifies reference system based on street names. ISO/CD 17572 Part 2: Pre-coded Location Reference (Pre-coded Profile) specifies the location system using the database with pre-coded roads which do not need the existing of road

names way. Part 2 is applicable to Japan. A multi-part standard is under developing to handling different systems.

#### 4.4 Fluctuation of Geographic Name Indication

Address indication in Japanese language shows fluctuations because:

- Chinese and Arabic numerals are mixed.
- Single-byte characters and double-byte characters can be mixed.
- In the case of the *Chō-aza* with number related part, sometimes only the number related part is treated independently, even though *Chō-aza* is a proper name and has no direct relation with numbers.

Besides, in the case of alphabet indication, its notation system has also fluctuations (ISO 3602:1989 — Documentation — Romanization of Japanese (kana script) is scarcely used in Japan).

People can easily recognize the same address; however, it is not always easy for computers to recognize the address structure.

For example, the following address shows the same (*Chō-aza* is the underlined part):

Case1:  
Ibaraki Ken, Tsukuba Shi, Karima, 2530 Banchi 2  
茨城県つくば市刈間2530番地2  
茨城県つくば市刈間2530番地2  
茨城県つくば市刈間二五三〇番地二  
Ibaraki Ken, Tsukuba Shi, Karima, 2530 Banchi no 2  
茨城県つくば市刈間2530番地の2  
茨城県つくば市刈間2530番地の2  
茨城県つくば市刈間二五三〇番地の二  
Ibaraki Ken, Tsukuba Shi, Karima, 2530-2  
茨城県つくば市刈間2530-2

Case2:  
Tōkyō To, Chiyoda Ku, Kōjimachi Roku-Chōme, 1 Ban, 25 Gō  
東京都千代田区麹町六丁目一番二十五号  
東京都千代田区麹町六丁目一番二十五号  
Tōkyō To, Chiyoda Ku, Kōjimachi 6-Chōme, 1 Ban, 25 Gō  
東京都千代田区麹町6丁目1番25号  
東京都千代田区麹町6丁目1番25号  
Tōkyō To, Chiyoda Ku, Kōjimachi-6-Chōme, 1-25  
東京都千代田区麹町六丁目 1-25  
Tōkyō To, Chiyoda Ku, Kōjimachi, 6-1-25  
東京都千代田区麹町6-1-25

**Figure 3. Examples of Address Presentations**

Case1 is based on Land Registry Referencing System. Case2 is based on Systematic Numbering System. Roku in Case2 means the pronunciation of six in Japanese. Officially Roku-Chome is proper noun and a part of *Chō-aza* name. But it is usually treated as a number in the presentation

of address. As a result, even Japanese sometimes misunderstands structure of address. Number is presented by either of 2-byte-Japanese Kanji-character, 2-byte character or 1-byte character. In traditional Japanese, the name of unit such as *Banchi*, *Go* and so on is added after number; however hyphen is also used to separate the numbers as a simple presentation way.

Fluctuation of geographic name may exert a harmful influence to computers. Well-thought algorithm can recognize the correct address; however, encoding will be helpful for efficient computer processing. Presentation may be out of scope of address standard, but implementation should be taken into consideration.

In addition, the Ministry of Internal Affairs and Communications (MIC) developed 5-digit code for all administrative areas. This code system is still managed by MIC. This code system is also standardized and widely distributed as Japan Industrial Standard X 0402. In contrast, *Chō-aza* has no official code. Japan Geographic Data Center, non-profit organization, extended the MIC code to original 11-digit code. Then they develop, update and sell the code data, however, this is not highly recognized.

#### **4.5 Practical Use of Japanese Address System**

The Japanese Address System is not easy to understand for even Japanese people. Few people recognize the rules correctly, even the systematic address indication based on the Address Indication Act.

For this reason, in Japan, private enterprises have been developing residential maps which are unique to Japan. Residential maps use large-scale maps (including footprints of buildings) developed by municipalities as background maps. Addresses of individuals or organizations, individual names, etc. are described on the residential maps. These maps are widely used to search addresses of individuals or organizations, for business purposes, etc.

In a recent decade, databases of residential maps are developed and widely utilized as the address databases with coordinates. Especially, users of car-navigation system can set the destination with not only *Chō-aza* name but also number. Regarding the web map services and mobile phone map services spread since the late 1990s, searching addresses, displaying maps and route guidance are also available and popular. The Japanese complex address system would be one of reasons for car-navigation system, web/mobile phone map services are spread in Japan more instantaneously than other developed countries.

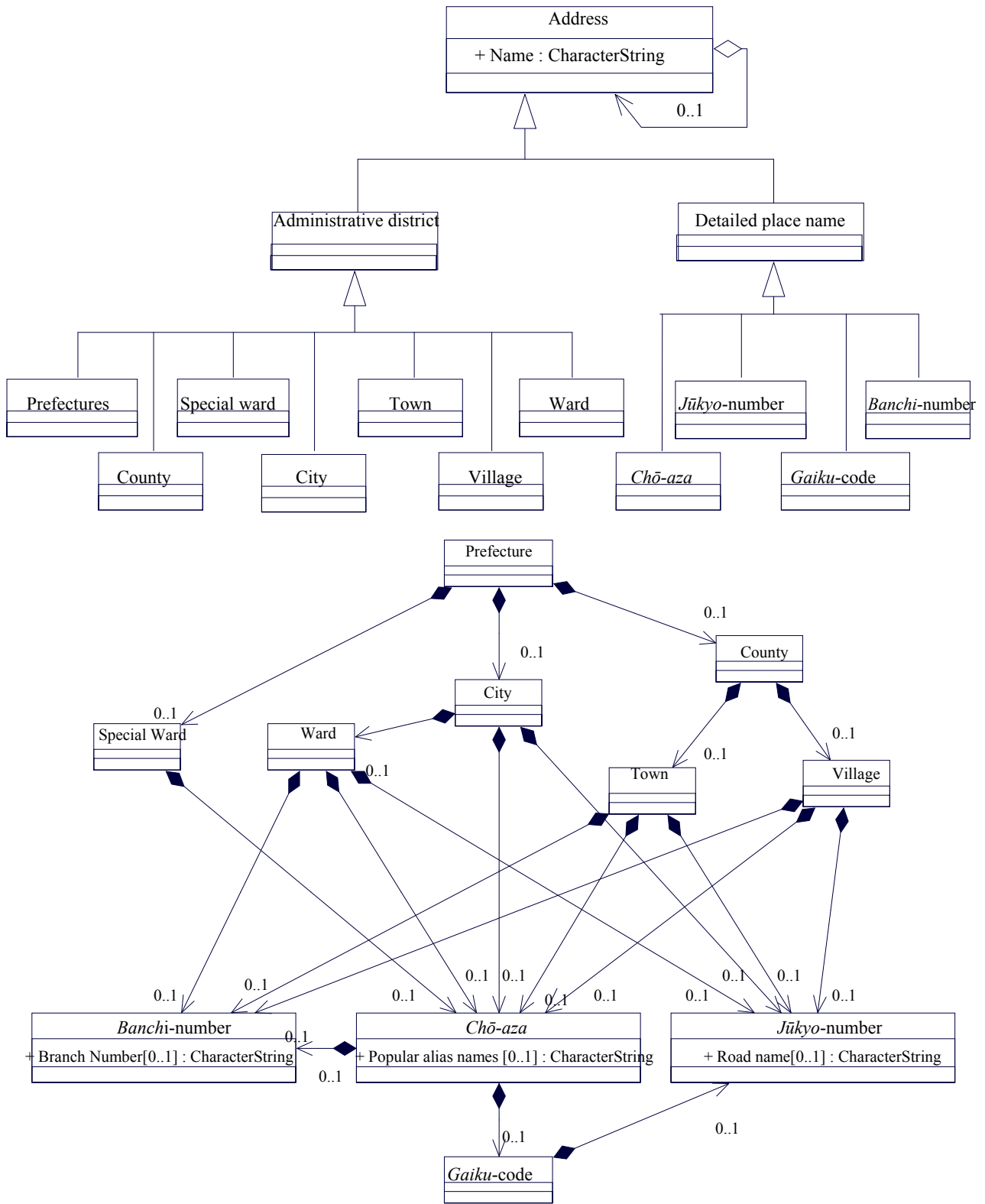
For this reason, today, we do not feel severe disadvantages of complex address system for everyday life. There is an opinion that the historical geographic names shall be retained, so, Japanese people do not put pressure upon the modification of the address system.

#### **4.6 Address Standards and Definitions of Addresses**

There are no address standards. Therefore, there are no definitions of addresses. However, there are two examples shown in standards as informative contents even though an address itself has no standards. An appendix of JIS D 0810:2004 Road vehicles – Map data physical storage format for car navigation systems shows data structures for address indexing. The other is the application schema of address in Japanese edition of Place Identifier Specification. The tentative English translation of the application schema is as shown in Figure 4.

The Address Indication Act, even though not standard, provides the building types which need address indications in enforcement regulations in municipalities. An example of a municipality is shown below:

- (1) building for residential purpose
- (2) building for the purposes of office, shop, institution, factory, etc.
- (3) building for the purposes of school, library, gymnasium, meeting hall, theater, etc.
- (4) building other than those above and with a part for residential purpose



**Figure 4. Application schema of address (UML class diagram)**

## **5. Consideration of Address Standardization**

The necessity of address standardization is described here by answering the questions of N2396.

***a) What is an address? What is the definition of an address in current national address standards?***

There are no definitions because there are no standards. It shall be considered that an address standardization of building for residence, office, etc., is dramatically different from the address standardization including the location of non-residential land.

***b) What is the scope of current national address standards?***

Not available.

***c) Why do we need a national address standard?***

Development of address standardization itself might be not so difficult. Instead, its implementation procedure is a challenge. In Japan, address information is widely used in both open/closed information systems.

Development and distribution of the address list with common code and coordinate without charge is useful, however, keeping the data up-to-date would be difficult unless the municipalities are involved. For the personal information protection, public organizations may not open the address information.

It is a question that address databases developed by private enterprises have any merit for distributing the data that meet the standards. (From the viewpoint of customer retention, standardization is unnecessary instead.)

***d) Can we benefit from an international address standard?***

Regarding the cadastral data, the organization in charge of development is clearly identified because the state government has the organization for central management system for cadastral data (However cadastral system is also heavily related to legal system (See N1047.)). In contrast, address might not have any responsible organization clearly. The usability of standards is not contradicted including the continuous expense burden. Instead, as same as the answer in (c), implemented database development would be more difficult because of the necessity of cost for development, operation and management. If the standard is applied only in some countries after establishment, the benefit for using the international standard is little.

Especially in the developing countries, development of large scale maps to measure the coordinate values for each address are challenging rather than the standard itself. If the developing country introduces a new address system, they have advantage to take an ideal approach which is free from the existing system. In this case, development of TR with description of ideal system may be suitable rather than developing the standard based on existing systems in abstract level. It should be noted that International Standard is not a text book for the development of an ideal system.

***e) Is there enough reason to move ahead with an international address standard?***

As the answers above, implementation of standard is not contradicted even though the feasibility is still not confirmed. However, an address system is related with the country's history, culture and legislation. Because it is difficult to alter them, the international standardization of address shall be standardization in abstract level at the most. On the other hand, it is very likely that the abstract level standardization must show low interoperability, such as ISO/CD 17572. It would be impossible to exchange the address data among the countries including the ones without alphabet base, unless not only the data exchange through the standard schema, but also the address management system using unique codes (such as registry system defined ISO 19135) is also implemented in the standard.

When the Stage 0 Review Summary is developed, it might be as well to conduct the needs surveys in non-Western style countries and surveys for domestic implementation possibility at the address standard establishment (including prospecting of the management organization of geographic name database and cost estimation).

Address is a fundamental element in the society. The impact of standardization is large. All countries should unanimously agree the contents of address standard.

## **6. Conclusion**

The Japanese Address System is different from the Western style. Japanese address system is not so systemic; however the geographic names have long history and are managed by municipalities under the laws. When an international standard for address is developed, it shall be considered that address systems and address names are deeply related with culture/history/social/legal systems. Thus standard shall be abstract level although the level of interoperability becomes low. Implementation of address database is out of scope of standardization but it may need support of government. Careful discussion should be made before proceeding the next stage.

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