

The logo features the text "NF 19" in a large, white, sans-serif font. The "NF" is positioned above the "19". This text is centered over a blue, pixelated globe. The globe is surrounded by a network of white dots and lines, suggesting a global or digital theme. The entire composition is set against a dark background with faint, curved lines.

NF
19

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NF
19

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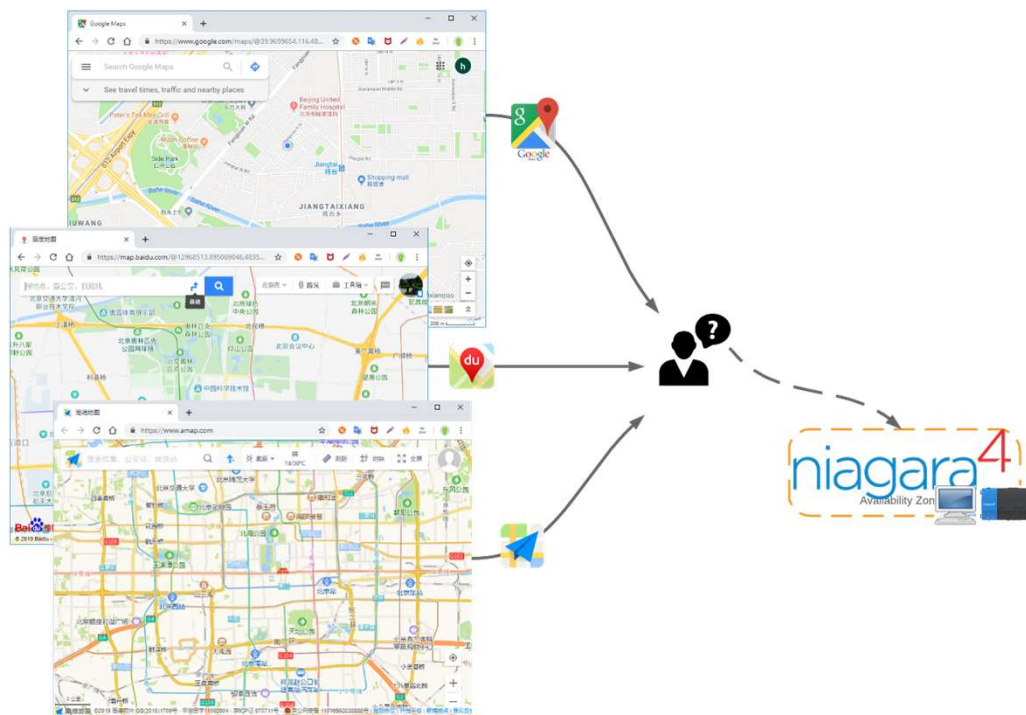
Niagara与GIS系统的集成

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遇到的问题



- 提供哪些协议?
 - MQTT, CoAP, oBIX, ...
 - REST API
- 是否提供SDK?
 - C/C++ SDK, Java SDK, ...
 - Android SDK, iOS SDK
 - JavaScript API

- 基于协议开发Niagara模块
- 基于Java SDK开发Niagara模块

方案的选择

- 百度地图

> JavaScript API支持异步加载, 您可以在引用脚本的时候添加callback参数, 当脚本加载完成后callback函数会被立刻调用。

- 高德地图

> JS API支持多种加载方式, 可以顺序加载也可以异步加载, 同时也可以作为一般脚本资源被 RequireJS等前端框架加载。

- Google地图

> JavaScript API支持多种加载方式, 可以顺序加载也可以异步加载。

- bajaxux优势

- ✓ JavaScript, RequireJS模块加载
- ✓ BajaScript, 与Niagara站点交互
- ✓ HTML5 Widget框架
- ✓ 众多开源的前端资源



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bajaux

Niagara提供的HTML5 Widget框架

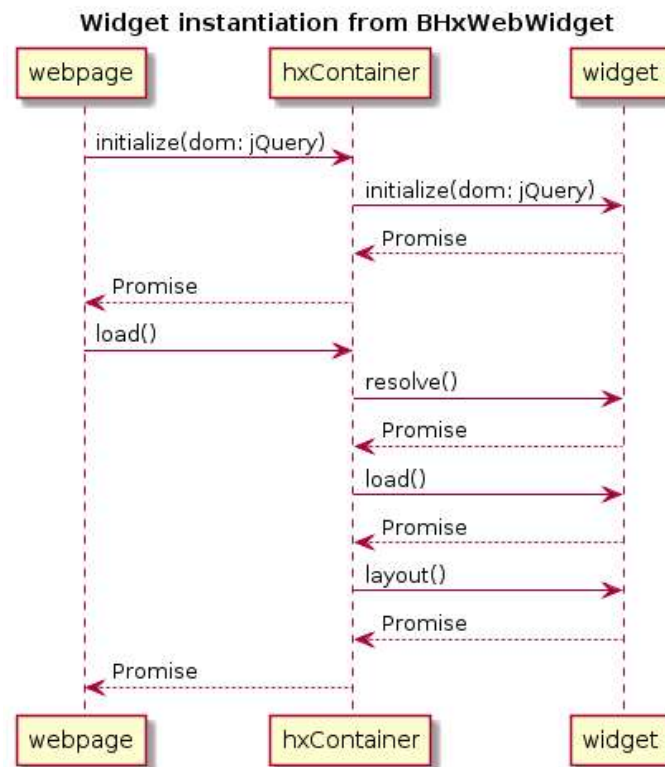


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bajaux

- 基于BajaScript完成与Niagara站点的数据交互
- 如何开发一个bajaux Widget:
 1. 定义Widget对象
 - 使用`properties()`添加自定义Px属性
 - 添加订阅功能`subscriberMixIn`
 2. 初始化并绑定到页面上 - `doInitialize()`
 3. 读取站点数据并显示 - `doLoad()`
 4. 读取页面数据 - `doRead()`
 5. 保存页面数据 - `doSave()`



bajaux Widget示例

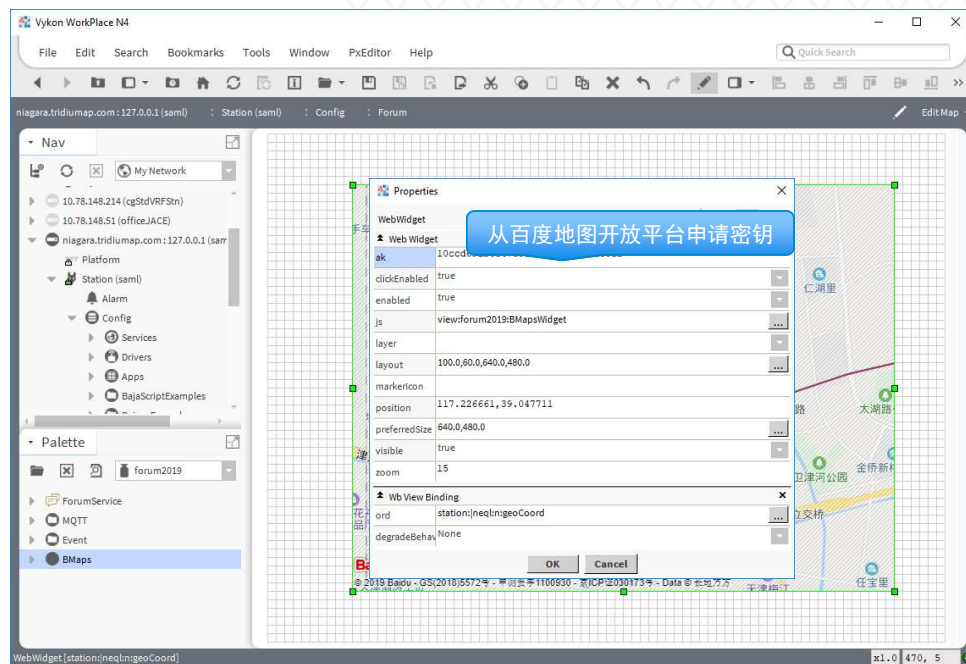
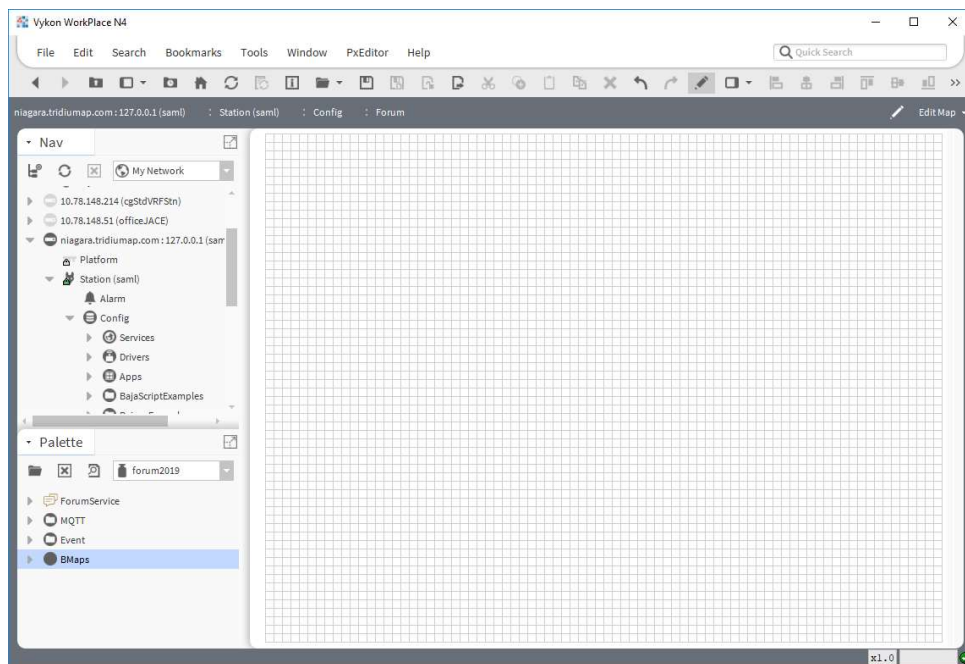
以百度地图为例



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最终的效果



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可能的场景

Forum (Folder)

- Map Px View
- temp 25.5 {ok} @ def
- humidity 22.2 {alarm,unackedAlarm} @ def

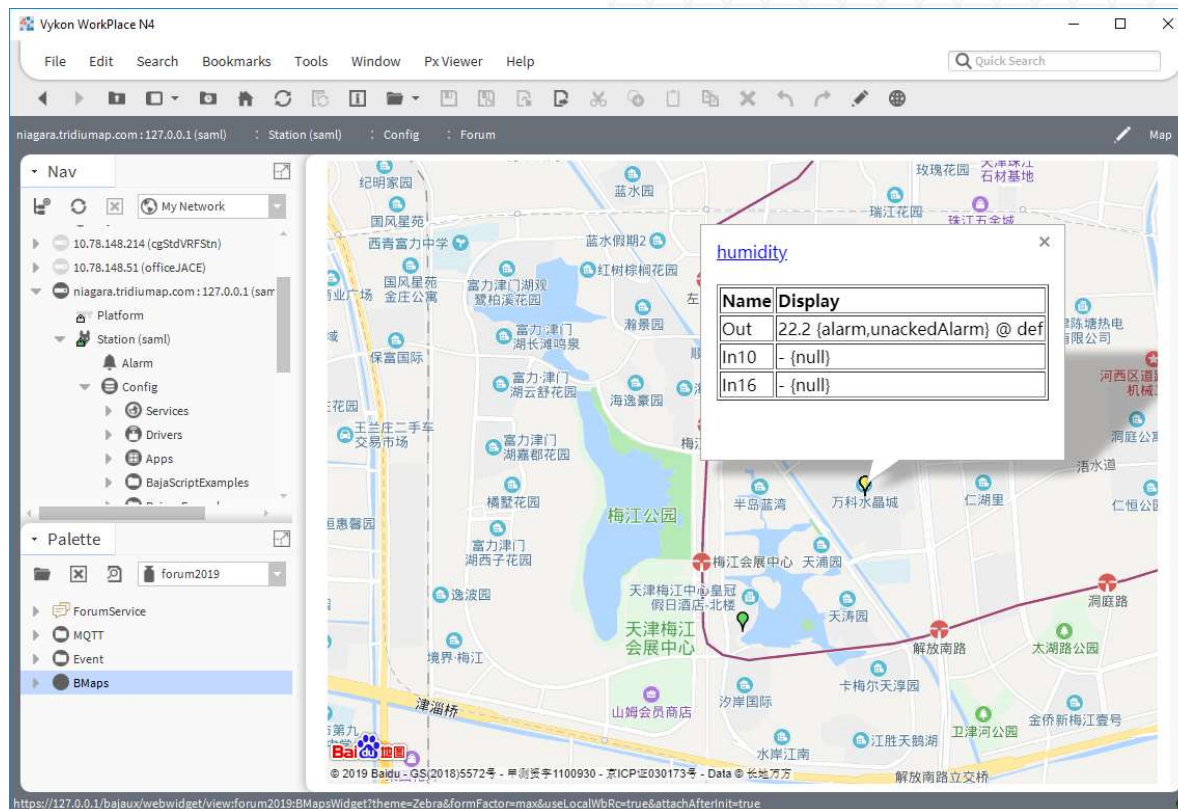
Facets units=null,precision=1,min=-inf,max=+inf

| Proxy Ext | Value |
|-----------|---------------------------------|
| Out | 22.2 {alarm,unackedAlarm} @ def |
| In1 | - {null} |
| In2 | - {null} |
| In3 | - {null} |
| In4 | - {null} |
| In5 | - {null} |
| In6 | - {null} |
| In7 | - {null} |
| In8 | - {null} |
| In9 | - {null} |
| In10 | - {null} |
| In11 | - {null} |
| In12 | - {null} |
| In13 | - {null} |
| In14 | - {null} |
| In15 | 0.0 {down,stale} |
| In16 | - {null} |
| Fallback | 22.2 {ok} |

Override Expiration null

n:geoCoord 117.235106,39.05504

OutOfRangeAlarmExt Alarm Source Ext

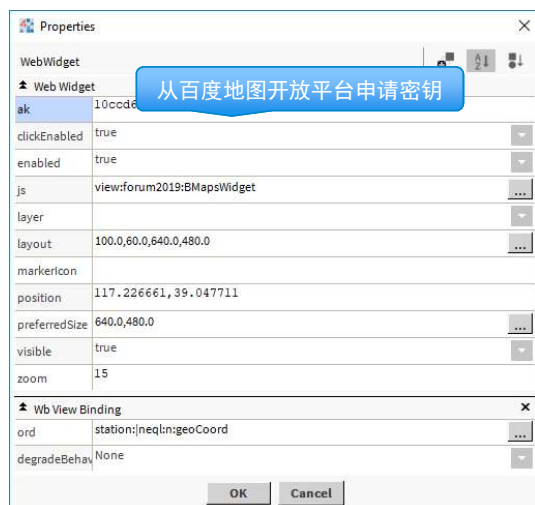


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如何开发？

- 定义 *BMapsWidget* 进行自定义属性的配置



```
var BMapsWidget = function () {  
    var that = this;  
    Widget.apply(that, arguments);  
  
    that.properties().  
        .add("ak", "10ccdc186c7f6e2d7be7f9e2e2ed1")  
        .add("position", "116.404,39.915")  
        .add({  
            name: 'zoom',  
            value: 15,  
            typeSpec: 'baja:Integer'  
        })  
        .add("clickEnabled", false)  
        .add("markerIcon", "");  
  
    subscriberMixin(that);  
};
```

BMapsWidget.prototype = new Widget();
BMapsWidget.prototype.constructor = BMapsWidget;

如何开发？

- *doInitialize*

将百度地图加载到前端页面上

注意：由于这里用到了*RequireJS*的第三方插件*async*，所以需要事先配置好*async*的路径。

```
BMapsWidget.prototype.doInitialize = function (dom) {
    var that = this;
    console.info("BMapsWidget initializing");
    dom.addClass(BMAPS_CLASS);
    dom.html(bMapsTemplate({}));

    var mapApi = "https://api.map.baidu.com/api?v=3.0&ak=" + that.properties().getValue("ak");

    return new Promise(function (resolve, reject) {
        require(['async!' + mapApi], function () {
            resolve();

            console.info("Baidu Map API initialized");
            // 百度地图API功能
            that.$bmaps = BMap;
            that.$map = new that.$bmaps.Map(getMapContainer(dom));
            var central = decodeLatLng(that.properties().getValue("position"));
            var point = new that.$bmaps.Point(central.lng, central.lat);
            that.$map.centerAndZoom(point, that.properties().getValue("zoom"));

            // 创建标注
            var markerIcon = that.properties().getValue("markerIcon");
            if (markerIcon) {
                var opts = {
                    // 图片相对于可视区域的偏移值
                    anchor: new that.$bmaps.Size(1, -1)
                };
                var icon = new that.$bmaps.Icon(markerIcon, new that.$bmaps.Size(300, 157), opts);
                // 创建标注
                var marker = new that.$bmaps.Marker(point, {icon: icon});
                that.$map.addOverlay(marker);
            }
            // 监听地图单击事件
            var attachClickEvent = that.properties().getValue("clickEnabled");
            if (attachClickEvent) {
                that.$map.addEventListener("click", function (e) {
                    var geoCoord = e.point.lng + ',' + e.point.lat;
                    console.info("Coord: " + geoCoord);
                    // 存储到BForumService
                    baja.Ord.make("station:|slot:/Services/ForumService").get()
                        .then(function (forum) {
                            forum.setGeoCoord(geoCoord);
                        })
                });
            }
        });
    });
};
```



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如何开发？

```
function config(require, modulePrefix, isWebDevJs) {  
  // workaround to allow cross-site iframe  
  require.config.baja.disableConnectionReuse = true;  
  // configure async require plugin  
  require.paths.async = modulePrefix + "forum2019/rc/async";  
}
```

```
@NiagaraType  
@NiagaraSingleton  
public class BAsyncRequireJsConfig extends BSingleton implements BRequireJsConfig {  
  /*+ ----- BEGIN BAJA AUTO GENERATED CODE ----- +*/  
  /*@ $com.tridiummap.forum2019.ux.BAsyncRequireJsConfig(3933907701)1.0$ @*/  
  /* Generated Tue Apr 23 12:52:53 CST 2019 by Slot-o-Matic (c) Tridium, Inc. 2012 */  
  
  public static final BAsyncRequireJsConfig INSTANCE = new BAsyncRequireJsConfig();  
  
  //////////////////////////////////////  
  // Type  
  //////////////////////////////////////  
  
  @Override  
  public Type getType() {  
    return TYPE;  
  }  
  
  public static final Type TYPE = Sys.loadType(BAsyncRequireJsConfig.class);  
  
  /*+ ----- END BAJA AUTO GENERATED CODE ----- +*/  
  
  @Override  
  public JsInfo getJsInfo(Context context) {  
    return JS_INFO;  
  }  
  
  private static final JsInfo JS_INFO = JsInfo.make(  
    BOrd.make("module://forum2019/rc/asyncRequireJsConfig.js"));  
}
```



如何开发？

- *doLoad*

将配置了n:geoCoord标签的数据在百度地图上创建出相应的标注，同时订阅了这些数据的变化。

```
BMapsWidget.prototype.doLoad = function (table) {
  var that = this;
  console.info("BMapsWidget loading");
  //Load the results of the query onto the Map.
  return table.cursor()
    .then(function (cursor) {
      var entities = [];
      cursor.each(function () {
        entities.push(this.get());
      });
      return entities;
    })
    .then(function (entities) {
      return Promise.all(_.map(entities, function (entity) {
        return entity.tags();
      }));
    })
    .then(function (tagSets) {
      tagSets = _.filter(tagSets, function (tags) {
        return tags.contains("n:ordInSession") && tags.contains("n:geoCoord");
      });

      var ords = _.map(tagSets, function (tags) {
        return tags.get("n:ordInSession");
      });

      return new baja.BatchResolve(ords)
        .resolve({subscriber: that.getSubscriber()});
    })
    .then(function (batchResolve) {
      var comps = batchResolve.getTargetObjects();

      _.each(comps, function (comp) {
        addMarker(that, comp);
      });
    });
};
```



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如何开发？

- *module.palette*

```
<p h="1" m="b=baja" t="b:UnrestrictedFolder">
  <!-- /bmaps -->
  <p n="BMaps" m="wb=workbench" t="wb:WebWidget">
    <p n="layout" m="ui=bajai" t="ui:Layout" v="0.0,0.0,640.0,480.0"/>
    <p n="js" t="b:Ord" v="view:forum2019:BMapsWidget"/>
    <!-- /bmaps/wbViewBinding -->
    <p n="wbViewBinding" t="wb:WbViewBinding">
      <p n="ord" v="station:|neql:n:geoCoord" />
    </p>
  </p>
</p>
```



更多内容

- *doRead*

将页面的数据读取到一个JavaScript对象

- *doSave*

将上述JavaScript对象中的数据保存到Niagara站点

- *doDestroy*

资源回收，避免内存泄漏

谢谢！



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