

Challenge! Open Governance 2017 Application Form for Citizens & Students

| | | | |
|-------------------------------|---|---|------------------------------|
| Title of Regional Issue* | No. | Title | Name of Municipality |
| | - (事務局用) | Aiming for sustainable tourism and transport by combining tourism resources such as open data and bicycles. | Kyoto City, Kyoto Prefecture |
| Name of the Idea (disclosure) | Bicycles linking people, towns, nature, and culture! - chariP naVi and collaborative community design | | |

(*Enter the title of regional issue of the applying municipality as described in COG2017 website.

1. Applicant Information

| | | |
|---|--|------|
| Name of the team (disclosure) | Kyoto History and Townscape Communication Corps | |
| Team attribution (disclosure) | <input checked="" type="radio"/> 1. 市民によるチーム <input type="radio"/> 2. 学生によるチーム <input type="radio"/> 3. 市民、学生の混成によるチーム | |
| Number of members | 11 | |
| Team leader (only the name will be disclosed) | Name (disclosure) | 黄 瑞穂 |
| | | |
| | | |

※Conditions for information disclosure

Information provided in “2. Description of Idea” beginning on the next page will be disclosed under the Creative Commons Attribution 4.0 International license (CC BY 4.0) after confirmation of its contents. At the request of the applicant, however, such information will be disclosed under the CC BY-NC (Attribution – Noncommercial) 4.0 International license. Please let us know your preference at the time of application. **In both cases, the name of the applying team will be used.** (See the specific licensing conditions at <https://creativecommons.org/licenses/by/4.0/legalcode.ja>, or <https://creativecommons.org/licenses/by-nc/4.0/legalcode.ja>. You can also see licensing information from Creative Commons at <https://creativecommons.jp/licenses/>)

(Notes)

<Name of the file for application and addressee>

- Send the file with the filename COG2016_applicationform_teamname_municipalityname to the address below. You can also access this address via the application registration column on the COG2016 website of the Graduate School of Public Policy, The University of Tokyo: admin_padi_cog2016@pp.u-tokyo.ac.jp

<Public or private information>

- The name of the idea, name of the team, team attribution, name of the team leader, and “description of idea” will be open to the public.
- The contents above will be reviewed before disclosure (anything which is harmful to public order, unethical, or making use of a plagiarized idea will not be disclosed).
- The “self-evaluation” column of the application form will not be disclosed. However, if the content is excellent and deemed useful for other applicants, it may be disclosed after consultation during the advice stage after the open review.
- If any element associated with an intellectual property right whose holder is not a member of the applying team, such as texts, photographs, and graphics, is included in the “description of idea,” it should be demarcated stating that it is quoted according to the relevant laws and regulations or that its use has been approved by the right holder. Please do the same for the “self-evaluation” column.

<List of the team members>

Submit the list of the team members in the attached Excel file (Any information about members other than the team leader as specified in 2. above will not be disclosed except to the COG Secretariat. Please see the attachment for details).

2. Description of the Idea

Fill in three items: (1) content of idea, (2) rationale for idea, and (3) how to realize it.

(1) content of the idea

Please show the contents of the idea by putting these elements in the idea as to who, what, where,

when, and how it is a public service (activity) to do.

Idea Content

By taking the bicycle, which has previously been limited to a role as an individual, private mode of transport, and bestowing upon it a new value as enjoyable culture, we hope to “Create an always healthy, environmentally-friendly, Kyoto where everyone can live happy in the future. Moreover, we want to communicate the history, culture, and beautiful traditional townscape of Kyoto upon which 1200 years of imperial history was engraved.” So then, what should we do to achieve that? We thought up the following public service based on our own ideas.

Applicable to the smartphone mobile environment! A service to make visible bicycle and related information needed by residents and tourists.

Main features of the chariP naVi

- * Making information visible on a map about the location and availability of bicycle parking, rental bicycles, and other various information.
- * Simple and easy via a smartphone! Complete with a user interface which allows residents and tourists to search and display information at once.
- * Discover a new Kyoto, only accessible by bicycle, with en route recommendations linking tourist attractions point-to-point.
- * For everyday use, with features for disaster prevention and reduction in times of crisis.
- * Potential horizontal expansion with any municipal government that releases open data can easily utilize the system, not just Kyoto City.

Data used in the chariP naVi

- open data (Kyoto Municipal government open data portal site)
 - *bicycle parking / rental cycle data * data from tourist facilities (e.g., monuments, sights)
 - *LOD data from municipal facilities (e.g., libraries, childcare centers, welfare facilities)
 - *Peace of mind /Safety data (e.g., AED, public toilets)
- Big data
 - * Data from world-wide mesh code research groups (e.g., tourist attraction data, bus stop data, restaurant data)
 - * Peace of mind /Safety data (information on repair shops for punctures etc.)

Open data / Mash-up!!! Big Data

Example of Use (Navigation)

800 meters ahead there is a free 1-hour bicycle parking area



There is a tourist attraction 400 meters up ahead!



<http://photo53.com/> (Source: Kyoto Free Photos)

What is our Goal? Community design linking all stakeholders through the use of open data!

In the lead-up to the 2020 Tokyo Olympic Games, the number of tourists visiting Kyoto (including inbound) has risen dramatically, so we are facing a number of challenges, such as overcrowded public transportation and increased demand for accommodation.

In considering a solution to these problems from a bicycle-based perspective, we came to understand that it was necessary to consider a multitude of perspectives such as maintenance of the riding environment under the jurisdiction of the city, the value of tourist resources, the needs of service providers and residents, demand for funds, and the information data system.

Therefore, working with the cooperation of the city and prefectural governments, we will hold workshops, and with services providers and universities use open data to undertake community design!

In this way, sharing the fruits and feedback of our efforts, we were able to become aware of a great number of things, and came to understand the importance of considering a solution together with everyone.

Community Design

Civic Tech / Citizens / Tourists /

Everyone joins together!!

University Research Institutions / Government /Service Providers

The service is operated by civic tech!

All stakeholders are involved!

Our challenge is not the goal, but the beginning!

It is vital to expand the community circle in this way!

(2) Rationale for the idea

Describe the Rationale for the idea (why have you chosen this idea?) with numerical data (achievements, statistics, or questionnaire results) and evidence (materials, plans, or existing measures)

that support the idea (collectively, the “data”).

What we thought was ideal!



Bicycle-only road
(Germany)



Large scale bicycle parking area (Holland)



Train carriages where bikes can be brought on (Denmark)



Share Bicycles
(Barcelona City)

At first, our team strove to create “a society where all people can live happily, in the future, despite the population decline, by having people choosing public transport and bicycles as the main type of transportation.” Moreover, not just content with merely being a mode of transport, we want to enjoy bike-riding as a culture and tell

residents and tourists of the history and beautiful townscape of Kyoto, made accessible by bicycle.

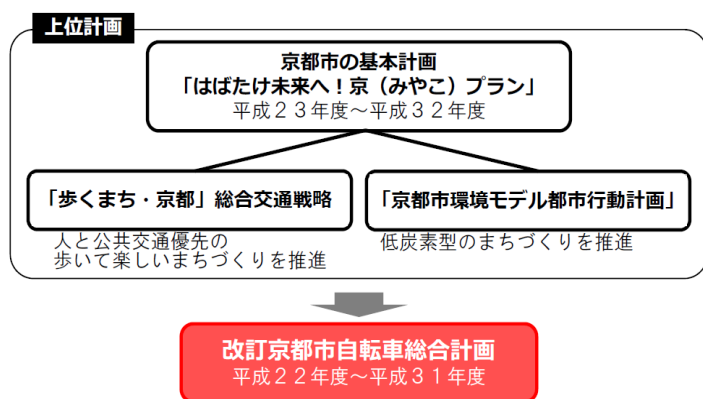
Thus, we realized the importance of having an adequate riding environment, like that of proactive bike-riding European cities such as Copenhagen and Barcelona, in which to safely enjoy riding with peace of mind, if the aforementioned is to be achieved.

First, we investigated the situation in Kyoto using actual data.

How much of a gap exists between our ideal and the real Kyoto? And what are the reasons for that? First, our challenge started not with our experience and opinions of current bicycle use in Kyoto, but rather by using various data to visualize it.

Kyoto city's approach

Aiming to be an environmentally-friendly city, the municipal government has promoted a bicycle use plan in conjunction with a pedestrian-based town initiative



Higher-level Plan

Kyoto City Basic Plan “Towards a Bright Future! Miyako Plan” (2011 -2020)

“Pedestrian-friendly Kyoto” General Transportation Strategy

Promoting a pedestrian-friendly development prioritizing walking and public transport.

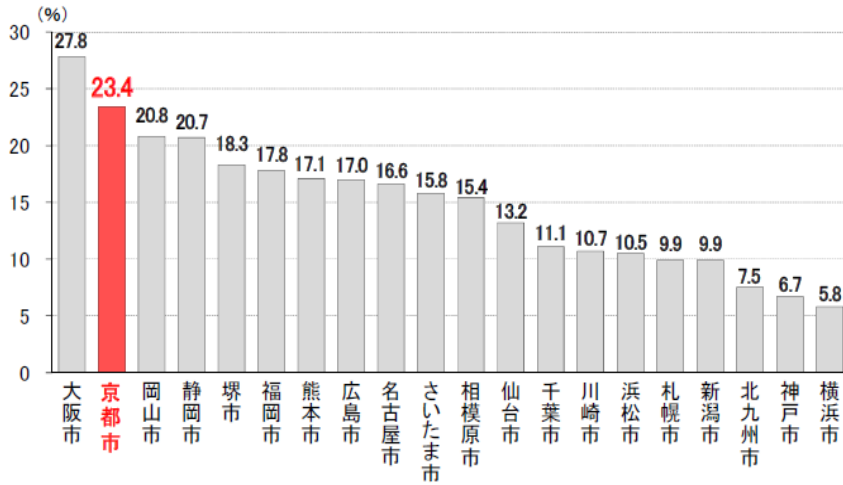
“Kyoto City Environmentally-friendly Model City Plan”

Promoting Low-carbon Development

Revised Kyoto City Bicycle General Plan
2010-2019

Rates of bicycle use for commuting to work or school by designated city

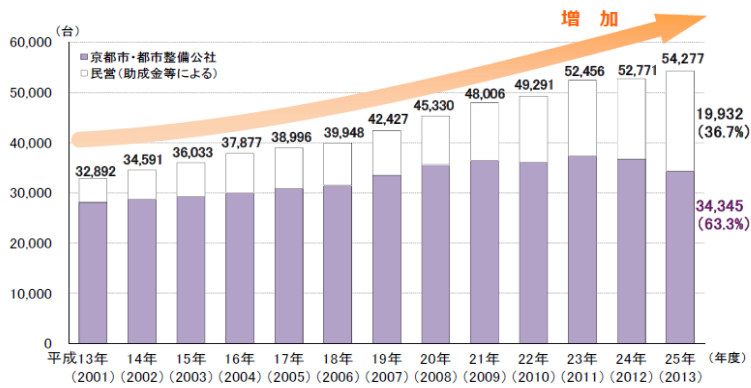
Even amid the designated cities, Kyoto City exhibited high rates of bicycle use and ownership by residents.



- Osaka
- Kyoto
- Okayama
- Shizuoka
- Sakai
- Fukuoka
- Kumamoto
- Hiroshima
- Nagoya
- Saitama
- Sagamihara
- Sendai
- Chiba
- Kawasaki
- Hamamatsu
- Sapporo
- Niigata
- Kitakyushu
- Kobe
- Yokohama

Availability of bicycle parking areas

Apart from government-run bicycle parking areas, subsidies are also available for the private sector, and bicycle parking area availability is improving each year.



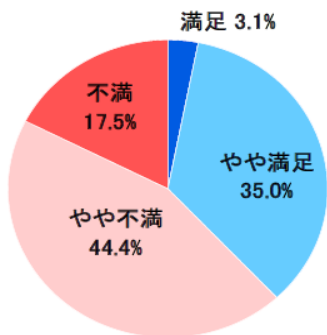
増加 / increase

台 /bicycles

京都市・都市整備公社 Kyoto Municipal / Public Enterprise

民間 (助成金等による) Private (Subsidy-based)

Survey regarding the use of bicycle parking areas



満足 / Satisfied

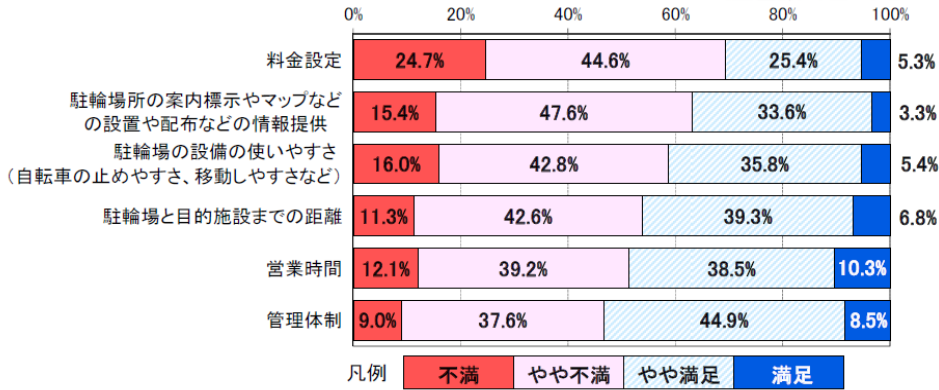
やや満足 / Fairly satisfied

やや不満 / Fairly dissatisfied

不満 / Dissatisfied

However, the number of people harboring dissatisfaction with bicycle parking areas was over 60%, of which, the majority were dissatisfied with parking fees, availability of information regarding location, and information dissemination.

Q.現状の駐輪場について、どのようなところが満足（不満）と感じていますか。
 (回答数=720人)



Q. Which aspects of the current bicycle parking situation are you feeling satisfied (dissatisfied) with? (720 respondents)

Fees

Information dissemination such as location of signage, maps, and fliers

Ease of use (easy to park, move bicycle)

Distance between parking and goal location

Hours of business

Management

凡例/ Legend

満足 / Satisfied, やや満足 / Fairly satisfied, やや不満 / Fairly dissatisfied, 不満 / Dissatisfied

Status of bicycle-riding environment

Bicycle-riding environment improvements are continuing to ensure safe and stress-free bicycle riding.

| 整備形態 | 整備延長 | 計 |
|--------------|--------|--------|
| ①車道混在(路肩の活用) | 0.7km | 44.6km |
| ②自転車通行位置の明示 | 36.7km | |
| ③自転車専用通行帯 | 4.8km | |
| ④自転車道 | 2.4km | |

整備形態 /Road improvements

整備延長 /Improved length

計 / total

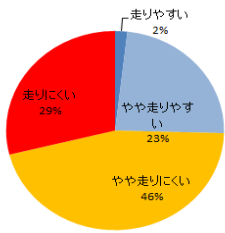
1.Mixed Use (i.e., Using the edge of the road)

2.Marked Bicycle lane

3.Bicycle-only Lane

4.Bicycle Road

Survey regarding ease of bicycle-riding



走りやすい / Satisfied

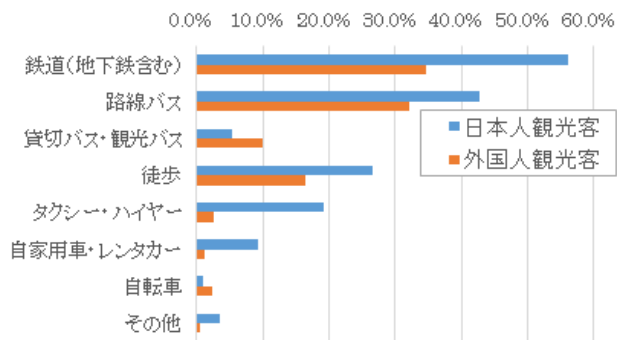
やや走りやすい / Fairly satisfied

やや走りにくい / Fairly dissatisfied

走りにくい / Dissatisfied

Approximately 80% of riders think that Kyoto is a difficult town to cycle in.

Transportation used by tourists to Kyoto



鉄道 / Rail

路線バス / Public bus

貸し切りバス・観光バス / Hire bus, tour bus

徒歩 / Walk

タクシー・ハイヤー / Taxi, hire-car

自家用車・レンタカー / Own car, rental car

自転車 / Bicycle

その他 / Other

日本人観光客 / Japanese Tourists

外国人観光客 / Foreign Tourists

The percentage of tourists using bicycles in Kyoto is 0.9% Japanese and 2.3% foreign.

[Source] Kyoto New Bicycle Plan, 2016 Kyoto General Tourism Survey



One wonders why residents harbor such huge dissatisfaction with the bicycle parking and riding environment, despite the city government creating a general plan, and undertaking improvements to the bicycle-riding environment.

Also, there are hardly any tourists using bicycles.

This cannot be solved by just thinking about it! So, we asked citizens, parking businesses and the city government about it!

Kyoto Municipal Government Bicycle Jurisdiction Division

- Various environmental improvements are being carried out, but a limited budget means that they are being carried out in order of priority.
- Although bicycle environment improvements to tackle availability of sites and manner education, etc., are being carried out, the fact that these improvements are not being felt by tourists and residents is thought to be an issue.
- We will use the various points raised and information exchanged, as reference material for future efforts.

Parking service providers

Being able to provide detailed service to foreign visitors is an issue. Also, the entry to the parking area is difficult to recognize, and despite being convenient, it is not being used much.

Residents

The parking area is difficult to understand, and it is often full. If we do not have information about riding safely and stress-free, such as knowing the location of toilets and shops which fix punctures, it is impossible to ride within the city.



In order for residents and tourists to enjoy riding safely and stress-free, the first thing to do is to make the location of currently available parking areas and various other useful information, visible.

And, rather than just complaining to the government, the important thing is for industry and residents to discuss and think about the issues together! But how will making it “visible” aid tourists and residents?

How are we to gauge users' real opinions? Through a fusion of agile software development and design theory!

We then decided that it was important to approach the issue from the users' point of view.

Based on the notion of data as fundamental, we carried out an analysis of SNS data, brainstorming, persona establishment, and customer journey maps, inching closer to understanding real user opinions, to create an app reflecting the UI/UX perspective. By carrying out field work and Agile development, as well as setting up a PPDAC cycle loop, we thought up a solution!

Results from analysis of matters relating to bicycle use in Kyoto City found on the community Q&A site, Yahoo

Chiebukuro (Nov. 2016—Nov. 2017)

Positive Reasons:

- Bicycles are convenient
- Bicycles are fun
- Bicycle-riding feels great
- Bicycles are efficient
- Bicycles are better than cars for sightseeing in Kyoto
- Bicycles are the best
- Bicycles are easy
- Bicycle parking is available

Opinions were divided between being positive or negative, and most of the positive opinions mentioned how enjoyable it is to ride around Kyoto on a bicycle.

Negative Reasons:

- Not suitable for the season
- Bicycles get in the road
- Risk of accidents
- Riding on the road is scary
- Its uncool
- I would never even consider doing so
- Bicycles are unsuited to the hilly landscape
- Too many people to make any progress
- Unknown

Since the second highest negative opinion was that “bicycles become a hindrance,” we came up with a solution of having a guide to bicycle parking and safe routes.

Brainstorming

Analysis

Persona establishment

Customer Journey Map

Prototype

Fieldwork

Things we realized from the incomplete loop! Things we learned!



There is no need to leave everything to the government, if we all join together and carry out a community design, we can come up with a practical solution based on the shared perspectives.

That is our collaborative creative public service!

<https://bicycle.rakusaba.jp> (charip navi)

(3) how to realize it.

Describe the process and milestones, etc.



Realizing our idea

Using open data, the role of the platforms

-> local public bodies (Kyoto City)

Using big data and linking between systems

-> bicycle parking, rental bicycles, and other related businesses

Application development, operation, and management

-> Civic Tech (Code for Kyoto)

Providing highly-specialized knowledge and experience, and utilization of the case method

-> universities and research institutions

Presenting the needs and challenges, service, and feedback

-> citizens and tourists

住民サービス向上/Improved service for residents

行政 Government

オープンデータ Open data

関連事業者 Related business

情報のシェア Information sharing

ビッグデータ Big Data

需要増加 Increased demand

技術 Skills

シビックテック Civic tech

理論 Theory

大学・研究機関 University, Research institutions

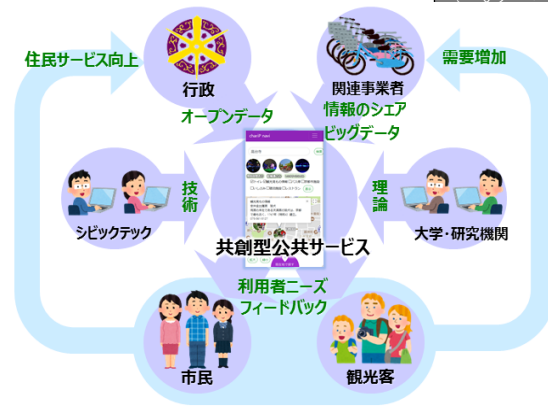
共創型公共サービス Collaborative Creative Public Service

利用者ニーズ Users' needs

フィードバック Feedback

市民 Citizens

観光客 Tourists



アイデアの実現にいたるプロセスとマイルストーン **Process and milestones to idea realization**

29年度 2017 financial year

30年度 2018 financial year

31年度以降 2019 financial year

「chariP naVi」"chariP naVi"

開発・環境構築 Development, environment construction

第一次計画※ 開発・テスト Primary plan * development, testing

無料開発インスタンスである Cloud Garage のある Cloud Garage の利用申請 Apply for cloud garage in the event of cost-free development instantiation

ガレージ開設・運用 Establishment and operation of the garage

第二次計画※ 設計・開発・テスト Secondary plan* design, development and testing

Cloud Garage 上での環境構築・サーバ保守・運用 Environment building, server protection, and management in cloud garage

オープンソース公開 Open source publishing

開発・環境構築 Development and environment building

自治体オープンデータに対応して容易に横展開が可能なパッケージを Git-Hub にてオープンソースで公開 Open source publishing of a Git-Hub package which can deal with municipal open data, to facilitate easy expansion

行政（京都市や国）との連携促進 Promote links with government (Kyoto City and national)

定期的な情報交換による情報やアイデアのシェア、フィードバック Idea sharing and feedback through regular information exchange

京都市の市民協働参画推進事業である「お宝バンク」へのアイデア登録と、それに伴う関連事業との連携 Registration of the idea with "Treasure Chest," the Kyoto City enterprise for promoting citizen collaboration and participation

Linking up with relevant parties

京都市オープンデータポータルサイトへの「chariP naVi」掲載などによる事例の共有と連携 from publishing "chariP naVi" on the Kyoto City open data portal site. Actual linking and collaborating

第二次計画実施にあたって、IOT との連携や必要なサーバ構築などで国の実証事業との連携を検討
protection of the server as part of the secondary plan and consideration of cooperation with
demonstration projects

アーバンデータチャレンジ Urban Data Challenge

加盟団体等の周辺団体との連携 Connecting with surrounding organizations, such as affiliated organizations
アイデアの共有・フィードバック等、横連携に向けての積極的な働き掛け事業者(各種団体含む) との連携 Connecting with
business operators (including organizations) and proactively working toward forging horizontal
connections through idea sharing and feedback

定期的な情報交換による情報やアイデアのシェア、フィードバック Idea sharing and feedback through regular
information exchange

第二次計画実証段階において、システム間連携や稼働状況等のデータ連携 Between system and operational status
data linking at the demonstration phase of the secondary plan

大学との連携 Cooperation with the university

定期的な情報交換による大学による知見の提供とアイデアのシェア、フィードバック。 Idea sharing, feedback, university
expertise sharing through regular information exchange

大学によるケースメソッド化 Case method implementation via the university

chariP naVi Primary Plan Overview

1. Main functions

The primary plan involves projected future development with a UI/UX to allow users to immediately
access the necessary information, while incorporating as many functions as possible for clients, and
packaged so that it is easy to use even for other groups.

Main functions are outlined below.

(Including features currently under development)

*Gathering and display of parking and rental bicycle location and availability information, as well as
various other tourist and safety-related information, on a map.

* Route information from your current location to goal

Display of statistical data on crowds and time-to-arrival from your current location to the parking area

* image display and information on landmarks and tourist spots within 1 km grid of the current
location or goal location

* recommended riding or walking routes for residents and tourists

* links to information relating to road conditions and traffic manners as published on the Kyoto City
cycle site

* Available in English and Japanese

2. Internal data structure

Various types of open and big data are converted and held in Json format to allow easy use in
Javascript.

Additionally, a mechanism to allow for retrieval of LOD data from SPARQL endpoints is also included.

Also, information on the position of tourist sites is converted into world grid square codes, making it
possible in the future to not just access information on Kyoto, but any region worldwide.

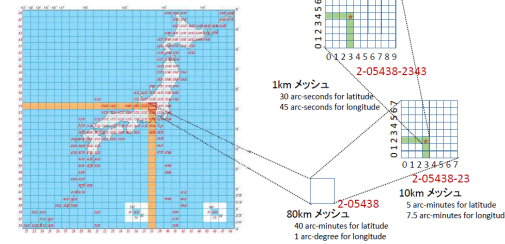
What are World Grid Square Codes?

Worldwide Expansion of Regional Grid Square Codes (JIS X0410)

- 1km grid
- 10km grid
- 80 km grid

世界メッシュコードとは

地域メッシュコード (JIS X0410) の世界拡張

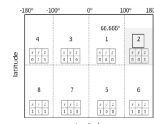


Definition of World Grid Squares

- 0- level grid square code
- 3rd-level grid square code

世界メッシュコードの定義

$\lfloor (1-2x)\text{latitude} \times 60 \div 40 \rfloor = p$ (p is two digits)
 $a = \lfloor (1-2x)\text{latitude} \times 60 \div 40 - p \rfloor \times 40$
 $\lfloor a \div 5 \rfloor = g$ (g is one digit)
 $b = (a \div 5 - g) \times 5$
 $\lfloor b \times 60 \div 30 \rfloor = r$ (r is one digit)
 $c = (b \times 60 \div 30 - r) \times 30$
 $\lfloor (1-2y)\text{longitude} - 100z \rfloor = u$ (u is two digits)
 $f = \lfloor (1-2y)\text{longitude} - 100z - u \rfloor$
 $\lfloor f \times 60 \div 7.5 \rfloor = v$ (v is one digit)
 $g = \lfloor f \times 60 \div 7.5 - v \rfloor \times 7.5$
 $\lfloor g \times 60 \div 45 \rfloor = w$ (w is one digit)
 $h = (g \times 60 \div 45 - w) \times 45$



0次メッシュコード $o = 2^2 x + 2y + z + 1$

3次メッシュコード grid square code $\begin{cases} o00p0uqrvrv & (p < 10, u < 10) \\ o0p0uqrvrv & (10 \leq p < 100, u < 100) \\ op0uqrvrv & (p \geq 100, u < 10) \\ o0p0uqrvrv & (p < 10, u \geq 10) \\ o0p0uqrvrv & (10 \leq p < 100, u \geq 10) \\ op0uqrvrv & (p \geq 100, u \geq 10) \end{cases}$

3. Necessary funding and operations

While the Primary Plan is being developed on a volunteer basis, it is possible that funds may be required to customize support, and for the purchase of middle ware and map licenses, as part of the service expansion to other areas and user groups.

Therefore, we are planning to apply for funding for server maintenance and management through the set-cost developer cloud service, Cloud Garage, as well as seeking a set amount of funding for costs associated with customization and support from target groups.

chariP naVi Secondary Plan Overview

1. Main functions

The Secondary Plan includes features to allow users to register the necessary information and access displayed parking and rental bicycle availability information in real time.

Main functions are outlined below.

(Including features currently under development)

- * Display of parking and rental bicycle availability information in real time
- * Features to allow users to input routes and register information regarding favorite tourist sites
- * Information on routes to parking areas, rental cycle shops, and tourist sites near current location or goal location

* Available in Korean and French

2. Internal data structure

Implementation of PostgreSQL as a database to register user information and information on areas near current location, as well as bicycle parking congestion data.

Additionally, consideration of implementing a platform, such as Azure, to ensure secure and timely processing, in the event that target data increases.

3. Necessary funding and operations

In order to add features to respond to sensor data and link with service providers' systems, it is possible that funds may be required for the purchase of middle ware and map licenses, as well as development costs.

As such, we are considering approaches involving service revenue, as well as linking with government projects to cover the demand for funds.