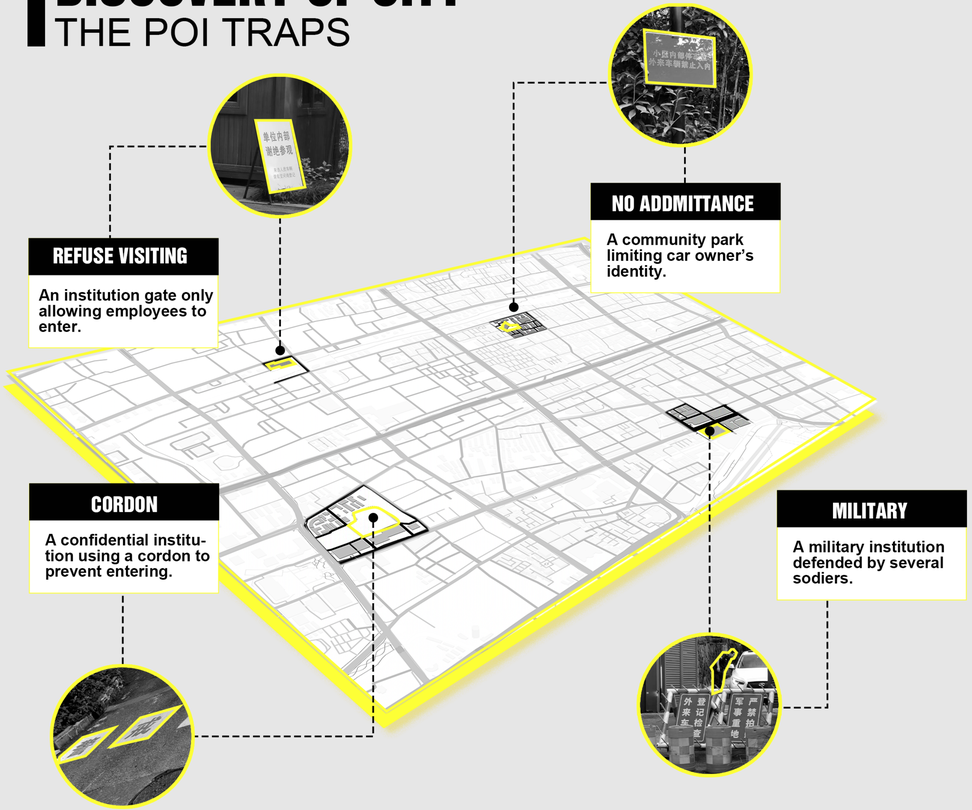
# Here Who Digs

## A Possible Solution for the Less-Frequented Areas in the City

# DISCOVERY OF CITY
## THE POI TRAPS




In Hangzhou city, I found numerous places featuring low accessbility for various reason, which arouses my interest on those places rarely concerned by ordinary travelers.This is where my study began.

## NORMAL PATTERN

The most common route of a short travel.

DECIDE TO HANG OUT

CHOOSE A DESTINATION

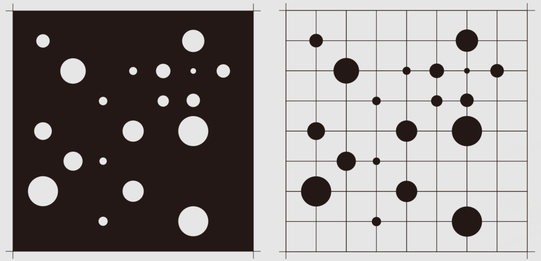
FIND A WAY AND JUST GO

### WHAT IS IN TRAVELERS' MIND:

· Highly regarded as an aimful pattern.
· My travel is simply "for travel".
· "I'm just following the most-liked post in social media."

## INSPIRATION

When I attempted to conduct data analysis for the points of interest in the city, I noticed that the ultimate visual outcome resembled more of a mask hovering over the city, adorned with various-sized perforations. In contrast to the "points of interest" within the city, they seemed more like "hollow points," which is why I referred to them as "urban caves."

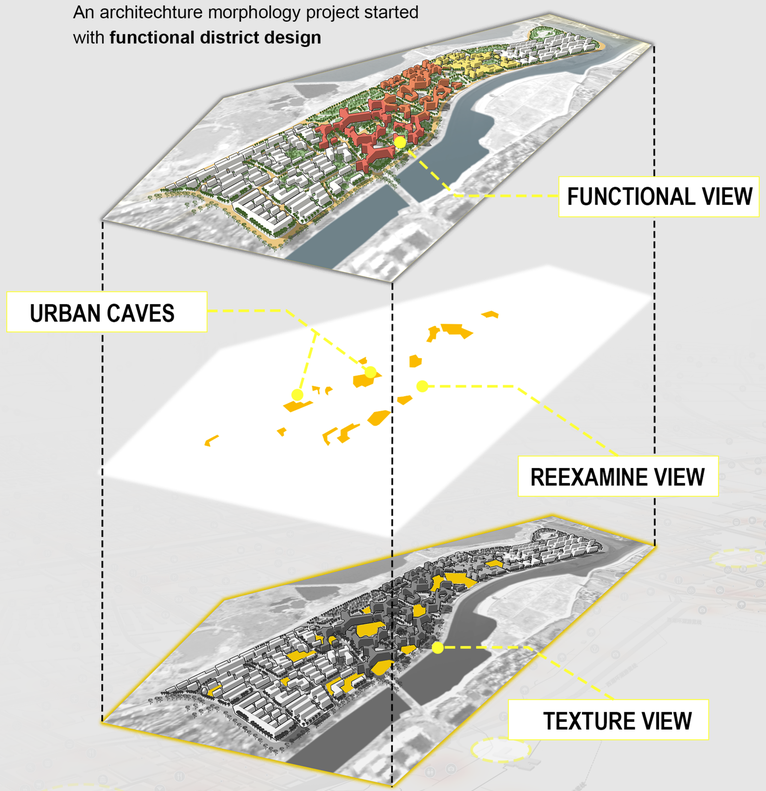


POI VIEW

URBAN CAVE VIEW

## "URBAN CAVES"

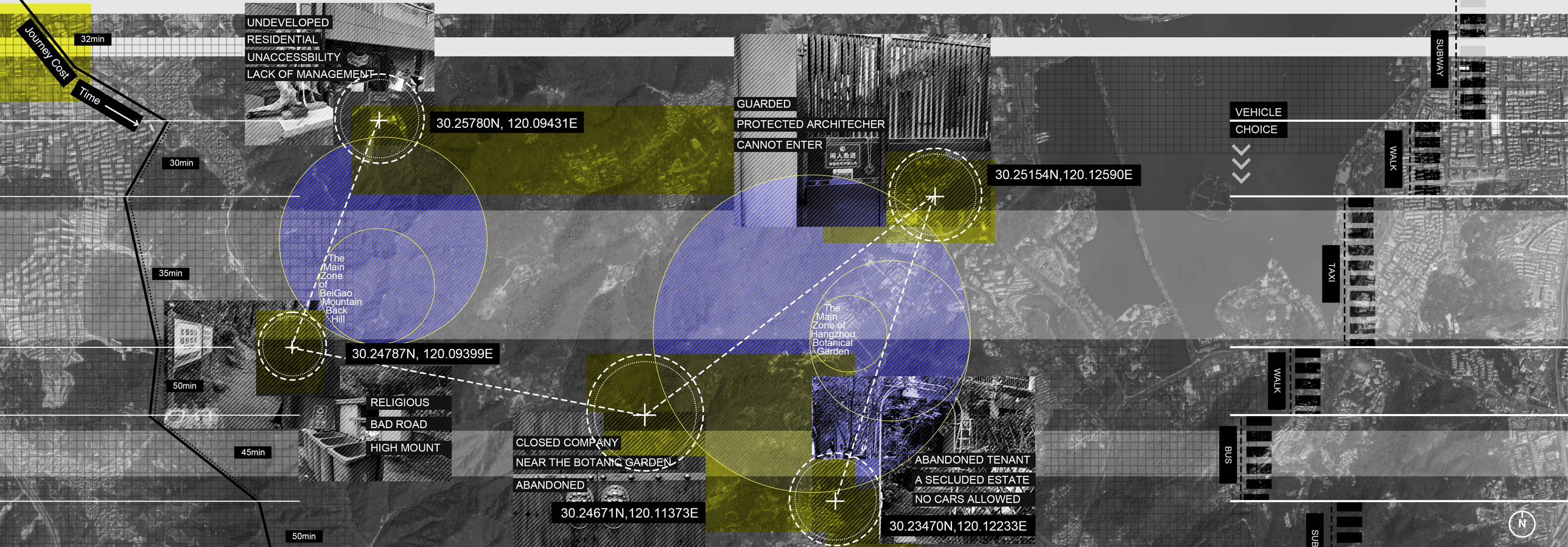
An architechture morphology project started with **functional district design**




Taking a reverse perspective to reexamine this project, it was discovered that within clearly defined functional blocks, there were numerous spaces that did not revolve around the themes of "attraction, inspiration, and fulfillment."

# DIG INTO THE CAVE
## DISENCHANTMENT OF CITY

I formulated a plan based on the previously created heatmap of points of interest (in Hangzhou), identifying five accessible "urban caves" and proceeded to visit them. During this journey, I documented the modes of transportation, time consumption, geographic locations of each "cave," and some personal perspectives on why they evolved into "caves".



# REAL LANDSCAPE OF CITY
## RECONSTRUCTION OF URBAN IMAGE

Based on previous research, I attempted to develop a solution for urban dwellers trapped in caves. During the iterative process of conceptualization, I encountered various challenges with several hypotheses, ultimately settling on an ARG (Alternative Reality Game) approach.

## CONCEPTUAL PATH

### *AN ATTEMPT AT QUANTITATIVE RESEARCH*

**CONTENT**

**build a five-dimentioanal model to describe one's POI value**

**Environment Factors**: Whether the space itself attracts you.
**Geographic Factors**: The impact of the site's relationship with the surroundings.
**Semantic Factors**: Matching your preferences.
**Social Factors**: Influenced by others, class and cultural habits
**Temporal Factors**: Places often have specific temporary feature.

**Positive Index (P)**: Does a higher level of this factor attract people more?
**Negative Index (N)**: Does a lower level of this factor attract people more?

**PATH**

**Draw a personalized city POI map**: Select the points of interest you have visited, and generate a kernel density map.

**Collect data:** Based on the selected points of interest, create a questionnaire similar to an MBTI test to gather data.

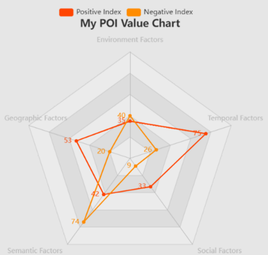
**Positive feedback**: Evaluate user preferences using a five-dimensional model to provide positive feedback.

**CRITICIZE**

**Deviation from the Goal:** Being too focused on amplifying self-awareness from a distant perspective limits the scope of thinking to "how to enhance self-awareness".

**Academicization:** For the average person, a value-oriented scale that is overly professional can lead to difficulties in understanding and diminish their desire to participate.

**Lack of Smooth Transition:** The transition from an earlier stage of photographic logs to a more output-oriented approach is not logically aligned.




### *AN ATTEMPT AT TOOLKIT BUILD*

**CONTENT**

**A guidebook for Urban Caves exploration**

Utilizing heat map analysis, the guidebook provides a map focused on urban caves. Users can use this manual as a guide to explore content in the city that doesn't fall under points of interest, stimulating exploration through activities such as check-ins, point collection, and community sharing.

**PATH**

Urban point of interest kernel density analysis.

Reverse heat map, selecting points for caves.

Plan the route and visualize it.

**CRITICIZE**

**Simplification**: Simplify complex human perceptions of locations into data models.

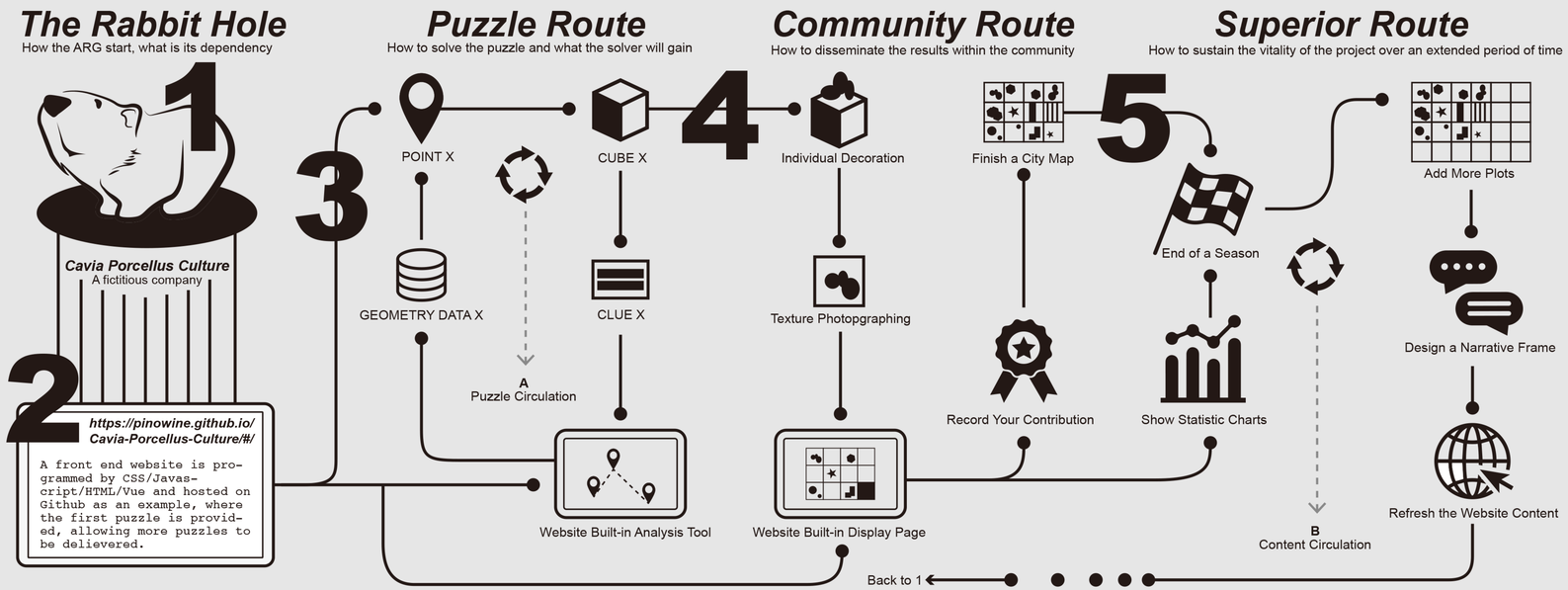
**Passivity:** People still do not actively engage in exploration; instead, they rely on predefined routes, deviating from the original design purpose of urban caves.

## CASE STUDY

Cicada 3301 is a nickname for three sets of puzzles posted online between 2012 and 2014, aiming to recruit intelligent individuals through complex cryptographic challenges. The puzzles cover various forms of media, and while the first two rounds were solved, the third remains unsolved.

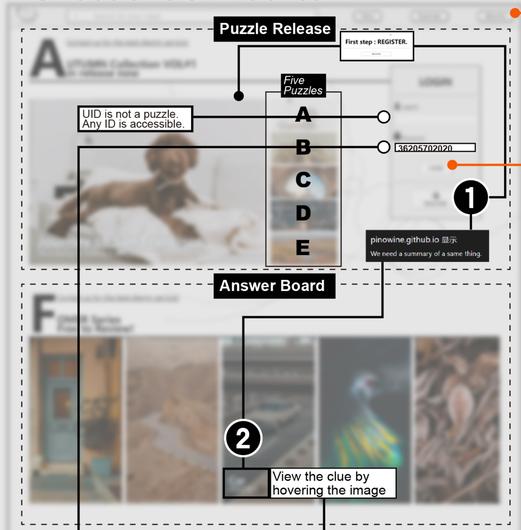
This activity has strongly encouraged users on platforms like Reddit to engage in decryption and community discussions. This greatly inspires me to iterate on ways to encourage residents to participate in Urban Cave exploration.

## ARG ROUTE



# WEB ROUTE

## The Rabbit Hole: Entrance




**Build the password**

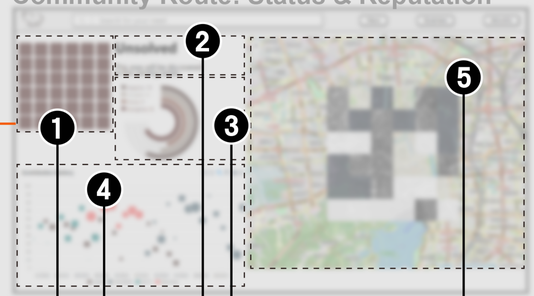
A: 3
B: 6
C: 2057
D: 0
E: 2020

= 36205702020

**Figure out the answer**

E.G. You can find three *outdoor* label in this part, so the first number is 3.

## Community Route: Status & Reputation



**Indicator**
Matching the tiles in map-viewer.

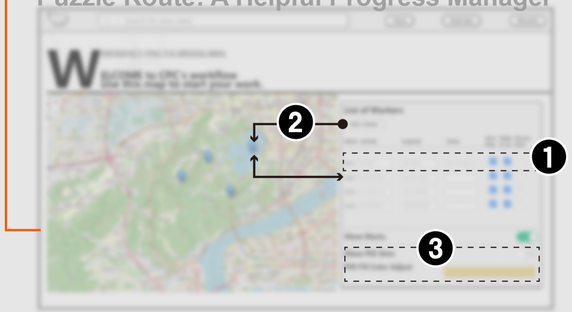
**Description**
A simple description of the chosen tile.

**Map-Viewer**
An OSM(open street map)-based interactive map, exhibiting the citizens' view of their blocks by replacing the overlaying tiles with top-view photos of the *cube model* created by themselves. (See in the next part)

**Reputation**
A chart exhibiting active participants' contribution.

**Status**
A chart exhibiting progress between cites.

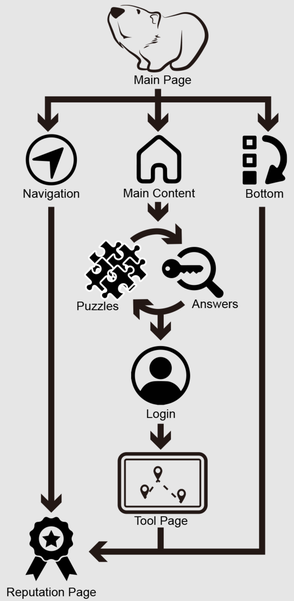
## Puzzle Route: A Helpful Progress Manager



1. Get a beginning data
2. Mark the point based on the data
3. Use POI layer to recheck the city cave
4. Get the next data by field trip

# FRONT-END WORK

## WEB MAP




## ENTRANCE PAGE

```
pinowine, 12小时前 | 1 author (pinowine)
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <link rel="icon" href="/favicon.ico">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Cavia Porcellus Culture</title>
  </head>
  <body>
    <div id="app"></div>
    <script type="module" src="/src/main.js"></script>
  </body>
</html>
<style>
  * {
    cursor: none;
    margin: 0;
    padding: 0;
  }
</style>
```

## PROJECT TREE

```
cavia_porcellus_culture/
├── LICENSE
├── README.md
├── index.html
├── public/
│   └── favicon.ico
└── src/
    ├── App.vue
    ├── assets/
    │   └── img/
    ├── components/
    │   ├── AnalyzeChart.vue
    │   ├── Back.vue
    │   ├── Bottom.vue
    │   ├── Curser.vue
    │   ├── Head.vue
    │   ├── InnerHome.vue
    │   ├── Login.vue
    │   ├── Main.vue
    │   ├── MeshViewer.vue
    │   ├── PtsDemo.vue
    │   ├── TimeLine.vue
    │   └── Toggle.vue
    ├── data/
    │   ├── POI.json
    │   ├── carousel.js
    │   ├── slider.js
    │   └── treeMenu.js
    ├── libs/
    │   └── jspp-ui/
    ├── main.js
    ├── router/
    │   └── index.js
    └── views/
        ├── Home.vue
        ├── InnerHome.vue
        ├── autumn-collection/
        └── login.vue
```

## TECHNOLOGY STACK

VITE VUE NODE.JS JS HTML CSS NPM

This was my first attempt at building a project using a front-end framework.I encountered many issues during the project deployment (including routing, environment configuration, image hosting, etc.), which I had never faced before when I was writing native HTML and JavaScript without using the Webpack tool.

## CODE SNIPPETS

```
components: {
    LMap,
    LGeoJson,
    LTileLayer,
    LMarker,
    LPopup,
    LTooltip,
    Toggle,
    PtsDemo
  },
  data() {
    return {
      addonLat: '',
      addonLng: '',
      zoom: 14,
      center: latLng([30.2677, 120.1320]),
      url:"
https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png",
      attribution:
        '
&copy; <a href="http://osm.org/copyright">OpenStreetMap
</a> contributors
',
      withTooltip: latLng([47.41422, -1.250482]),
      currentZoom: 11.5,
      currentCenter: latLng([30.2677, 120.1320]),
      showParagraph: false,
      geojson: null,
      POI: {
        value: true,
      },
      tooltip: {
        value: true,
      },
      fillColor: "#e4ce7f",
      enableTooltip: true,
      mapOptions: {
        zoomSnap: 0.5
      },
      showMap: true,
      heatmapLayer: null,
      geojsonOptions : {
        radius: 20,
        fillColor: "#ff7800",
        color: "#000",
        weight: 1,
        opacity: 1,
        fillOpacity: 0.8,
      },
      markers: [
        {
          id: 'a1',
          position: {lat: 30.218437, lng:
120.129702},
          tooltip: '杭州少年儿童公园',
          draggable: true,
          visible: true,
        }
      ],
    };,
  methods: {
    addLocation(lat,lng) {
      return latLng(lat,lng)
    },
    alert(item) {
      alert("this is " + JSON.stringify(item));
    },
    addMarker: function() {
      const newMarker = {
        position: { lat: 30.218437, lng: 120.129702 },
        draggable: true,
        visible: true,
      };
      this.markers.push(newMarker);
    },
    removeMarker: function(index) {
      this.markers.splice(index, 1);
    },
```

```
computed: {
    styleFunction() {
      const fillColor = this.fillColor;
      // Important: cache fillColor so computed for re-cre
ccolate when change fillColor
      return () => {
        return {
          weight: 2,
          color: "#CEFFF3",
          opacity: 1,
          fillColor: fillColor,
          fillOpacity: 1
        };
      };
    },
  },
  async created() {
    this.loading = true;
    const response = await fetch("
src/data/merged_data.json");
    const data = await response.json();
    this.geojson = data;
    this.loading = false;
  },
  async beforeMount() {
    // NEED to where to load leaflet components!
    const { circleMarker } = await import("
leaflet/dist/leaflet-src.esm");

// And now the leaflet circleMarker function can be used
// to create markers
    this.geojsonOptions.pointToLayer = (feature, latLng)
=>
      circleMarker(latLng, { radius: 8 });
    this.geojsonOptions.onEachFeature = (feature, layer)
=> {
      if (!this.enableTooltip) {
        return () => {};
      }
      layer.bindTooltip(
        "<div>name:" +
          feature.properties.name +
          "</div><div>amenity: " +
          feature.properties.amenity +
          "</div>",
        { permanent: false, sticky: true }
      );
    };
    this.mapIsReady = true;
  },
```

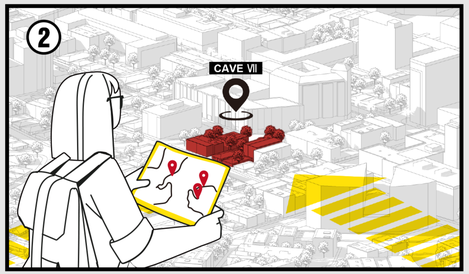
```
button {
    font-weight: bold;
    width: 20%;
    margin-top: 20px;
    margin-bottom: 20px;
    border-radius: 6px;
    border: 1px solid #AAA;
    background: #FFF;
    box-shadow: 1px 0px 4px 0px rgba(0, 0, 0, 0.25);
    padding-top: 5px;
    padding-bottom: 5px;
    transition: all 0.3s ease-in-out;

    &:hover {
      background-color: #d4d4d4;
      transition: all 0.3s ease-in-out;
    }
```

```
<template>
<div class="container">
  <div class="map-title">
    <div class="titlecontainer">
      <div class="caps">
        <p class="caps">W</p>
      </div>
      <div class="detailsinfo">
        <p class="slogan">
 EMERGENCY: FIND THE MISSING MAN.</p>
        <p class="bigtitle">
 ELCOME to CPC's workflow <br/>
 Use this map to start your work.</p>
      </div>
    </div>
    <!-- <div class="canvas-container">
      <stylemap />
    </div> -->
  </div>
  <div class="map-container">
    <div class="l-map-container">
      <l-map
        :useGlobalLeaflet="false"
        ref="map"
        :zoom="zoom"
        v-model:center="center"
        :options="mapOptions"
        >
        <l-tile-layer
          :url="url"
          :attribution="attribution"
        />/l-tile-layer>
        <l-marker
          v-if="tooltip.value"
          v-for="marker in markers"
          :key="marker.id"
          :visible="marker.visible"
          :draggable="marker.draggable"
          v-model:lat-lng.sync="marker.position"
          :icon="marker.icon"
          @click="alert(marker)"
        >
          <l-popup :content="marker.tooltip" />
          <l-tooltip :content="marker.tooltip" />
        </l-marker>
        <l-geo-json
          v-if="POI.value"
          :geojson="geojson"
          :options="geojsonOptions"
          :options-style="styleFunction"
        />
      </l-map>
    </div>
    <div class="modem">
      <h3>List of Markers</h3>
      <button
        name="button"
        @click="addMarker"
        >
        Add a marker
      </button>
      <table class="head">
        <tr>
          <th class="Marker" >Marker</th>
          <th class="lat" style="padding-left:
10px;">Latitude</th>
          <th class="lng">Longitude</th>
          <th class="Tooltip">Tooltip</th>
          <th class="Draggable">Allow</th></tr>drag</th
>
          <th class="Visible" style="padding-left
: 10px;">Visible</tr> mark</th>
          <th class="Remove" style="padding-left:
10px;">Remove</th></Mark</th>
        </tr>
```

## JOURNEY BOARD

### GET STARTED:

The first step is to enter the website, where you can find the first puzzle. After solving that, you will have access to inner page, where you can start your exploration with the given coordinate.

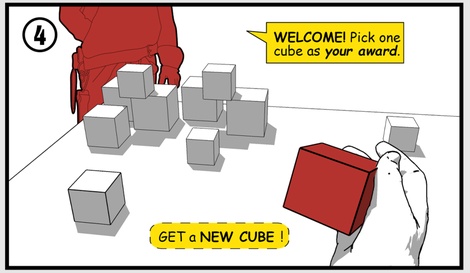



### PLAN FOR THE JOURNEY:

Coorperations are highly recommended to help you reach the goal. You can make an appeal in any community, suggesting nearby people to explore on the spot. Also, you can go by yourself.

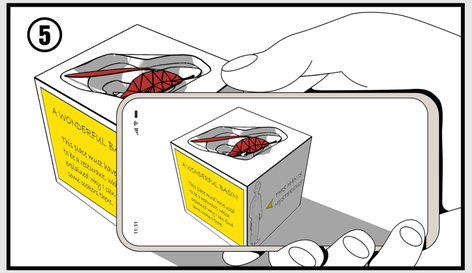
### FOLLOW THE ARG ROUTE:

The ARG sponsors will use various notes to imply the actual location (where you can get the reward). Follow the route, observe cautiously, you will conquer this game easily.




### REWARD TIME:

A local will be there waiting to award you a ***new and clean*** cube. This man should be the one who settled down in this place, like the owner of the shop or so, and he/she will be trained to react to you.




### FREE DIY:

Feel free to decorate the clean cube you got - it's yours now! You can use some tiny things to symbolize the city cave you've dicovered. After finishing that, you can upload the image to our website.

### CHECK THE PROGRESS:

It's done! Now, order a cup of coffee, sit in front of your laptop and enjoy the map scene constructed by each community member's effort, along with progress statistics. Your contributions will be recorded.

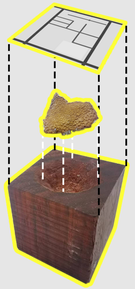
## DESIGN THE CUBE

**Eg. A possible game run**

PHASE I PHASE II PHASE III

**Woodworking**

**Eg. How the narration works**



The Mask

Your Memory

The Cube

Q1: Where is this?
A1: 4113 Childy Street.

Q2: Why the dried tangerine peel?
A2: My dad is a traditional Chinese medicine practitioner, and he is enthusiastic about making soup with it.

Q3: Why rosewood?
A3: I was very young when we moved, and the only thing I remember is the tea table made from it.

**Eg. About the wood material**

Yew

Wenge

Red Sandalwood

Dalbergia Cochinchinensis