

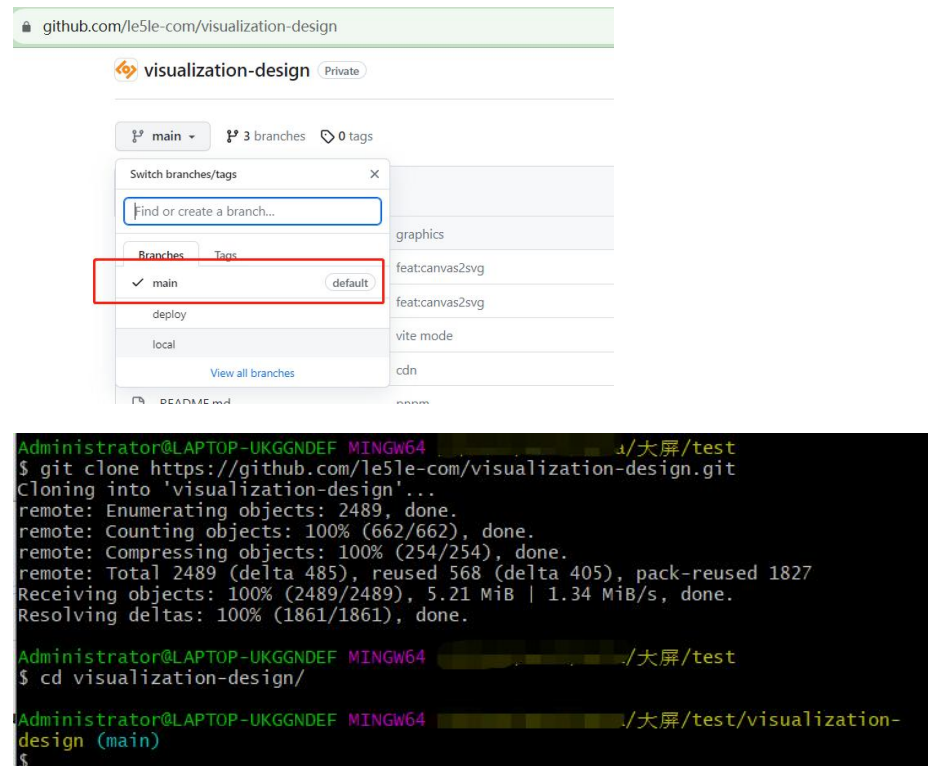
# visualization-design 源码使用手册

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## 一 下载代码

项目地址: <https://github.com/le5le-com/visualization-design>

1. 拉取代码: `git clone https://github.com/le5le-com/visualization-design.git`
2. 进入项目文件: `cd visualization-design/`
3. 确认当前是 **main 分支**:



说明:

- ① **main 分支**的核心库是通过引入最新发布的稳定的 **npm 包(meta2d 版本)**: **【推荐】**

[不推荐使用下面方式]

- ② **local 分支**引用的是非稳定状态下的源码包。需要拉取核心库并将其放到该项目的同级目录下, 核心库地址: <https://github.com/le5le-com/meta2d.js>  
(若使用 **local 分支**, 需全局搜索 **2d-components**, 并注释)

## 二 安装依赖包 (快速运行)

进入到 **visualization-design** 项目, 终端运行命令

`pnpm install` //安装依赖

`pnpm start` //启动项目

**pnpm** 下载地址: <https://pnpm.io/installation> (中文: <https://www.pnpm.cn/installation> )

## 三 加载图形库

### 3.1 方案

方案即图纸，通过/api/data/v/list 接口请求，通过 system 表示为系统方案。

```
const getCaseProjects = async (name: string, system:boolean, template:boolean, current = 1, pageSize = 1000) => {
  const query: any = { tags: name };
  let collection = name == '系统组件' ? 'v.component' : 'v';
  let data = { system, template };
  if(!data.system){
    delete data.system;
  }
  const ret: any = await axios.post(
    `/api/data/${collection}/list`,
    data,
    {
      // {
      //   // query: {
      //   //   tags: "系统方案"
      //   // },
      //   // shared: true,
      //   // projection: "id,id,name,image,price,case",
      //   // sort: { createdAt: 1 },
      //   // systemFlag
      //   system,
      //   template
      // },
    }
  );
  if (!ret) { ... }
  for (const item of ret.list) { ... }
  return ret.list;
};
```

### 3.2 模版

模板同场景，通过 template 参数表示为模版。

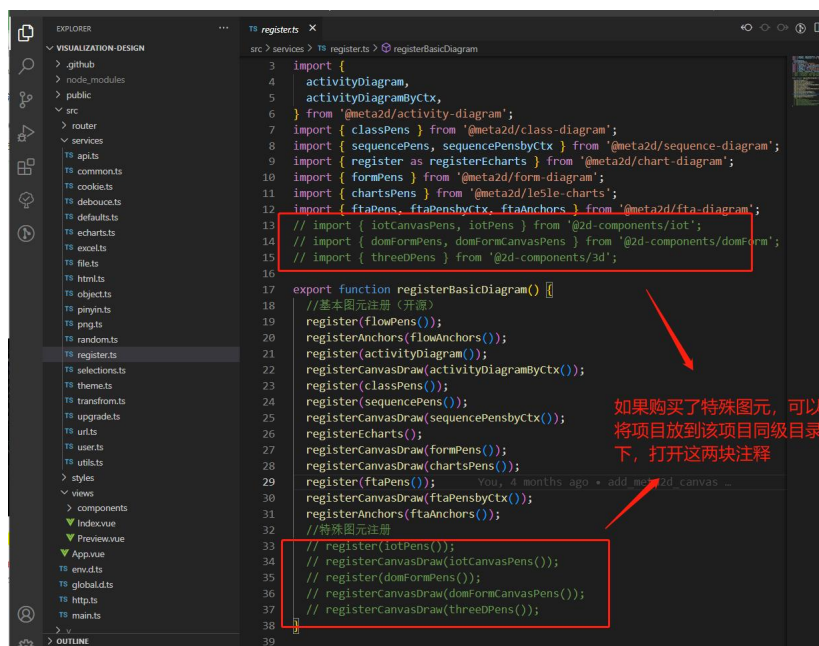
将交付文件中，模版文件夹中 json，在大屏编辑器平台-文件-导入文件后保存即可。再到运营中心设置为系统模版。

08 模版

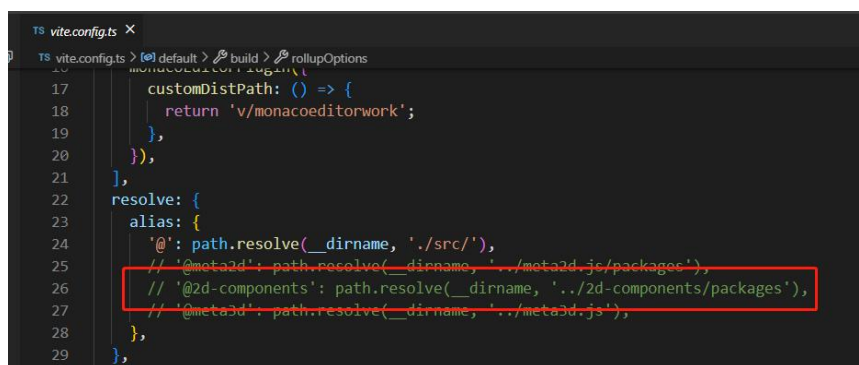
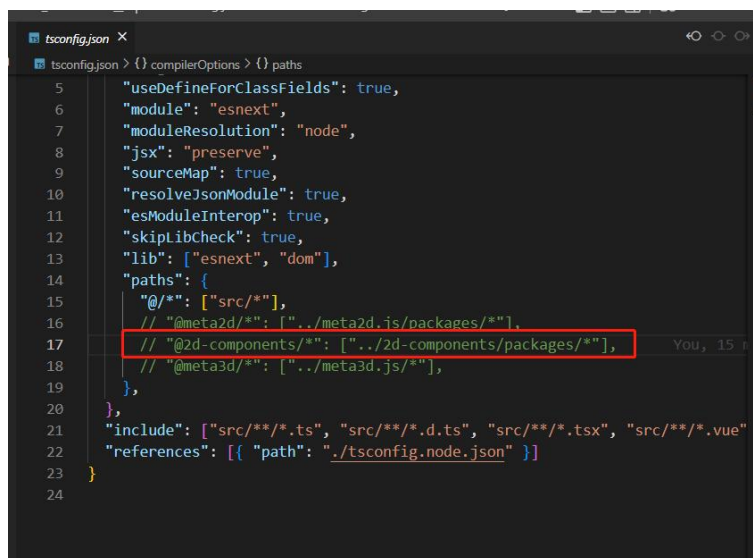
### 3.3 控件

控件主要是指一些控件图元，包含基础图元和特殊图元，对应交付文件中“控件源码”。控件的详细介绍可以查看文档：<https://doc.le5le.com/document/146738139>

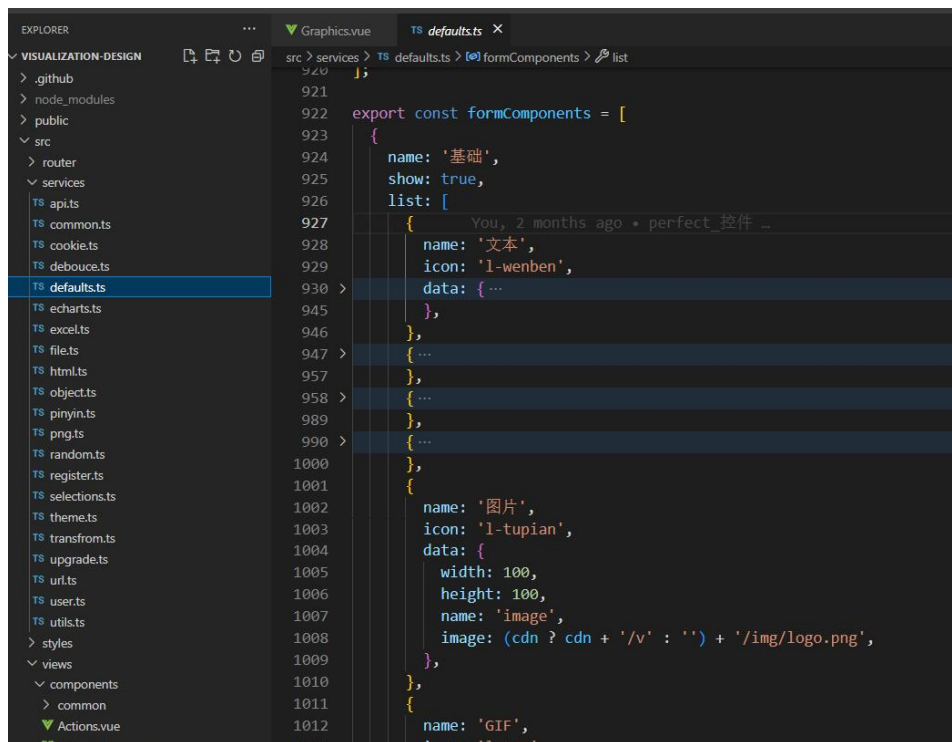
图元的注册是在 src/services/register.ts 文件里



如果购买了特殊图元，需要将特殊图元项目放到此项目同级目录下，并取消下面框选位置的注释：



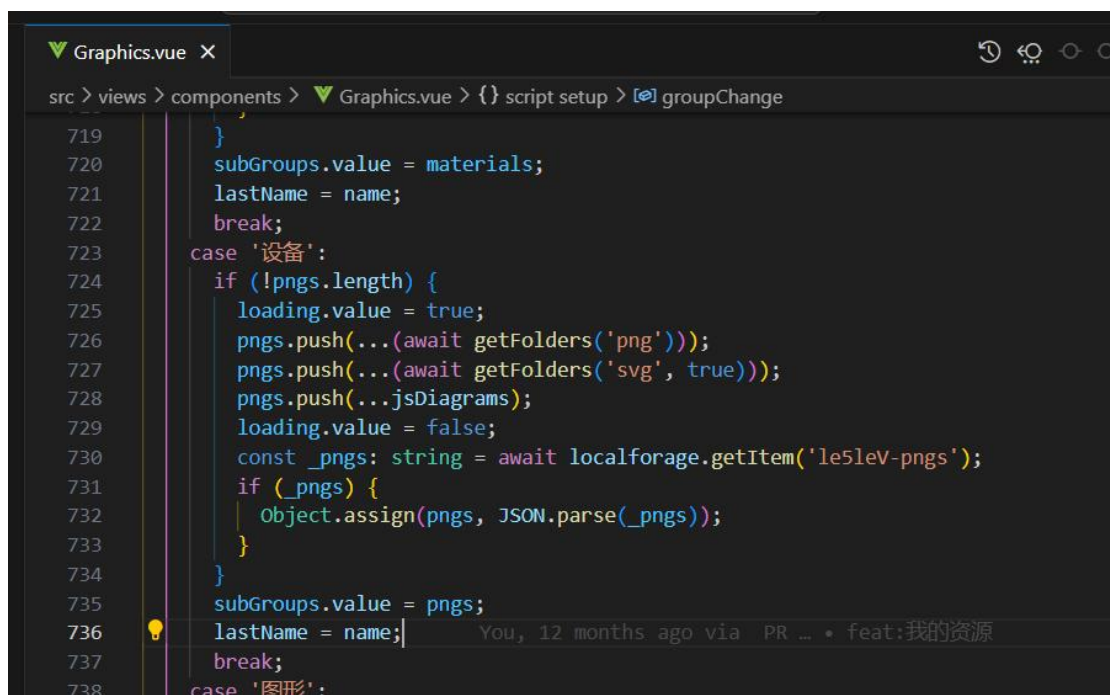
图形库的配置是在 src/services/defaults 文件里。



### 3.4 设备

图元主要是指不同行业/场景下的 svg/png/js 组件库，对应资源在交付文件的“设备”文件夹下。

1. png 和 svg 图形库通过 /api/assets/folders 和 /api/assets/files 两个接口获取得到，传入参数 path 分别是“svg”/“png”，



```

export async function getFolders(name: string, isSvg?: boolean) {
  const path = name;
  const folders: any = await axios.post('/api/assets/folders', {
    path,
  });
  if (!folders || !folders.list) {
    return [];
  }

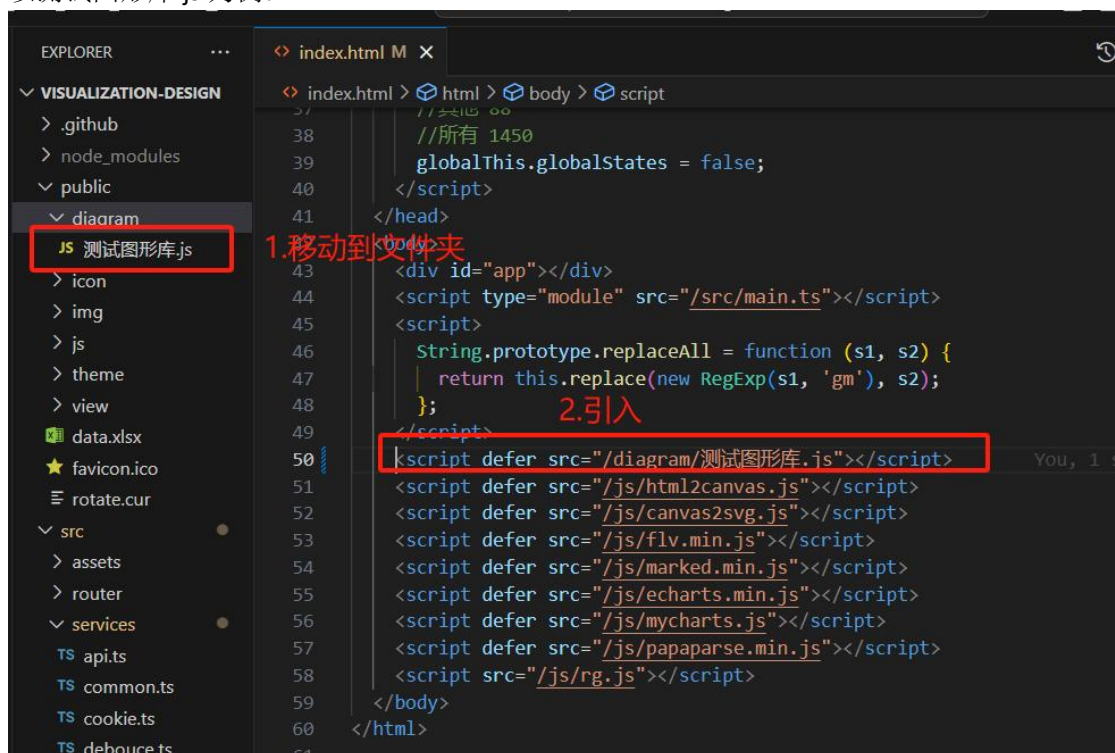
  const files: any = await axios.post('/api/assets/files', {
    path,
  });

  const results = [];
  for (const item of folders.list) { ...
  }
  return results;
}

```

2. Js 图形库对应 设备/js 图形库。将 js 图形库中所有的 js 文件放到项目的 public/diagram 文件夹下，在 index.html 文件中，引入这些 js 文件。

以测试图形库.js 为例：



Js 图形库的注册代码如下：



```

function getJsDiagram() {
  if (globalThis.registerToolsNew) {
    (window as any).registerToolsNew();
    const temJSClass = [];
    const temJSMaterial = [];
    globalThis.meta2dTools.forEach((item: any) => {
      if (temJSClass.indexOf(item.subClassName) === -1) {
        temJSClass.push(item.subClassName);
        temJSMaterial.push({
          name: item.subClassName,
          show: true,
          list: [],
        });
      }
      temJSMaterial.forEach((_class: any) => {
        if (_class.name === item.subClassName) {
          _class.list.push(item);
        }
      });
    });
    jsDiagrams.push(...temJSMaterial);
    // 切换回页面仍需要注册, 所以此处不清空
    // window.meta2dTools = undefined;
  }
}

```

You, 3 months ago • feat: js线性图元

### 3.5 图表

图表主要包括 echarts 图表和乐吾乐图表

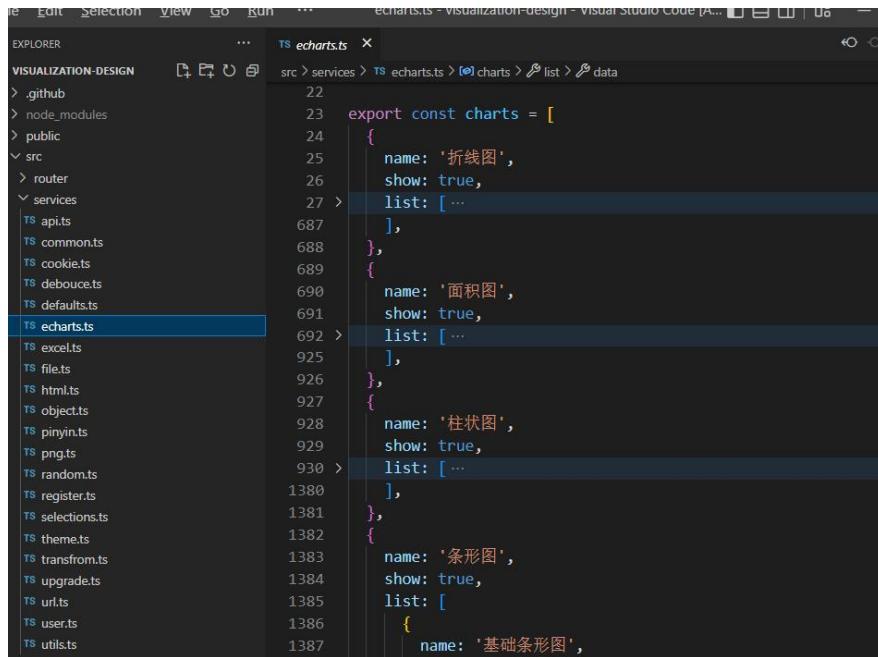
图形库使用对应的文档介绍:

Echarts 图表:

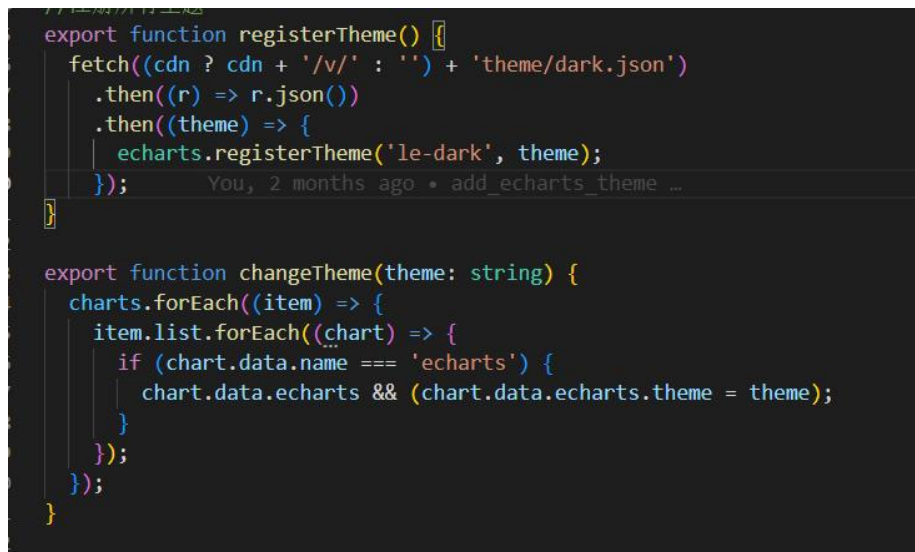
<https://doc.le5le.com/document/119754049#Echarts%E5%9B%BE%E8%A1%A8>

乐吾乐图表: <https://doc.le5le.com/document/119826189>

图表配置文件在 src/services/echarts.ts 文件里面。



这里有 echarts 图形库主题的注册及使用



### 3.6 素材

素材主要是图片资源，包括一些图片图标、装饰、标题和面板等，对应交付文件中“素材”文件夹。通过/api/assets/folders 和/api/assets/files 接口分别请求对应文件夹和文件夹下的文件。传入参数 path:'v/material'





```
break;
case '素材': Alsmile, 15 months ago via PR #1 * 场景
  groupType.value = 1;
  if (!materials.length) {
    loading.value = true;
    materials.push(...(await getFolders('v/material')));
    loading.value = false;
    const _materials: string = await localforage.getItem(
      'le5lev-materials'
    );
    if (_materials) {
      Object.assign(materials, JSON.parse(_materials));
    }
  }
  subGroups.value = materials;
  lastName = name;
  break;
case '设备':

5
6 export async function getFolders(name: string, isSvg?: boolean) { A
7   const path = name;
8   const folders: any = await axios.post('/api/assets/folders', {
9     path,
10  });
11  if (!folders || !folders.list) {
12    return [];
13  }
14
15  const files: any = await axios.post('/api/assets/files', {
16    path,
17  });
18  });
```

## 3.7 图形

图形主要是核心库开源的基础图元，具体可见文档：

<https://doc.le5le.com/document/119754049>

注册同控件，配置文件如下：

```

9 export const shapes = [
10   {
11     name: '基本形状',
12     show: true,
13     list: [ ...
14   ],
15   },
16   {
17     name: '脑图',
18     show: true,
19     list: [ ...
20   ],
21   },
22   {
23     name: '流程图',
24     show: true,
25     list: [ ...
26   ],
27   },
28   {
29     name: '活动图',
30     show: true,
31     list: [
32       {
33         name: '活动图',
34         show: true,
35         list: [
36           {
37             name: '活动图',
38             show: true,
39             list: [
40               {
41                 name: '活动图',
42                 show: true,
43                 list: [
44                 ]
45               }
46             ]
47             }
48           ]
49         }
50       ]
51     }
52   ]
53 }

```

### 3.8 组件

通过/api/data/v.component/list 接口请求，通过 system 表示是系统组件。

```

break;
case '组件':
  if (activeAssets.value === 'system') {
    if (!componentCaches.length) {
      loading.value = true;
      componentCaches.push(...(await getCaseProjects('系统组件', true, false)));
      loading.value = false;
      for (const component of componentCaches) {
        if (component.case) {
          if (component.case) {
            let group = components.filter((item) => { item.name === component.case });
            if (group && group.length) {
              group[0].list.push(component);
            } else {
              components.push({
                name: component.case,
                list: [component]
              });
            }
          } else {
            components[0].list.push(component);
          }
        }
      }
    }
  }
  groupType.value = 1;
  subGroups.value = components;
  lastName = name;

```

Wind-Breaker1, 10 months ago • fix:完善新接口的替换

## 3.9 我的资源

### 3.9.1 方案

```
//用户方案
subGroups.value = await getCollectionImageList('方案', 'v', false, false);
moveGroups['方案'] = [];
subGroups.value.forEach((item) => { if (item.name !== '默认') { moveGroups['方案'].push({ name: item.name }); });
groupType.value = 1;
userLastName = name;
}
```

1. /api/directory/list 获取文件夹列表
2. /api/data/v/list 获取用户所有图纸数据，system 不传，template 为 false
3. 再将图纸数据放入对应到文件夹

```
//获取方案文件夹
const getCollectionImageList = async (name?: string, collection?: string, system?: boolean, template?: boolean) => {
  //1. 获取网盘文件夹
  const fullpath = `/大屏/${name}`;
  let ret: { list: any[] } = await axios.post('/api/directory/list', {
    fullpath,
  });
  if (!ret) { ...
  }
  let list = [];
  for (let i of ret.list) { ...
  }
  const data = { ...
  };
  if (!data.system) { ...
  }
  const config = {
    params: {
      current: 1,
      pageSize: 1000,
    },
  };
  //2. 请求所有图纸/组件数据
  const res: any = await getCollectionList(collection, data, config);
  //3. 将数据对应到网盘文件夹
  const results = [];
  const resultsMap = { ...
  };
  for (const item of list) { ...
  }
  for (const item of res.list) { ...
  }
  for (const item of list) { ...
  }
  results.push({
    name: '默认',
    list: resultsMap['默认'],
  });
};
```

### 3.9.2 模版

```
subGroups.value = await getCollectionImageList('模板', 'v', 2);
groupType.value = 1;
userLastName = name;
```

同方案，通过 userFlag=1/2 区分是方案还是模版

### 3.9.3 组件

```
// userLastName = name;
subGroups.value = await getCollectionImageList('模板', 'v', false, true);
moveGroups['模板'] = [];
subGroups.value.forEach((item) => { if (item.name !== '默认') { moveGroups['模板'].push({ name: item.name }); });
groupType.value = 1;
userLastName = name;
```

同方案, collection 参数对应 'v.component'。

### 3.9.4 图片

```
case '图片':
  loading.value = true;
  subGroups.value = await getImageList();
  loading.value = false;
  userLastName = name;
  break;
```

```
const getImageList = async () => {
  let ret: { list: any[] } = await axios.post('/api/directory/list', {
    fullpath: '/大屏/图片',
  });
  if (!ret) {
    return [];
  }
  let list = [];
  for (let i of ret.list) {
    if (i.fullpath.split('/').length === 4) {
      //不取当前文件夹
      list.push(i);
    }
  }
  return await Promise.all(...);
};
```

获取云盘下所有图片资源。

### 3.9.5 3D

自定义的 3d 场景，通过 /api/data/3d/list 接口请求 3d 场景，需使用到乐吾乐 3d 可视化，可以咨询商务购买。

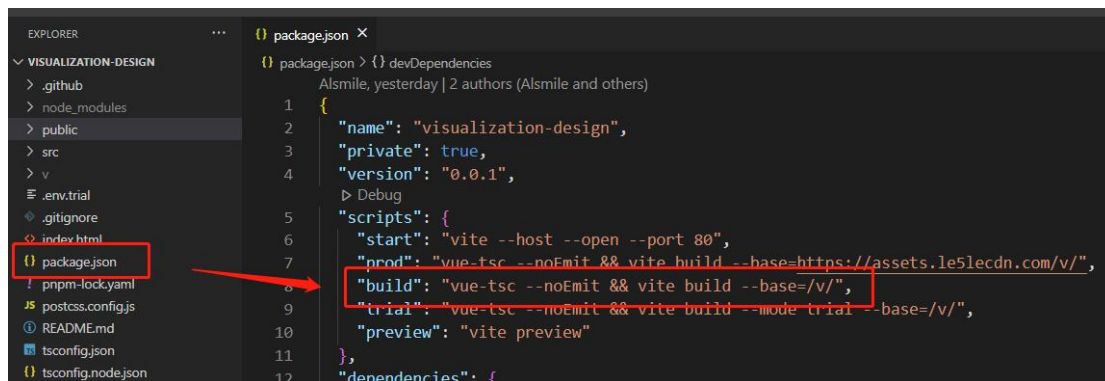
```

case '3D':
  subGroups.value = [
    {
      name: '3D',
      list: [],
    },
  ];
  groupType.value = 1;
  await getPrivateGraphics();
  userLastName = name;
  break;

```

## 四 编译打包

运行命令：pnpm run build



## 五 源码结构说明

整个项目分为两个页面：①Index.vue 大屏编辑页面 ②Preview.vue 大屏预览页面（运行页面）

```

const routes = [
  { path: '/', component: () => import('@views/Index.vue') },
  { path: '/preview', component: () => import('@views/Preview.vue') },
];

```

### 5.1 编辑器页面

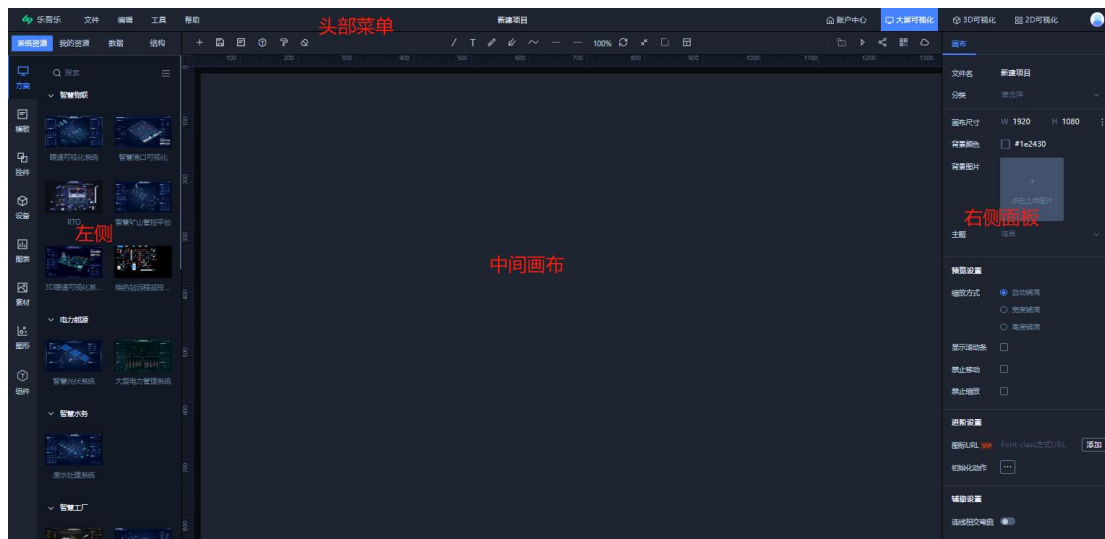
编辑器页面整体结构如下：

```

You, last month | 3 authors (Alsmile and others)
<template>
  <div class="app-page" @contextmenu.prevent>
    <Header /> 头部菜单
    <div class="design-body">
      <Graphics /> 左侧 (系统资源、我的资源、数据、结构)
      <View /> 中间主画布
      <div style="border-left: 1px solid var(--color-border);"> 自适应布局
        <FitProps v-if="selections.mode === SelectionMode.Fit" />
        <FileProps v-else-if="selections.mode === SelectionMode.File" /> 单击画布
        <PenProps v-else-if="selections.mode === SelectionMode.Pen" /> 单选图元
        <PensProps v-else /> 多选图元
      </div>
    </div>
  </div>
  Alsmile, 17 months ago • init
</template>

```

对应运行页面:



## 5.1.1 头部菜单

1. 目录: components/Header.vue
2. 源码说明:



- ① 右侧包含 logo 及公司名、文件、编辑、查看、帮助,都是通过下拉组件实现以文件为例,可以在每个选项的 click 事件定位到对应执行的代码内容。



```

<t-dropdown
  :minColumnWidth="200"
  :maxHeight="560"
  :delay2="[10, 150]"
  overlayClassName="header-dropdown"
  trigger1="click"
>
  <a> 文件 </a>
  <t-dropdown-menu>
    <t-dropdown-item @click="newFile">
      <a>新建文件</a>
    </t-dropdown-item>
    <t-dropdown-item @click="load(true)">
      <a>打开文件</a>
    </t-dropdown-item>
    <t-dropdown-item divider="true" @click="load">
      <a>导入文件</a>
    </t-dropdown-item>
    <t-dropdown-item>
      <a @click="save()">保存</a>
    </t-dropdown-item>
    <t-dropdown-item>
      <a @click="save(SaveType.SaveAs)">另保存</a>
    </t-dropdown-item>
    <t-dropdown-item divider="true">
      <a @click="downloadJson">下载JSON文件</a>
    </t-dropdown-item>
    <t-dropdown-item>

```

方法中可能用到了一些开源库（例如：下载文件用到了 `file-saver` 库）、调用了核心库方法，具体开发者自行阅读执行逻辑。

② 中间输入大屏图纸的名称

```

<div style= width: 148px; flex-shrink: 0 ></div>
<input v-model="data.name" @input="onInputName" />
Alsmile, 4 months ago • init
<a href= "/assets/account" target= "blank">

```

③ 右侧是一些导航链接，包括账户中心、乐吾乐其他产品、登录/用户菜单

## 5.1.2 左侧组件库

1. 目录：components/Graphics.vue
2. 源码说明：

```

<div class="group-asset">
  <t-radio-group
    v-model="activeAssets"
    @change="assetsChange"
    variant="primary-filled">
    <t-radio-button value="system">系统资源</t-radio-button>
    <t-radio-button value="user">我的资源</t-radio-button>
    <t-radio-button value="data">数据</t-radio-button>
    <t-radio-button value="structure">结构</t-radio-button>
  </t-radio-group>

```

切换不同的按钮，展示不同的内容。

## 2.1 系统资源/我的资源

① 顶部的左侧搜索框用于从下面选中的组件中搜索内容，右侧按钮控制下面选中的组件整体的展开/折叠



搜索框执行代码如图：主要通过 visible 属性控制组件的显示/隐藏

```

<t-input
  v-model="search"
  @change="onSearch"
  @enter="onSearch"
  placeholder="搜索"
/>

```

```

5  const onSearch = () => {      Alsmile, last month • search ing
6  |   debounce(searchGraphics, 300);
7  | };
8
9  const searchGraphics = async () => {
10 |   if (search.value) {
11 |     activePanels[activeGroup.value].splice(
12 |       0,
13 |       activePanels[activeGroup.value].length
14 |     );
15 |   }
16
17 |   for (const group of subGroups.value) {
18 |     for (const item of group.list) {
19 |       if (search.value) {
20 |         item.visible = searchObjectPinyin(item, 'name', search.value);
21 |       } else {
22 |         item.visible = true;
23 |       }
24 |     }
25
26 |     if (search.value) {
27 |       activePanels[activeGroup.value].push(group.name);
28 |     }
29 |   }
30 | };
31

```

右侧按钮通过控制当前活动面板 activePanels key 的内容控制下面面板的展开/折叠。

```

<t-tooltip content="展开/折叠">
  <t-icon
    name="menu-fold"
    class="hover"
    style="font-size: 16px"
    @click="onFold"
  />
</t-tooltip>

```

```
const onFold = () => {
  if (!activatedPanels[activatedGroup.value]) {
    return;
  }

  if (activatedPanels[activatedGroup.value].length) {
    activatedPanels[activatedGroup.value] = [];
  } else {
    activatedPanels[activatedGroup.value] = [];
    for (const item of subGroups.value) {
      activatedPanels[activatedGroup.value].push(item.name);
    }
  }
};
```

② 下面组件库，不同的类型对应不同的组件库/场景/模版内容。



通过监听点击选中，根据 name 去请求不同的数据，展示对应的内容。

```
const groupChange = async (name: string) => {
  activatedGroup.value = name;
  groupType.value = 0;
  switch (name) {
    > case '方案': ...
    > case '模板': ...
    > case '图表': ...
    > case '控件': ...
    > case '素材': ...
    > case '图元': ...
    > case '图形': Alsmile, 3 months ago • 场景
    > case '组件': ...
    > case '图片': ...
    > case '3D': ...
  }
}
```

## 2.2 数据

数据包含列表创建、获取和监听。对应 view/components/Data.vue 组件。



主要涉及到增删改查，对应的接口/api/data/datasource/xx 接口。

## 2.3 结构

结构可以查看当前大屏的完整的图元组成结构。对应 view/components/Structure.vue 组件。



通过监听内置的消息，去触发页面更新。

```
onMounted(() => {
  meta2d.on('opened', getTree);
  meta2d.on('add', getTree);
  meta2d.on('undo', getTree);
  meta2d.on('redo', getTree);
  meta2d.on('delete', getTree);
  meta2d.on('combine', getTree);
  meta2d.on('click', getActivated);
  meta2d.on('paste', getActivated);
  meta2d.on('layer', layerChange);
  meta2d.on('active', getActivated);

  if (inTreePanel.timer) {
```

可以点击定位、显示/隐藏、锁定图元，对应调用了核心库 `api`。



```

const onActive = (e,value: any) => {
  if (!value || value.endsWith('Layer')) {
    return;
  }

  if(e.ctrlKey){
    if(data.active.includes(value)){
      data.active = data.active.filter((item) => item !== value);
    }else{
      data.active.push(value);
    }
  }else{
    data.active = [value];
  }
  getActiveFlag = true;
  if(data.active.length > 1){
    let pens = [];
    data.active.forEach((item) => {
      pens.push(meta2d.store.pens[item]);
    });
    meta2d.active(pens, true);
  }else{
    const pen = meta2d.store.pens[value];
    meta2d.active([pen], true);
    if (!pen.calculative?.inView) {
      meta2d.gotoView(pen);
      meta2d.resize();
    }
  }
}

meta2d.render();
};

```

```

const lock = (node: any, v: LockState) => {
  node.data.locked = v;
  meta2d.setValue({
    id: node.value,
    locked: v,
  });
};

const visible = (node: any, v: boolean) => {
  node.data.visible = v;
  if (node.data.value.endsWith('Layer')) {
    if (node.data.value === 'imageLayer') {
      meta2d.canvas.canvasImage.canvas.style.display = v ? 'block' : 'none';
    } else if (node.data.value === 'mainLayer') {
      meta2d.canvas.canvas.style.display = v ? 'block' : 'none';
    } else if (node.data.value === 'imageBottomLayer') {
      meta2d.canvas.canvasImageBottom.canvas.style.display = v
        ? 'block'
        : 'none';
    } else if (node.data.value === 'templateLayer') {
      meta2d.canvas.canvasTemplate.canvas.style.display = v ? 'block' : 'none';
    }
  }
  return;
}

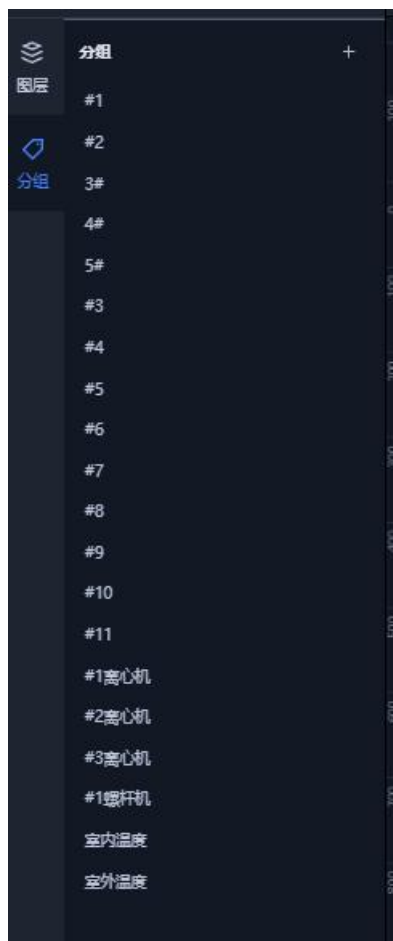
setChildrenVisible(node, v);
const pen = meta2d.findOne(node.value);
pen && meta2d.setVisible(pen, v);
meta2d.render();
};

```

锁定

显示/隐藏

在分组中，可以新增/删除自定义分组名称，可以批量控制该分组对应图元的显示/隐藏。



### 5.1.3 中间画布

#### ① 顶部二级菜单



右侧是快捷按钮 新建、保存为大屏、保存为我的组件、格式刷和清除格式。  
可以通过点击事件跳转到对应方法的执行，例如格式刷主要调用了核心库方法。

```

const oneFormat = () => {
  if (one.value) {
    one.value = false;
  } else {
    one.value = true;
    meta2d.setFormatPainter();
  }
  if (always.value) {
    always.value = false;
    one.value = false;
  }
};

const alwaysFormat = () => {
  always.value = true;
};

const clearFormat = () => {
  always.value = false;
  one.value = false;
  meta2d.clearFormatPainter();
};

```

中间是连线、视图、自适应设置相关操作

可以通过调用核心库方法将图纸切换到连线状态，下图代码表示控制关闭/打开连线状态

```

const oneDraw = () => {
  if (oneD.value) {
    oneD.value = false;
    if (!alwaysD.value) {
      meta2d.finishDrawLine();
      meta2d.drawLine();
      meta2d.store.options.disableAnchor = true;
    }
  } else {
    oneD.value = true;
    meta2d.drawLine(meta2d.store.options.drawingLineName);
    meta2d.store.options.disableAnchor = false;
  }
  if (alwaysD.value) {
    meta2d.finishDrawLine();
    meta2d.drawLine();
    oneD.value = false;
    alwaysD.value = false;
    meta2d.store.options.disableAnchor = true;
  }
};

```

通过修改 options 配置默认连线样式，下图代码表示修改连线类型。

```
const changeLineType = (value: string) => {
  currentLineType.value = value;
  if (meta2d) {
    meta2d.store.options.drawingLineName = value;
    meta2d.canvas.drawingLineName && (meta2d.canvas.drawingLineName
    meta2d.store.active?.forEach((pen) => {
      meta2d.updateLineType(pen, value);
    });
  }
};
```

通过调用核心库方法改变当前视图大小

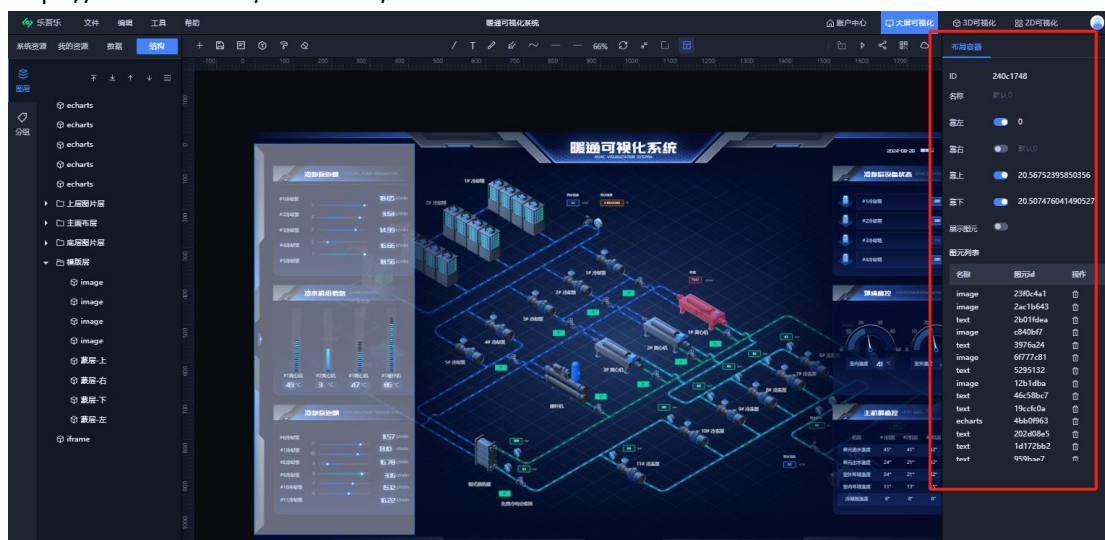
```
export const onScaleWindow = () => {
  // meta2d.fitView();
  meta2d.fitSizeView(true, 32);
};

export const onScaleFull = () => {
  meta2d.scale(1);
  // meta2d.centerView();
  const { x, y, origin, center } = meta2d.store.data;

  meta2d.translate(-x - origin.x, -y - origin.y);
  meta2d.translate(meta2d.store.options.x || 0, meta2d.store.
};
```

开启自适应布局模式后，会出现布局容器面板，具体操作说明见文档：

<https://doc.le5le.com/document/60>



右侧包含锁定画布、运行、分享、云发布等。

主要是项目业务内容，涉及到大屏的正式发布，需要结合部署人员一起探讨。

## ② 核心画布

```
</div>
<div id="meta2d"></div>

onMounted(() => {
  meta2d = new Meta2d('meta2d', meta2dOptions);
  registerBasicDiagram();
  open(true);
  meta2d.on('active', active);
  meta2d.on('inactive', inactive);
  meta2d.on('scale', scaleSubscriber);
  meta2d.on('add', lineAdd);
  meta2d.on('opened', openedListener);

  meta2d.on('undo', patchFlag);
  meta2d.on('redo', patchFlag);
  meta2d.on('add', patchFlag);
  meta2d.on('delete', patchFlag);
  meta2d.on('rotatePens', patchFlag);
  meta2d.on('translatePens', patchFlag);

  // 所有编辑栏所做修改
  meta2d.on('components-update-value', patchFlag);
  meta2d.on('contextmenu', onContextMenu);
  meta2d.on('click', canvasClick);

  timer = setInterval(autoSave, 60000);

  window.onbeforeunload = () => {
    autoSave();
  };
});
```

创建meta2d实例

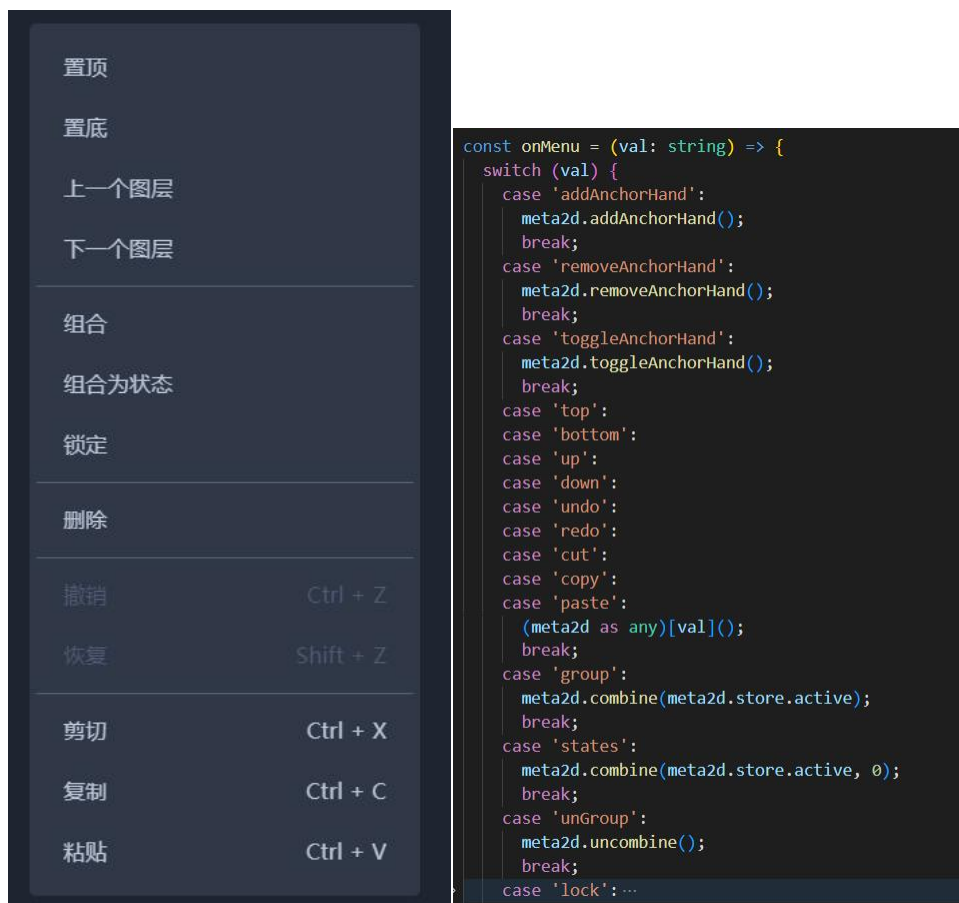
注册图形库

监听画布消息

自动保存图纸

③ 右键菜单 (components/ ContextMenu.vue)





主要是通过调用核心库方法，具体方法说明可查看官方文档：

<https://doc.le5le.com/document/119882449#%E5%87%BD%E6%95%B0>

## 5.1.3 右侧属性面板

### 5.1.3.1 不选中图元

① 目录 components/FileProps.vue

② 源码说明：

#### 1. 画布板块

画布板块主要分为，基本设置（包括大屏尺寸、背景颜色和背景图片）、预览设置（设置预览时/运行时的缩放方式、是否显示滚动条）、进阶设置（配置图片库、初始化和数据监听）



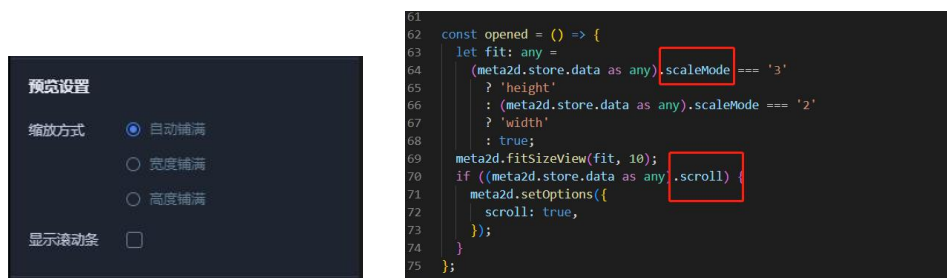


基本设置这一块，主要是通过修改 `meta2d.store.data` 下面的属性，具体说明可查看文档：  
<https://doc.le5le.com/document/119882449#%E6%95%B0%E6%8D%AE%E7%BB%93%E6%9E%84>

4  
 一些特殊属性：例如背景图片的设置，调用核心库 `setBackgroundImage` 方法。



预览设置这一块主要是配置预览时，大屏页面的显示方式，属于业务属性，使用可以查看 `Preview.vue` 页面。



进阶设置首先可以配置图标地址，输入字体图标地址后，会加载对应的图标库，在选中画笔进行图标设置时可以在图标抽屉中展示请求到的图标库。



其次可以配置初始化动作，是指首次打开图纸后会执行的脚本。最后数据监听，即通信建立后获取数据的处理脚本，具体可查看文档：

<https://doc.le5le.com/document/119620524#%E8%A7%A3%E6%9E%90%E8%87%AA%E5%AE%9A%E4%B9%89%E6%A0%BC%E5%BC%8F%E6%95%B0%E6%8D%AE>

### 5.1.3.2 单选图元

① 目录 components/PenProps.vue

② 源码说明：

单选图元板块主要包括外观、动画、数据、交互和结构。

```
<t-tabs v-model="data.tab">
  <t-tab-panel :value="1" label="外观"> ...
</t-tab-panel>
  <t-tab-panel :value="2" label="动画">
    <PenAnimates :pen="data.pen" />
  </t-tab-panel>
  <t-tab-panel :value="3" label="数据">
    <PenDatas :pen="data.pen" @tabchange="tabChange" />
  </t-tab-panel>
  <t-tab-panel :value="5" label="状态">
    <PenStatus :pen="data.pen" ref="status" />
  </t-tab-panel>
  <t-tab-panel :value="4" label="交互">
    <PenEvents :key="data.key" :pen="data.pen" />
  </t-tab-panel>
  <!-- <t-tab-panel :value="5" label="结构">
    <ElementTree />
  </t-tab-panel> -->
</t-tabs>
</div>
```

#### 1. 外观

外观主要内容是设置图元的样式、包括 id 位置等基本设置、文字、图片/图标、自定义属性等。

外观

动画

数据

交互

结构

ID

116fa54

名称

text

分组

aaaaa

X

217.25

Y

77.25

0

W

160

H

30

圆角

不透明度

1

外观

☒ 前景颜色

☒ 悬停颜色

☒ 选中颜色

线条

1

末端样式

连接样式

背景

纯色

线性渐变

径向渐变

☒ 请输入

阴影

☐

文字

属性

☐ 水平翻转

☐ 垂直翻转

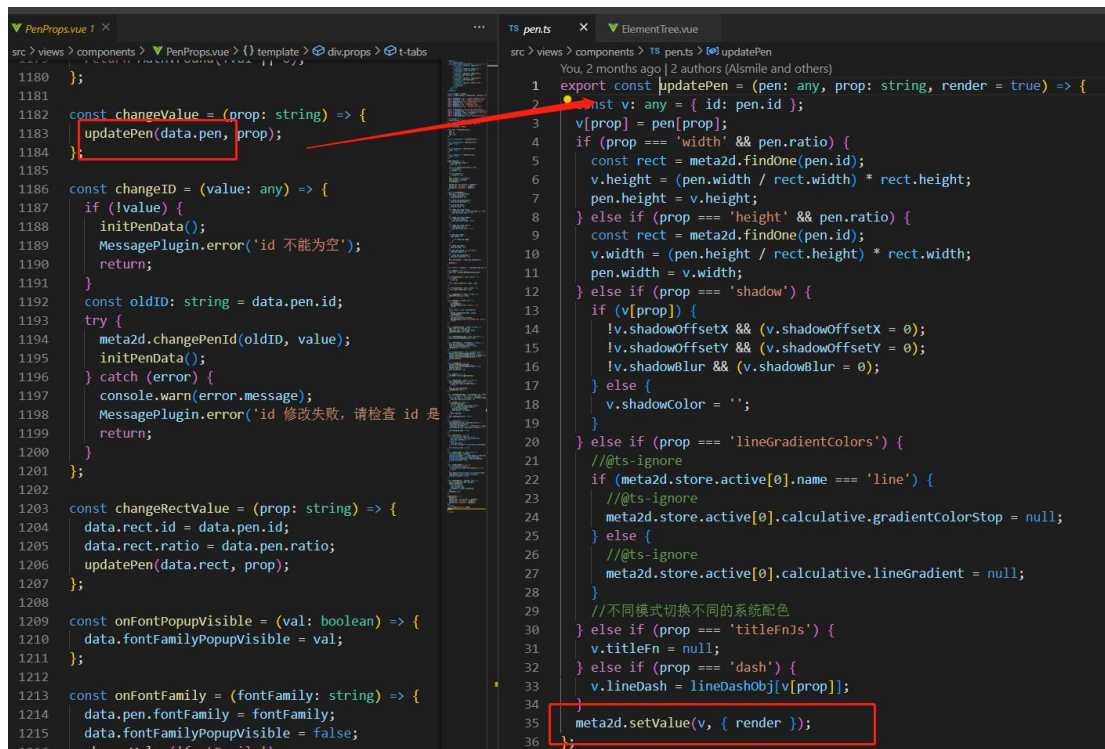
锚点半径 4

☐ 禁止旋转

☐ 禁止缩放

☐ 禁用锚点

鼠标提示



```
1180 };
1181
1182 const changeValue = (prop: string) => {
1183   updatePen(data.pen, prop);
1184 };
1185
1186 const changeID = (value: any) => {
1187   if (!value) {
1188     initPenData();
1189     MessagePlugin.error('id 不能为空');
1190     return;
1191   }
1192   const oldID: string = data.pen.id;
1193   try {
1194     meta2d.changePenId(oldID, value);
1195     initPenData();
1196   } catch (error) {
1197     console.warn(error.message);
1198     MessagePlugin.error('id 修改失败, 请检查 id 是否');
1199     return;
1200   }
1201 };
1202
1203 const changeRectValue = (prop: string) => {
1204   data.rect.id = data.pen.id;
1205   data.rect.ratio = data.pen.ratio;
1206   updatePen(data.rect, prop);
1207 };
1208
1209 const onFontPopupVisible = (val: boolean) => {
1210   data.fontFamilyPopupVisible = val;
1211 };
1212
1213 const onFontFamily = (fontFamily: string) => {
1214   data.pen.fontFamily = fontFamily;
1215   data.fontFamilyPopupVisible = false;
1216   changeValue('fontFamily');
1217 };
1218
1219 export const updatePen = (pen: any, prop: string, render = true) => {
1220   const v: any = { id: pen.id };
1221   v[prop] = pen[prop];
1222   if (prop === 'width' && pen.ratio) {
1223     const rect = meta2d.findOne(pen.id);
1224     v.height = (pen.width / rect.width) * rect.height;
1225     pen.height = v.height;
1226   } else if (prop === 'height' && pen.ratio) {
1227     const rect = meta2d.findOne(pen.id);
1228     v.width = (pen.height / rect.height) * rect.width;
1229     pen.width = v.width;
1230   } else if (prop === 'shadow') {
1231     if (v[prop]) {
1232       lv.shadowOffsetX && (v.shadowOffsetX = 0);
1233       lv.shadowOffsetY && (v.shadowOffsetY = 0);
1234       lv.shadowBlur && (v.shadowBlur = 0);
1235     } else {
1236       v.shadowColor = '';
1237     }
1238   } else if (prop === 'lineGradientColors') {
1239     // @ts-ignore
1240     if (meta2d.store.active[0].name === 'line') {
1241       // @ts-ignore
1242       meta2d.store.active[0].calculative.gradientColorStop = null;
1243     } else {
1244       // @ts-ignore
1245       meta2d.store.active[0].calculative.lineGradient = null;
1246     }
1247     // 不同模式切换不同的系统配色
1248   } else if (prop === 'titleFnJs') {
1249     v.titleFn = null;
1250   } else if (prop === 'dash') {
1251     v.lineDash = lineDashObj[v[prop]];
1252   }
1253   meta2d.setValue(v, { render });
1254 };
1255
1256 export const updateRect = (rect: any, prop: string, render = true) => {
1257   const v: any = { id: rect.id };
1258   v[prop] = rect[prop];
1259   if (prop === 'width' && rect.ratio) {
1260     const pen = meta2d.findOne(rect.id);
1261     v.height = (rect.width / pen.width) * pen.height;
1262     rect.height = v.height;
1263   } else if (prop === 'height' && rect.ratio) {
1264     const pen = meta2d.findOne(rect.id);
1265     v.width = (rect.height / pen.height) * pen.width;
1266     rect.width = v.width;
1267   } else if (prop === 'shadow') {
1268     if (v[prop]) {
1269       lv.shadowOffsetX && (v.shadowOffsetX = 0);
1270       lv.shadowOffsetY && (v.shadowOffsetY = 0);
1271       lv.shadowBlur && (v.shadowBlur = 0);
1272     } else {
1273       v.shadowColor = '';
1274     }
1275   } else if (prop === 'lineGradientColors') {
1276     // @ts-ignore
1277     if (meta2d.store.active[0].name === 'line') {
1278       // @ts-ignore
1279       meta2d.store.active[0].calculative.gradientColorStop = null;
1280     } else {
1281       // @ts-ignore
1282       meta2d.store.active[0].calculative.lineGradient = null;
1283     }
1284     // 不同模式切换不同的系统配色
1285   } else if (prop === 'titleFnJs') {
1286     v.titleFn = null;
1287   } else if (prop === 'dash') {
1288     v.lineDash = lineDashObj[v[prop]];
1289   }
1290   meta2d.setValue(v, { render });
1291 };
1292
1293 export const updateText = (text: any, prop: string, render = true) => {
1294   const v: any = { id: text.id };
1295   v[prop] = text[prop];
1296   if (prop === 'fontSize') {
1297     v.fontSize = text.fontSize;
1298   } else if (prop === 'fontWeight') {
1299     v.fontWeight = text.fontWeight;
1300   } else if (prop === 'fontStyle') {
1301     v.fontStyle = text.fontStyle;
1302   } else if (prop === 'fontFamily') {
1303     v.fontFamily = text.fontFamily;
1304   } else if (prop === 'textColor') {
1305     v.textColor = text.textColor;
1306   } else if (prop === 'textAlign') {
1307     v.textAlign = text.textAlign;
1308   } else if (prop === 'textBaseline') {
1309     v.textBaseline = text.textBaseline;
1310   } else if (prop === 'textDirection') {
1311     v.textDirection = text.textDirection;
1312   } else if (prop === 'textOverflow') {
1313     v.textOverflow = text.textOverflow;
1314   } else if (prop === 'textShadow') {
1315     v.textShadow = text.textShadow;
1316   } else if (prop === 'textStrokeWidth') {
1317     v.textStrokeWidth = text.textStrokeWidth;
1318   } else if (prop === 'textStrokeColor') {
1319     v.textStrokeColor = text.textStrokeColor;
1320   } else if (prop === 'textStrokeDash') {
1321     v.textStrokeDash = text.textStrokeDash;
1322   } else if (prop === 'textStrokeDashOffset') {
1323     v.textStrokeDashOffset = text.textStrokeDashOffset;
1324   } else if (prop === 'textStrokeLineCap') {
1325     v.textStrokeLineCap = text.textStrokeLineCap;
1326   } else if (prop === 'textStrokeLineJoin') {
1327     v.textStrokeLineJoin = text.textStrokeLineJoin;
1328   } else if (prop === 'textStrokeMiterLimit') {
1329     v.textStrokeMiterLimit = text.textStrokeMiterLimit;
1330   } else if (prop === 'textStrokeWidth') {
1331     v.textStrokeWidth = text.textStrokeWidth;
1332   } else if (prop === 'textStrokeColor') {
1333     v.textStrokeColor = text.textStrokeColor;
1334   } else if (prop === 'textStrokeDash') {
1335     v.textStrokeDash = text.textStrokeDash;
1336   } else if (prop === 'textStrokeDashOffset') {
1337     v.textStrokeDashOffset = text.textStrokeDashOffset;
1338   } else if (prop === 'textStrokeLineCap') {
1339     v.textStrokeLineCap = text.textStrokeLineCap;
1340   } else if (prop === 'textStrokeLineJoin') {
1341     v.textStrokeLineJoin = text.textStrokeLineJoin;
1342   } else if (prop === 'textStrokeMiterLimit') {
1343     v.textStrokeMiterLimit = text.textStrokeMiterLimit;
1344   }
1345   meta2d.setValue(v, { render });
1346 };
1347
1348 export const updateImage = (image: any, prop: string, render = true) => {
1349   const v: any = { id: image.id };
1350   v[prop] = image[prop];
1351   if (prop === 'x') {
1352     v.x = image.x;
1353   } else if (prop === 'y') {
1354     v.y = image.y;
1355   } else if (prop === 'width') {
1356     v.width = image.width;
1357   } else if (prop === 'height') {
1358     v.height = image.height;
1359   } else if (prop === 'angle') {
1360     v.angle = image.angle;
1361   } else if (prop === 'opacity') {
1362     v.opacity = image.opacity;
1363   } else if (prop === 'filter') {
1364     v.filter = image.filter;
1365   } else if (prop === 'src') {
1366     v.src = image.src;
1367   } else if (prop === 'alt') {
1368     v.alt = image.alt;
1369   } else if (prop === 'crossOrigin') {
1370     v.crossOrigin = image.crossOrigin;
1371   } else if (prop === 'referrerPolicy') {
1372     v.referrerPolicy = image.referrerPolicy;
1373   } else if (prop === 'integrity') {
1374     v.integrity = image.integrity;
1375   } else if (prop === 'isMap') {
1376     v.isMap = image.isMap;
1377   } else if (prop === 'isBlob') {
1378     v.isBlob = image.isBlob;
1379   } else if (prop === 'isDataUri') {
1380     v.isDataUri = image.isDataUri;
1381   } else if (prop === 'isSvg') {
1382     v.isSvg = image.isSvg;
1383   } else if (prop === 'isCanvas') {
1384     v.isCanvas = image.isCanvas;
1385   } else if (prop === 'isImage') {
1386     v.isImage = image.isImage;
1387   } else if (prop === 'isVideo') {
1388     v.isVideo = image.isVideo;
1389   } else if (prop === 'isAudio') {
1390     v.isAudio = image.isAudio;
1391   } else if (prop === 'isImage') {
1392     v.isImage = image.isImage;
1393   } else if (prop === 'isVideo') {
1394     v.isVideo = image.isVideo;
1395   } else if (prop === 'isAudio') {
1396     v.isAudio = image.isAudio;
1397   }
1398   meta2d.setValue(v, { render });
1399 };
1400
1401 export const updateGroup = (group: any, prop: string, render = true) => {
1402   const v: any = { id: group.id };
1403   v[prop] = group[prop];
1404   if (prop === 'x') {
1405     v.x = group.x;
1406   } else if (prop === 'y') {
1407     v.y = group.y;
1408   } else if (prop === 'width') {
1409     v.width = group.width;
1410   } else if (prop === 'height') {
1411     v.height = group.height;
1412   } else if (prop === 'angle') {
1413     v.angle = group.angle;
1414   } else if (prop === 'opacity') {
1415     v.opacity = group.opacity;
1416   } else if (prop === 'filter') {
1417     v.filter = group.filter;
1418   } else if (prop === 'src') {
1419     v.src = group.src;
1420   } else if (prop === 'alt') {
1421     v.alt = group.alt;
1422   } else if (prop === 'crossOrigin') {
1423     v.crossOrigin = group.crossOrigin;
1424   } else if (prop === 'referrerPolicy') {
1425     v.referrerPolicy = group.referrerPolicy;
1426   } else if (prop === 'integrity') {
1427     v.integrity = group.integrity;
1428   } else if (prop === 'isMap') {
1429     v.isMap = group.isMap;
1430   } else if (prop === 'isBlob') {
1431     v.isBlob = group.isBlob;
1432   } else if (prop === 'isDataUri') {
1433     v.isDataUri = group.isDataUri;
1434   } else if (prop === 'isSvg') {
1435     v.isSvg = group.isSvg;
1436   } else if (prop === 'isCanvas') {
1437     v.isCanvas = group.isCanvas;
1438   } else if (prop === 'isImage') {
1439     v.isImage = group.isImage;
1440   } else if (prop === 'isVideo') {
1441     v.isVideo = group.isVideo;
1442   } else if (prop === 'isAudio') {
1443     v.isAudio = group.isAudio;
1444   }
1445   meta2d.setValue(v, { render });
1446 };
1447
1448 export const updateLayer = (layer: any, prop: string, render = true) => {
1449   const v: any = { id: layer.id };
1450   v[prop] = layer[prop];
1451   if (prop === 'x') {
1452     v.x = layer.x;
1453   } else if (prop === 'y') {
1454     v.y = layer.y;
1455   } else if (prop === 'width') {
1456     v.width = layer.width;
1457   } else if (prop === 'height') {
1458     v.height = layer.height;
1459   } else if (prop === 'angle') {
1460     v.angle = layer.angle;
1461   } else if (prop === 'opacity') {
1462     v.opacity = layer.opacity;
1463   } else if (prop === 'filter') {
1464     v.filter = layer.filter;
1465   } else if (prop === 'src') {
1466     v.src = layer.src;
1467   } else if (prop === 'alt') {
1468     v.alt = layer.alt;
1469   } else if (prop === 'crossOrigin') {
1470     v.crossOrigin = layer.crossOrigin;
1471   } else if (prop === 'referrerPolicy') {
1472     v.referrerPolicy = layer.referrerPolicy;
1473   } else if (prop === 'integrity') {
1474     v.integrity = layer.integrity;
1475   } else if (prop === 'isMap') {
1476     v.isMap = layer.isMap;
1477   } else if (prop === 'isBlob') {
1478     v.isBlob = layer.isBlob;
1479   } else if (prop === 'isDataUri') {
1480     v.isDataUri = layer.isDataUri;
1481   } else if (prop === 'isSvg') {
1482     v.isSvg = layer.isSvg;
1483   } else if (prop === 'isCanvas') {
1484     v.isCanvas = layer.isCanvas;
1485   } else if (prop === 'isImage') {
1486     v.isImage = layer.isImage;
1487   } else if (prop === 'isVideo') {
1488     v.isVideo = layer.isVideo;
1489   } else if (prop === 'isAudio') {
1490     v.isAudio = layer.isAudio;
1491   }
1492   meta2d.setValue(v, { render });
1493 };
1494
1495 export const updateCanvas = (canvas: any, prop: string, render = true) => {
1496   const v: any = { id: canvas.id };
1497   v[prop] = canvas[prop];
1498   if (prop === 'x') {
1499     v.x = canvas.x;
1500   } else if (prop === 'y') {
1501     v.y = canvas.y;
1502   } else if (prop === 'width') {
1503     v.width = canvas.width;
1504   } else if (prop === 'height') {
1505     v.height = canvas.height;
1506   } else if (prop === 'angle') {
1507     v.angle = canvas.angle;
1508   } else if (prop === 'opacity') {
1509     v.opacity = canvas.opacity;
1510   } else if (prop === 'filter') {
1511     v.filter = canvas.filter;
1512   } else if (prop === 'src') {
1513     v.src = canvas.src;
1514   } else if (prop === 'alt') {
1515     v.alt = canvas.alt;
1516   } else if (prop === 'crossOrigin') {
1517     v.crossOrigin = canvas.crossOrigin;
1518   } else if (prop === 'referrerPolicy') {
1519     v.referrerPolicy = canvas.referrerPolicy;
1520   } else if (prop === 'integrity') {
1521     v.integrity = canvas.integrity;
1522   } else if (prop === 'isMap') {
1523     v.isMap = canvas.isMap;
1524   } else if (prop === 'isBlob') {
1525     v.isBlob = canvas.isBlob;
1526   } else if (prop === 'isDataUri') {
1527     v.isDataUri = canvas.isDataUri;
1528   } else if (prop === 'isSvg') {
1529     v.isSvg = canvas.isSvg;
1530   } else if (prop === 'isCanvas') {
1531     v.isCanvas = canvas.isCanvas;
1532   } else if (prop === 'isImage') {
1533     v.isImage = canvas.isImage;
1534   } else if (prop === 'isVideo') {
1535     v.isVideo = canvas.isVideo;
1536   } else if (prop === 'isAudio') {
1537     v.isAudio = canvas.isAudio;
1538   }
1539   meta2d.setValue(v, { render });
1540 };
1541
1542 export const updateImageGroup = (imageGroup: any, prop: string, render = true) => {
1543   const v: any = { id: imageGroup.id };
1544   v[prop] = imageGroup[prop];
1545   if (prop === 'x') {
1546     v.x = imageGroup.x;
1547   } else if (prop === 'y') {
1548     v.y = imageGroup.y;
1549   } else if (prop === 'width') {
1550     v.width = imageGroup.width;
1551   } else if (prop === 'height') {
1552     v.height = imageGroup.height;
1553   } else if (prop === 'angle') {
1554     v.angle = imageGroup.angle;
1555   } else if (prop === 'opacity') {
1556     v.opacity = imageGroup.opacity;
1557   } else if (prop === 'filter') {
1558     v.filter = imageGroup.filter;
1559   } else if (prop === 'src') {
1560     v.src = imageGroup.src;
1561   } else if (prop === 'alt') {
1562     v.alt = imageGroup.alt;
1563   } else if (prop === 'crossOrigin') {
1564     v.crossOrigin = imageGroup.crossOrigin;
1565   } else if (prop === 'referrerPolicy') {
1566     v.referrerPolicy = imageGroup.referrerPolicy;
1567   } else if (prop === 'integrity') {
1568     v.integrity = imageGroup.integrity;
1569   } else if (prop === 'isMap') {
1570     v.isMap = imageGroup.isMap;
1571   } else if (prop === 'isBlob') {
1572     v.isBlob = imageGroup.isBlob;
1573   } else if (prop === 'isDataUri') {
1574     v.isDataUri = imageGroup.isDataUri;
1575   } else if (prop === 'isSvg') {
1576     v.isSvg = imageGroup.isSvg;
1577   } else if (prop === 'isCanvas') {
1578     v.isCanvas = imageGroup.isCanvas;
1579   } else if (prop === 'isImage') {
1580     v.isImage = imageGroup.isImage;
1581   } else if (prop === 'isVideo') {
1582     v.isVideo = imageGroup.isVideo;
1583   } else if (prop === 'isAudio') {
1584     v.isAudio = imageGroup.isAudio;
1585   }
1586   meta2d.setValue(v, { render });
1587 };
1588
1589 export const updateImageLayer = (imageLayer: any, prop: string, render = true) => {
1590   const v: any = { id: imageLayer.id };
1591   v[prop] = imageLayer[prop];
1592   if (prop === 'x') {
1593     v.x = imageLayer.x;
1594   } else if (prop === 'y') {
1595     v.y = imageLayer.y;
1596   } else if (prop === 'width') {
1597     v.width = imageLayer.width;
1598   } else if (prop === 'height') {
1599     v.height = imageLayer.height;
1600   } else if (prop === 'angle') {
1601     v.angle = imageLayer.angle;
1602   } else if (prop === 'opacity') {
1603     v.opacity = imageLayer.opacity;
1604   } else if (prop === 'filter') {
1605     v.filter = imageLayer.filter;
1606   } else if (prop === 'src') {
1607     v.src = imageLayer.src;
1608   } else if (prop === 'alt') {
1609     v.alt = imageLayer.alt;
1610   } else if (prop === 'crossOrigin') {
1611     v.crossOrigin = imageLayer.crossOrigin;
1612   } else if (prop === 'referrerPolicy') {
1613     v.referrerPolicy = imageLayer.referrerPolicy;
1614   } else if (prop === 'integrity') {
1615     v.integrity = imageLayer.integrity;
1616   } else if (prop === 'isMap') {
1617     v.isMap = imageLayer.isMap;
1618   } else if (prop === 'isBlob') {
1619     v.isBlob = imageLayer.isBlob;
1620   } else if (prop === 'isDataUri') {
1621     v.isDataUri = imageLayer.isDataUri;
1622   } else if (prop === 'isSvg') {
1623     v.isSvg = imageLayer.isSvg;
1624   } else if (prop === 'isCanvas') {
1625     v.isCanvas = imageLayer.isCanvas;
1626   } else if (prop === 'isImage') {
1627     v.isImage = imageLayer.isImage;
1628   } else if (prop === 'isVideo') {
1629     v.isVideo = imageLayer.isVideo;
1630   } else if (prop === 'isAudio') {
1631     v.isAudio = imageLayer.isAudio;
1632   }
1633   meta2d.setValue(v, { render });
1634 };
1635
1636 export const updateImageCanvas = (imageCanvas: any, prop: string, render = true) => {
1637   const v: any = { id: imageCanvas.id };
1638   v[prop] = imageCanvas[prop];
1639   if (prop === 'x') {
1640     v.x = imageCanvas.x;
1641   } else if (prop === 'y') {
1642     v.y = imageCanvas.y;
1643   } else if (prop === 'width') {
1644     v.width = imageCanvas.width;
1645   } else if (prop === 'height') {
1646     v.height = imageCanvas.height;
1647   } else if (prop === 'angle') {
1648     v.angle = imageCanvas.angle;
1649   } else if (prop === 'opacity') {
1650     v.opacity = imageCanvas.opacity;
1651   } else if (prop === 'filter') {
1652     v.filter = imageCanvas.filter;
1653   } else if (prop === 'src') {
1654     v.src = imageCanvas.src;
1655   } else if (prop === 'alt') {
1656     v.alt = imageCanvas.alt;
1657   } else if (prop === 'crossOrigin') {
1658     v.crossOrigin = imageCanvas.crossOrigin;
1659   } else if (prop === 'referrerPolicy') {
1660     v.referrerPolicy = imageCanvas.referrerPolicy;
1661   } else if (prop === 'integrity') {
1662     v.integrity = imageCanvas.integrity;
1663   } else if (prop === 'isMap') {
1664     v.isMap = imageCanvas.isMap;
1665   } else if (prop === 'isBlob') {
1666     v.isBlob = imageCanvas.isBlob;
1667   } else if (prop === 'isDataUri') {
1668     v.isDataUri = imageCanvas.isDataUri;
1669   } else if (prop === 'isSvg') {
1670     v.isSvg = imageCanvas.isSvg;
1671   } else if (prop === 'isCanvas') {
1672     v.isCanvas = imageCanvas.isCanvas;
1673   } else if (prop === 'isImage') {
1674     v.isImage = imageCanvas.isImage;
1675   } else if (prop === 'isVideo') {
1676     v.isVideo = imageCanvas.isVideo;
1677   } else if (prop === 'isAudio') {
1678     v.isAudio = imageCanvas.isAudio;
1679   }
1680   meta2d.setValue(v, { render });
1681 };
1682
1683 export const updateImageImageGroup = (imageImageGroup: any, prop: string, render = true) => {
1684   const v: any = { id: imageImageGroup.id };
1685   v[prop] = imageImageGroup[prop];
1686   if (prop === 'x') {
1687     v.x = imageImageGroup.x;
1688   } else if (prop === 'y') {
1689     v.y = imageImageGroup.y;
1690   } else if (prop === 'width') {
1691     v.width = imageImageGroup.width;
1692   } else if (prop === 'height') {
1693     v.height = imageImageGroup.height;
1694   } else if (prop === 'angle') {
1695     v.angle = imageImageGroup.angle;
1696   } else if (prop === 'opacity') {
1697     v.opacity = imageImageGroup.opacity;
1698   } else if (prop === 'filter') {
1699     v.filter = imageImageGroup.filter;
1700   } else if (prop === 'src') {
1701     v.src = imageImageGroup.src;
1702   } else if (prop === 'alt') {
1703     v.alt = imageImageGroup.alt;
1704   } else if (prop === 'crossOrigin') {
1705     v.crossOrigin = imageImageGroup.crossOrigin;
1706   } else if (prop === 'referrerPolicy') {
1707     v.referrerPolicy = imageImageGroup.referrerPolicy;
1708   } else if (prop === 'integrity') {
1709     v.integrity = imageImageGroup.integrity;
1710   } else if (prop === 'isMap') {
1711     v.isMap = imageImageGroup.isMap;
1712   } else if (prop === 'isBlob') {
1713     v.isBlob = imageImageGroup.isBlob;
1714   } else if (prop === 'isDataUri') {
1715     v.isDataUri = imageImageGroup.isDataUri;
1716   } else if (prop === 'isSvg') {
1717     v.isSvg = imageImageGroup.isSvg;
1718   } else if (prop === 'isCanvas') {
1719     v.isCanvas = imageImageGroup.isCanvas;
1720   } else if (prop === 'isImage') {
1721     v.isImage = imageImageGroup.isImage;
1722   } else if (prop === 'isVideo') {
1723     v.isVideo = imageImageGroup.isVideo;
1724   } else if (prop === 'isAudio') {
1725     v.isAudio = imageImageGroup.isAudio;
1726   }
1727   meta2d.setValue(v, { render });
1728 };
1729
1730 export const updateImageImageLayer = (imageImageLayer: any, prop: string, render = true) => {
1731   const v: any = { id: imageImageLayer.id };
1732   v[prop] = imageImageLayer[prop];
1733   if (prop === 'x') {
1734     v.x = imageImageLayer.x;
1735   } else if (prop === 'y') {
1736     v.y = imageImageLayer.y;
1737   } else if (prop === 'width') {
1738     v.width = imageImageLayer.width;
1739   } else if (prop === 'height') {
1740     v.height = imageImageLayer.height;
1741   } else if (prop === 'angle') {
1742     v.angle = imageImageLayer.angle;
1743   } else if (prop === 'opacity') {
1744     v.opacity = imageImageLayer.opacity;
1745   } else if (prop === 'filter') {
1746     v.filter = imageImageLayer.filter;
1747   } else if (prop === 'src') {
1748     v.src = imageImageLayer.src;
1749   } else if (prop === 'alt') {
1750     v.alt = imageImageLayer.alt;
1751   } else if (prop === 'crossOrigin') {
1752     v.crossOrigin = imageImageLayer.crossOrigin;
1753   } else if (prop === 'referrerPolicy') {
1754     v.referrerPolicy = imageImageLayer.referrerPolicy;
1755   } else if (prop === 'integrity') {
1756     v.integrity = imageImageLayer.integrity;
1757   } else if (prop === 'isMap') {
1758     v.isMap = imageImageLayer.isMap;
1759   } else if (prop === 'isBlob') {
1760     v.isBlob = imageImageLayer.isBlob;
1761   } else if (prop === 'isDataUri') {
1762     v.isDataUri = imageImageLayer.isDataUri;
1763   } else if (prop === 'isSvg') {
1764     v.isSvg = imageImageLayer.isSvg;
1765   } else if (prop === 'isCanvas') {
1766     v.isCanvas = imageImageLayer.isCanvas;
1767   } else if (prop === 'isImage') {
1768     v.isImage = imageImageLayer.isImage;
1769   } else if (prop === 'isVideo') {
1770     v.isVideo = imageImageLayer.isVideo;
1771   } else if (prop === 'isAudio') {
1772     v.isAudio = imageImageLayer.isAudio;
1773   }
1774   meta2d.setValue(v, { render });
1775 };
1776
1777 export const updateImageImageCanvas = (imageImageCanvas: any, prop: string, render = true) => {
1778   const v: any = { id: imageImageCanvas.id };
1779   v[prop] = imageImageCanvas[prop];
1780   if (prop === 'x') {
1781     v.x = imageImageCanvas.x;
1782   } else if (prop === 'y') {
1783     v.y = imageImageCanvas.y;
1784   } else if (prop === 'width') {
1785     v.width = imageImageCanvas.width;
1786   } else if (prop === 'height') {
1787     v.height = imageImageCanvas.height;
1788   } else if (prop === 'angle') {
1789     v.angle = imageImageCanvas.angle;
1790   } else if (prop === 'opacity') {
1791     v.opacity = imageImageCanvas.opacity;
1792   } else if (prop === 'filter') {
1793     v.filter = imageImageCanvas.filter;
1794   } else if (prop === 'src') {
1795     v.src = imageImageCanvas.src;
1796   } else if (prop === 'alt') {
1797     v.alt = imageImageCanvas.alt;
1798   } else if (prop === 'crossOrigin') {
1799     v.crossOrigin = imageImageCanvas.crossOrigin;
1800   } else if (prop === 'referrerPolicy') {
1801     v.referrerPolicy = imageImageCanvas.referrerPolicy;
1802   } else if (prop === 'integrity') {
1803     v.integrity = imageImageCanvas.integrity;
1804   } else if (prop === 'isMap') {
1805     v.isMap = imageImageCanvas.isMap;
1806   } else if (prop === 'isBlob') {
1807     v.isBlob = imageImageCanvas.isBlob;
1808   } else if (prop === 'isDataUri') {
1809     v.isDataUri = imageImageCanvas.isDataUri;
1810   } else if (prop === 'isSvg') {
1811     v.isSvg = imageImageCanvas.isSvg;
1812   } else if (prop === 'isCanvas') {
1813     v.isCanvas = imageImageCanvas.isCanvas;
1814   } else if (prop === 'isImage') {
1815     v.isImage = imageImageCanvas.isImage;
1816   } else if (prop === 'isVideo') {
1817     v.isVideo = imageImageCanvas.isVideo;
1818   } else if (prop === 'isAudio') {
1819     v.isAudio = imageImageCanvas.isAudio;
1820   }
1821   meta2d.setValue(v, { render });
1822 };
1823
1824 export const updateImageImageImageGroup = (imageImageImageGroup: any, prop: string, render = true) => {
1825   const v: any = { id: imageImageImageGroup.id };
1826   v[prop] = imageImageImageGroup[prop];
1827   if (prop === 'x') {
1828     v.x = imageImageImageGroup.x;
1829   } else if (prop === 'y') {
1830     v.y = imageImageImageGroup.y;
1831   } else if (prop === 'width') {
1832     v.width = imageImageImageGroup.width;
1833   } else if (prop === 'height') {
1834     v.height = imageImageImageGroup.height;
1835   } else if (prop === 'angle') {
1836     v.angle = imageImageImageGroup.angle;
1837   } else if (prop === 'opacity') {
1838     v.opacity = imageImageImageGroup.opacity;
1839   } else if (prop === 'filter') {
1840     v.filter = imageImageImageGroup.filter;
1841   } else if (prop === 'src') {
1842     v.src = imageImageImageGroup.src;
1843   } else if (prop === 'alt') {
1844     v.alt = imageImageImageGroup.alt;
1845   } else if (prop === 'crossOrigin') {
1846     v.crossOrigin = imageImageImageGroup.crossOrigin;
1847   } else if (prop === 'referrerPolicy') {
1848     v.referrerPolicy = imageImageImageGroup.referrerPolicy;
1849   } else if (prop === 'integrity') {
1850     v.integrity = imageImageImageGroup.integrity;
1851   } else if (prop === 'isMap') {
1852     v.isMap = imageImageImageGroup.isMap;
1853   } else if (prop === 'isBlob') {
1854     v.isBlob = imageImageImageGroup.isBlob;
1855   } else if (prop === 'isDataUri') {
1856     v.isDataUri = imageImageImageGroup.isDataUri;
1857   } else if (prop === 'isSvg') {
1858     v.isSvg = imageImageImageGroup.isSvg;
1859   } else if (prop === 'isCanvas') {
1860     v.isCanvas = imageImageImageGroup.isCanvas;
1861   } else if (prop === 'isImage') {
1862     v.isImage = imageImageImageGroup.isImage;
1863   } else if (prop === 'isVideo') {
1864     v.isVideo = imageImageImageGroup.isVideo;
1865   } else if (prop === 'isAudio') {
1866     v.isAudio = imageImageImageGroup.isAudio;
1867   }
1868   meta2d.setValue(v, { render });
1869 };
1870
1871 export const updateImageImageImageLayer = (imageImageImageLayer: any, prop: string, render = true) => {
1872   const v: any = { id: imageImageImageLayer.id };
1873   v[prop] = imageImageImageLayer[prop];
1874   if (prop === 'x') {
1875     v.x = imageImageImageLayer.x;
1876   } else if (prop === 'y') {
1877     v.y = imageImageImageLayer.y;
1878   } else if (prop === 'width') {
1879     v.width = imageImageImageLayer.width;
1880   } else if (prop === 'height') {
1881     v.height = imageImageImageLayer.height;
1882   } else if (prop === 'angle') {
1883     v.angle = imageImageImageLayer.angle;
1884   } else if (prop === 'opacity') {
1885     v.opacity = imageImageImageLayer.opacity;
1886   } else if (prop === 'filter') {
1887     v.filter = imageImageImageLayer.filter;
1888   } else if (prop === 'src') {
1889     v.src = imageImageImageLayer.src;
1890   } else if (prop === 'alt') {
1891     v.alt = imageImageImageLayer.alt;
1892   } else if (prop === 'crossOrigin') {
1893     v.crossOrigin = imageImageImageLayer.crossOrigin;
1894   } else if (prop === 'referrerPolicy') {
1895     v.referrerPolicy = imageImageImageLayer.referrerPolicy;
1896   } else if (prop === 'integrity') {
1897     v.integrity = imageImageImageLayer.integrity;
1898   } else if (prop === 'isMap') {
1899     v.isMap = imageImageImageLayer.isMap;
1900   } else if (prop === 'isBlob') {
1901     v.isBlob = imageImageImageLayer.isBlob;
1902   } else if (prop === 'isDataUri') {
1903     v.isDataUri = imageImageImageLayer.isDataUri;
1904   } else if (prop === 'isSvg') {
1905     v.isSvg = imageImageImageLayer.isSvg;
1906   } else if (prop === 'isCanvas') {
1907     v.isCanvas = imageImageImageLayer.isCanvas;
1908   } else if (prop === 'isImage') {
1909     v.isImage = imageImageImageLayer.isImage;
1910   } else if (prop === 'isVideo') {
1911     v.isVideo = imageImageImageLayer.isVideo;
1912   } else if (prop === 'isAudio') {
1913     v.isAudio = imageImageImageLayer.isAudio;
1914   }
1915   meta2d.setValue(v, { render });
1916 };
1917
1918 export const updateImageImageImageCanvas = (imageImageImageCanvas: any, prop: string, render = true) => {
1919   const v: any = { id: imageImageImageCanvas.id };
1920   v[prop] = imageImageImageCanvas[prop];
1921   if (prop === 'x') {
1922     v.x = imageImageImageCanvas.x;
1923   } else if (prop === 'y') {
1924     v.y = imageImageImageCanvas.y;
1925   } else if (prop === 'width') {
1926     v.width = imageImageImageCanvas.width;
1927   } else if (prop === 'height') {
1928     v.height = imageImageImageCanvas.height;
1929   } else if (prop === 'angle') {
1930     v.angle = imageImageImageCanvas.angle;
1931   } else if (prop === 'opacity') {
1932     v.opacity = imageImageImageCanvas.opacity;
1933   } else if (prop === 'filter') {
1934     v.filter = imageImageImageCanvas.filter;
1935   } else if (prop === 'src') {
1936     v.src = imageImageImageCanvas.src;
1937   } else if (prop === 'alt') {
1938     v.alt = imageImageImageCanvas.alt;
1939   } else if (prop === 'crossOrigin') {
1940     v.crossOrigin = imageImageImageCanvas.crossOrigin;
1941   } else if (prop === 'referrerPolicy') {
1942     v.referrerPolicy = imageImageImageCanvas.referrerPolicy;
1943   } else if (prop === 'integrity') {
1944     v.integrity = imageImageImageCanvas.integrity;
1945   } else if (prop === 'isMap') {
1946     v.isMap = imageImageImageCanvas.isMap;
1947   } else if (prop === 'isBlob') {
1948     v.isBlob = imageImageImageCanvas.isBlob;
1949   } else if (prop === 'isDataUri') {
1950     v.isDataUri = imageImageImageCanvas.isDataUri;
1951   } else if (prop === 'isSvg') {
1952     v.isSvg = imageImageImageCanvas.isSvg;
1953   } else if (prop === 'isCanvas') {
1954     v.isCanvas = imageImageImageCanvas.isCanvas;
1955   } else if (prop === 'isImage') {
1956     v.isImage = imageImageImageCanvas.isImage;
1957   } else if (prop === 'isVideo') {
1958     v.isVideo = imageImageImageCanvas.isVideo;
1959   } else if (prop === 'isAudio') {
1960     v.isAudio = imageImageImageCanvas.isAudio;
1961   }
1962   meta2d.setValue(v, { render });
1963 };
1964
1965 export const updateImageImageImageImageGroup = (imageImageImageImageGroup: any, prop: string, render = true) => {
1966   const v: any = { id: imageImageImageImageGroup.id };
1967   v[prop] = imageImageImageImageGroup[prop];
1968   if (prop === 'x') {
1969     v.x = imageImageImageImageGroup.x;
1970   } else if (prop === 'y') {
1971     v.y = imageImageImageImageGroup.y;
1972   } else if (prop === 'width') {
1973     v.width = imageImageImageImageGroup.width;
1974   } else if (prop === 'height') {
1975     v.height = imageImageImageImageGroup.height;
1976   } else if (prop === 'angle') {
1977     v.angle = imageImageImageImageGroup.angle;
1978   } else if (prop === 'opacity') {
1979     v.opacity = imageImageImageImageGroup.opacity;
1980   } else if (prop === 'filter') {
1981     v.filter = imageImageImageImageGroup.filter;
1982   } else if (prop === 'src') {
1983     v.src = imageImageImageImageGroup.src;
1984   } else if (prop === 'alt') {
1985     v.alt = imageImageImageImageGroup
```



```

4
5 const addAnimate = () => {
6   openedCollapses.value.push(props.pen.animations.length);
7   props.pen.animations.push({
8     name: '动画' + (props.pen.animations.length + 1),
9   });
10 };
11
12 const changeAnimate = (item: any) => {
13   const animate: any = animateList.find((elem: any) => {
14     return elem.value === item.animate;
15   });
16   if (!animate) {
17     return;
18   }
19   item.frames = deepClone(animate.data);
20 };
21
22 const play = (i: number) => {
23   meta2d.startAnimate(props.pen.id, i); 动画执行
24   isPlaying.value = i;
25 };
26
27 const stop = () => {
28   meta2d.stopAnimate(props.pen.id); 动画停止
29   isPlaying.value = -1;
30 };

```

animations 属性用于存放该节点配置的多个动画，最终动画的执行是由 frames 属性控制的，通过 startAnimate/stopAnimate 方法控制动画的执行/停止。动画相关属性介绍可查看文档：

<https://doc.le5le.com/document/119895613>

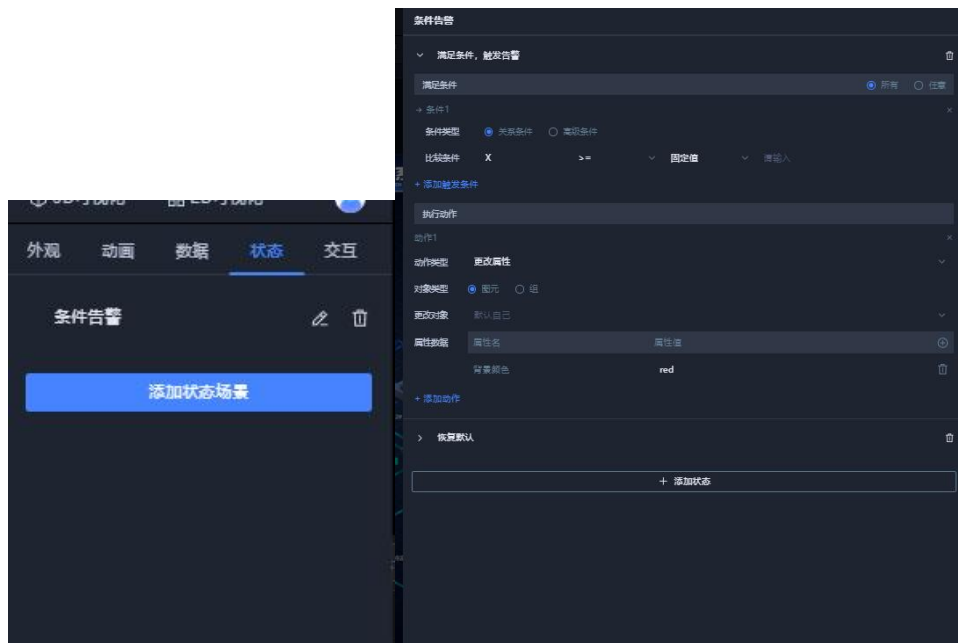
### 3. 数据（components/PenDatas.vue）

数据主要是绑定数据点和设置（值变化）触发器，主要是修改 pen 的 realTimes 属性，具体可以查看文档：<https://doc.le5le.com/document/135786389>



### 4. 状态（components/PenStatus.vue）

状态可以用作监听数据的值变化，做状态判断，执行动作行为。



### 5. 交互（components/PenEvents.vue）

交互主要是配置节点的交互事件，主要修改的是 pen 的 events 属性，具体可以查看文档：<https://doc.le5le.com/document/119627190>





### 5.1.3.3 多选图元

- ① 目录 components/PensProps.vue
- ② 源码说明：



外观主要包括对多个图元的统一锁定、显示状态的修改，设置分组，对齐操作以及外观、文字等一些公共样式的统一修改。

锁定/显示主要通过调用核心库 `setValue`、`setVisible` 方法。

```
const lock = (v: LockState) => {
  data.locked = v;
  for (const item of selections.pens) {
    meta2d.setValue({
      id: item.id,
      locked: v,
    });
  }
};

const visible = (v: boolean) => {
  data.visible = v;
  for (const item of selections.pens) {
    meta2d.setVisible(item as any, v);
  }
};
```

对齐操作也是直接调用核心库开源方法，具体方法说明可见文档：

<https://doc.le5le.com/document/119882449#%E5%87%BD%E6%95%B0>

```
const align = (align: string) => {
  if (align === 'h-distribute') {
    meta2d.spaceBetween(meta2d.store.active);
  } else if (align === 'v-distribute') {
    meta2d.spaceBetweenColumn(meta2d.store.active);
  } else {
    meta2d.alignNodes(align, meta2d.store.active);
  }
};

const align2 = (align: string) => {
  if (align === 'same-size') {
    meta2d.beSameByLast(meta2d.store.active);
  } else {
    meta2d.alignNodesByLast(align, meta2d.store.active);
  }
};
```

修改公共样式和上面修改单个图元样式一样，调用核心库 `setValue` 方法，特殊属性提前处理。注意这里遍历所有 `pen` 进行 `setValue` 是没有直接 `render` 的，最后再统一 `render`。具体可以参考文档：

<https://doc.le5le.com/document/119882449#setValue>

```

854 };
855
856 const align = (align: string) => {
857   if (align === 'h-distribute') {
858     meta2d.spaceBetween(meta2d.store.active);
859   } else if (align === 'v-distribute') {
860     meta2d.spacebetweenColumn(meta2d.store.active);
861   } else {
862     meta2d.alignNodes(align, meta2d.store.active);
863   }
864 };
865
866 const align2 = (align: string) => {
867   if (align === 'same-size') {
868     meta2d.besameByLast(meta2d.store.active);
869   } else {
870     meta2d.alignNodesByLast(align, meta2d.store.active);
871   }
872 };
873
874
875
876 const changeValue = (prop: string) => {
877   for (const item of selections.pens) {
878     data.id = item.id;
879     updatePen(data, prop, false);
880   }
881   meta2d.render();
882 };
883
884
885 const onFontFamily = (fontfamily: string) => {
886   data.fontfamily = fontfamily;
887   data.fontfamilypopupVisible = false;
888   changeValue('fontfamily');
889 };
890
891
892 const onFontPopupVisible = (val: boolean) => {
893   data.fontfamilypopupVisible = val;
894 };
895
896
897
898
899
900

```

```

1  export const updatePen = (pen: any, prop: string, render = true) => {
2    const v: any = { id: pen.id };
3    v[prop] = prop;
4    if (prop === 'width' && pen.ratio) {
5      const rect = meta2d.findOne(pen.id);
6      v.height = (pen.width / rect.width) * rect.height;
7      pen.height = v.height;
8    } else if (prop === 'height' && pen.ratio) {
9      const rect = meta2d.findOne(pen.id);
10     v.width = (pen.height / rect.height) * rect.width;
11     pen.width = v.width;
12   } else if (prop === 'shadow') {
13     if (v[prop]) {
14       lv.shadowOffsetX && (v.shadowOffsetx = 0);
15       lv.shadowOffsetY && (v.shadowoffsety = 0);
16       lv.shadowBlur && (v.shadowblur = 0);
17     } else {
18       v.shadowColor = '';
19     }
20   } else if (prop === 'linegradientcolor') {
21     // @ts-ignore (property) Meta2d.store: Meta2dStore
22     if (meta2d.store.active[0].name === 'line') {
23       // @ts-ignore
24       meta2d.store.active[0].calculative.gradientcolorStop = null;
25     } else {
26       // @ts-ignore
27       meta2d.store.active[0].calculative.linegradient = null;
28     }
29     // 不同模式切换不同的系统配色
30   } else if (prop === 'titlefn') {
31     v.titlefn = null;
32   } else if (prop === 'dash') {
33     v.lineDash = lineDashObj[v[prop]];
34   }
35   meta2d.setValue(v, { render });
36 };

```

## 5.2 预览页面

预览页面只有中心画布用于展示大屏页面。

```

EXPLORER
  src > views > Preview.vue
  src > views > Preview.vue > {} script setup > open
  You, 2 months ago | 2 authors (You and others)
  1 <template>
  2   <div class="preview" :style="{ background: bgColor}">
  3     <div class="meta2d-canvas" ref="meta2dDom"></div>
  4   </div>
  5 </template>
  6
  7 <script setup lang="ts">
  8   import { ref, onMounted, watch, onUnmounted } from 'vue';
  9   import localforage from 'localforage';
 10   import { localStorageName } from '@services/utills';
 11   import { defaultFormat } from '@services/defaults';
 12   import { useRouter, useRoute } from 'vue-router';

```

对应运行某个大屏图纸：



## 六 目录介绍

### 6.1 Public 公共静态资源目录

public/diagram.js 图形库

public/icon 项目图标库

public/img 项目图片资源存放

public/js 项目需要的一些离线资源包，例如 echarts 包（echarts.min.js）

public/theme echarts 图形库主题文件存放位置，具体可以查看：

<https://echarts.apache.org/zh/theme-builder.html>

public/view 编辑器“下载离线部署包”/“组件”等功能所需要的运行环境文件

Public/data.xlsx 数据集 Excel 示例

Public/favicon.ico 左上角 logo

Public/rotate.cur 图形节点旋转时鼠标样式

### 6.2 Src 开发目录

Src/assets 静态资源，fonts 下是系统字体

Src/router 路由配置

Src/services 公用服务（公用方法）

Src/styles 公用样式文件

Src/views 主要的页面，首页和预览页面

Src/views/components 组件

Src/App.vue 主组件

Src/global.d.ts 可以从全局范围访问的库

Src/http.ts axios 配置和网络请求/响应拦截器

Src/main.ts 入口 ts 文件

### 6.3 其他

Index.html 入口 html 文件

Package.json 项目依赖描述

postcss.config.js postcss 配置文件

Tsconfig.json ts 配置文件

Vite.config.ts vite 配置文件

## 七 运行流程

Vue 项目运行流程：index.html > App.vue 的 export 外的 js 代码 > main.js > App.vue 的 export 里面的 js 代码

想了解更多请学习 vue: <https://v3.cn.vuejs.org/>  
快速修改代码：用 VS code 搜索关键字

## 八 代码中实现登录链接

### 8.1 完全自己实现后端

可以参考后端 API 接口文档: <https://doc.le5le.com/document/7>

### 8.2 购买了乐吾乐后端

参考后端使用手册运行部署后端。然后通过前后端分离模式部署即可

## 九 部署集成

因为大屏编辑器代码比较重，推荐直接独立部署，通过域名访问或者 iframe 嵌入。