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THE SCIENCE OF WHERE™

Développer avec l'ArcGIS Maps SDK for JavaScript

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2024 - NOVEMBRE

Sommaire

Les bases du développement web

Quels sont les langages du web ? Qu'est-ce qu'une API ? Qu'est-ce qu'un SDK ?

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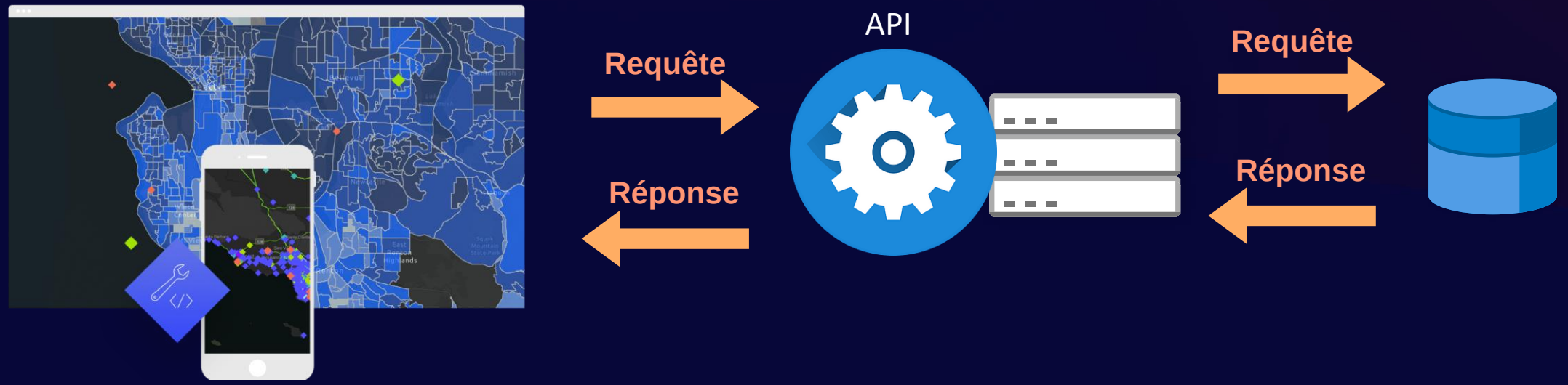
Les 3 langages du développement web

Contenu / Structure

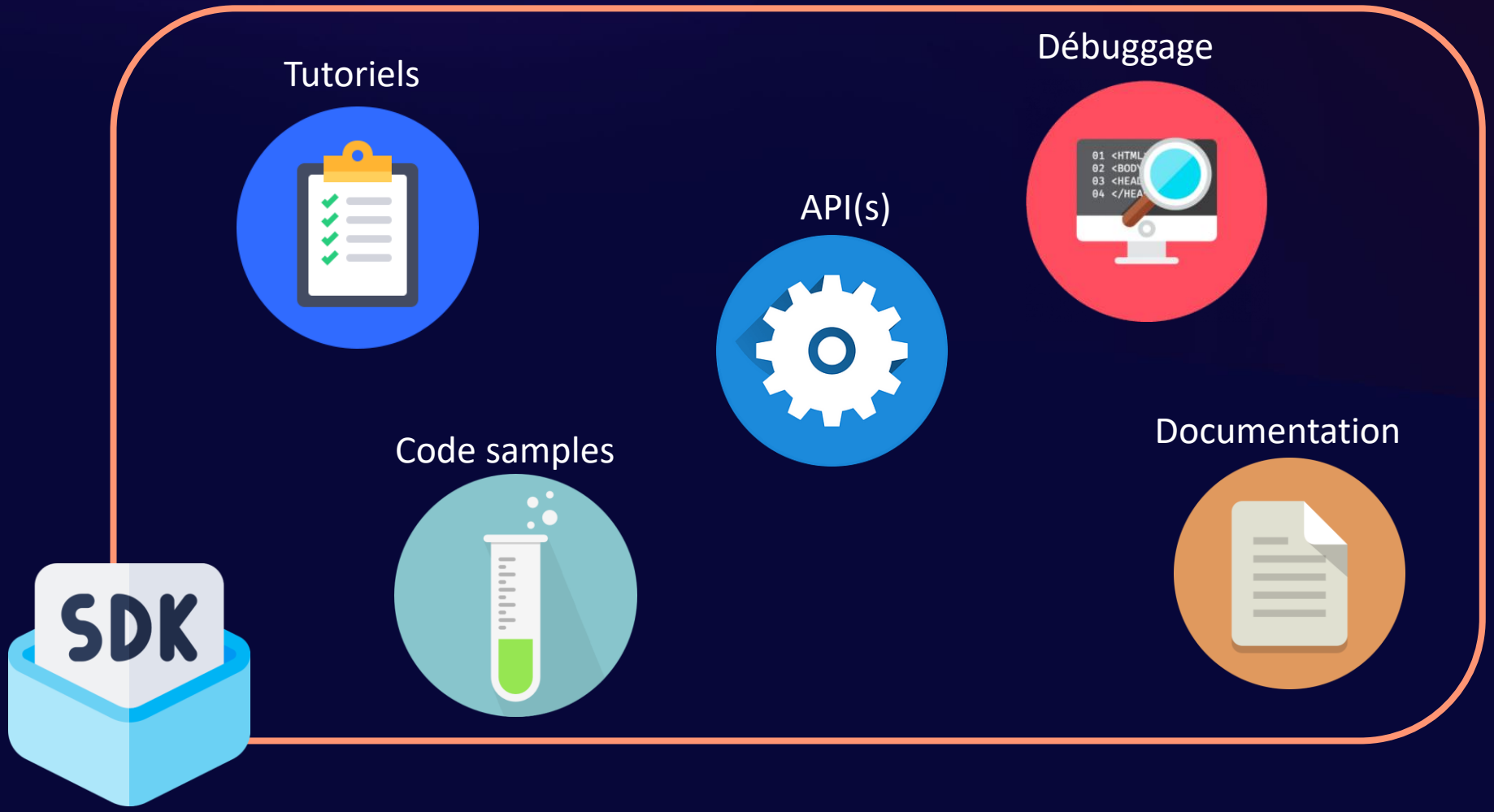
Style / Présentation

Comportement / Actions

Qu’est-ce qu’une API, qu’est-ce qu’un SDK ?



Qu’est-ce qu’une API, qu’est-ce qu’un SDK ?



Les APIs clientes d'ArcGIS

Qu'est-ce que l'API REST? Quelles sont les APIs disponibles dans le système ArcGIS?

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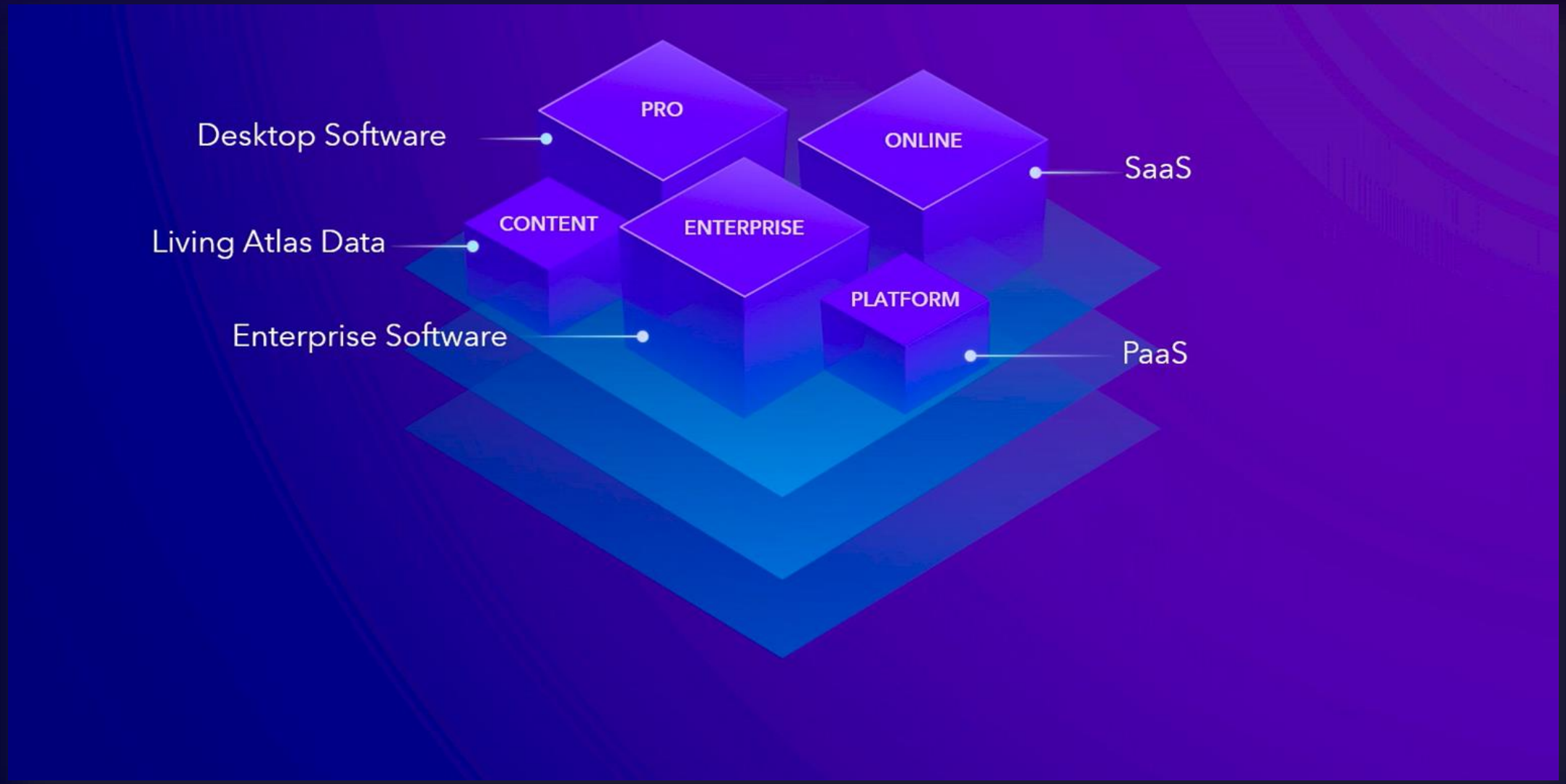
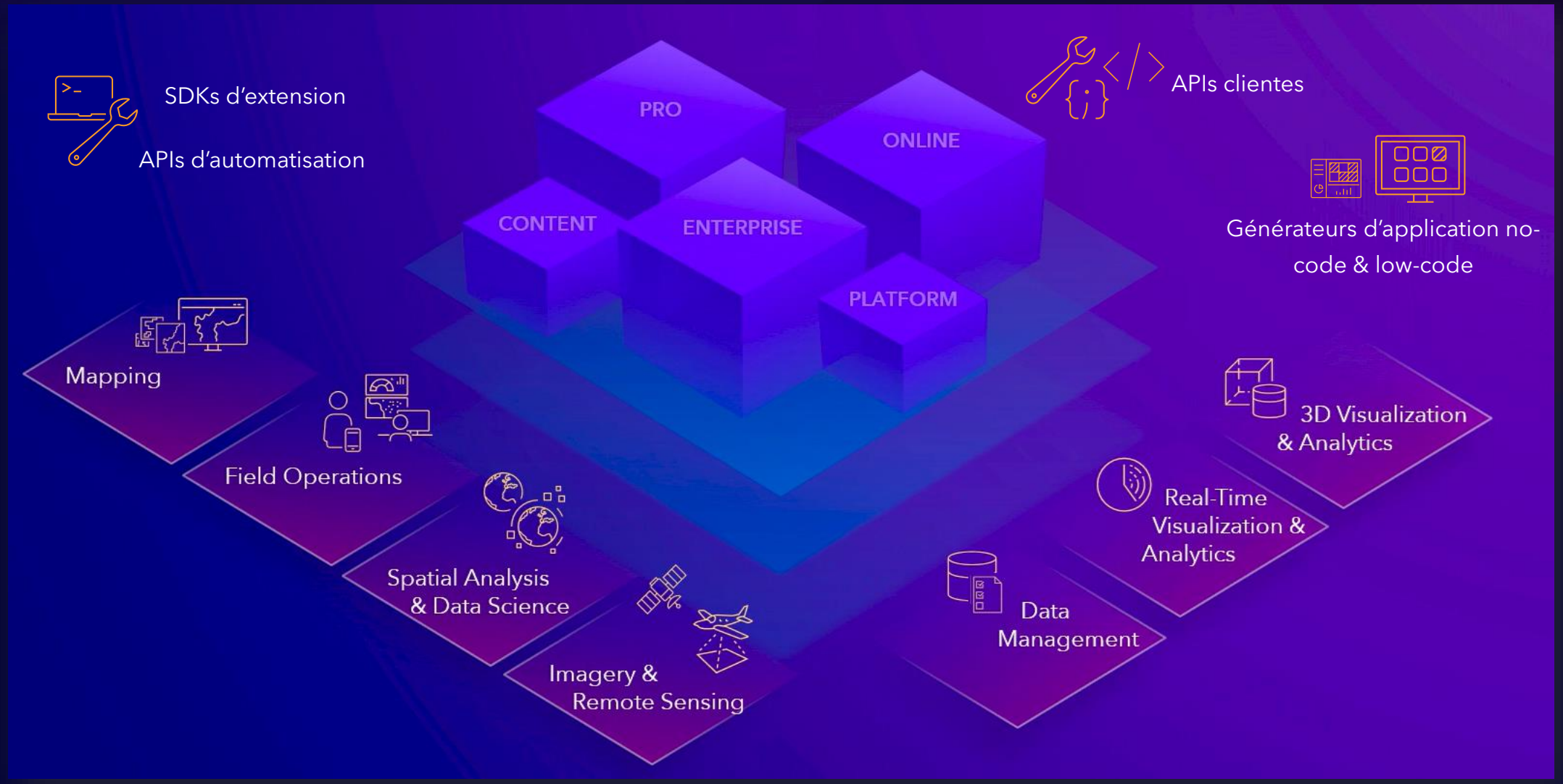
La place du développement dans le système ArcGIS



La place du développement dans le système ArcGIS



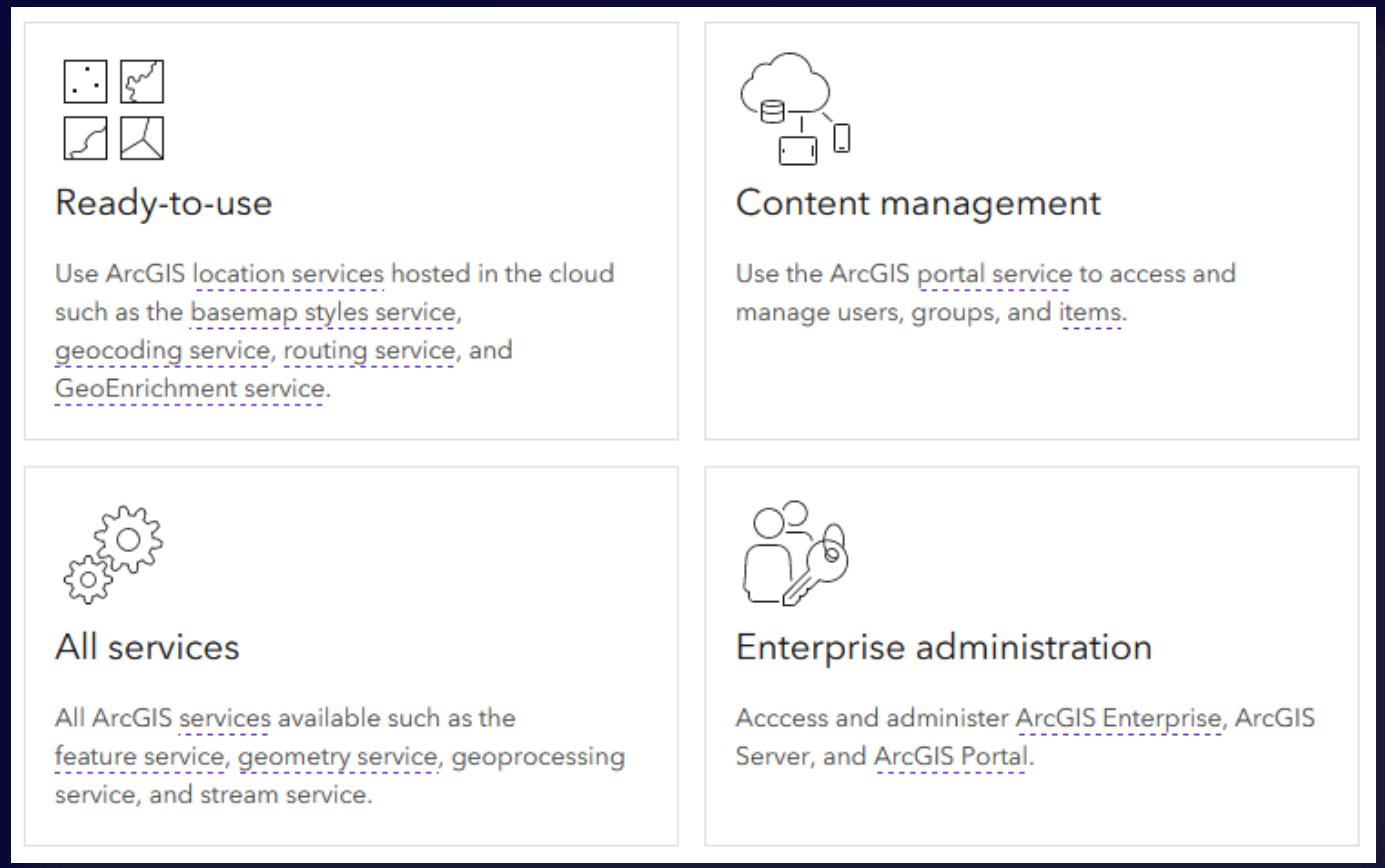
Les APIs clientes du système ArcGIS

Automatiser et étendre les produits du système ArcGIS

Tirer parti de l'intelligence géographique d'ArcGIS pour créer de nouvelles applications (ArcGIS Maps SDK for…)

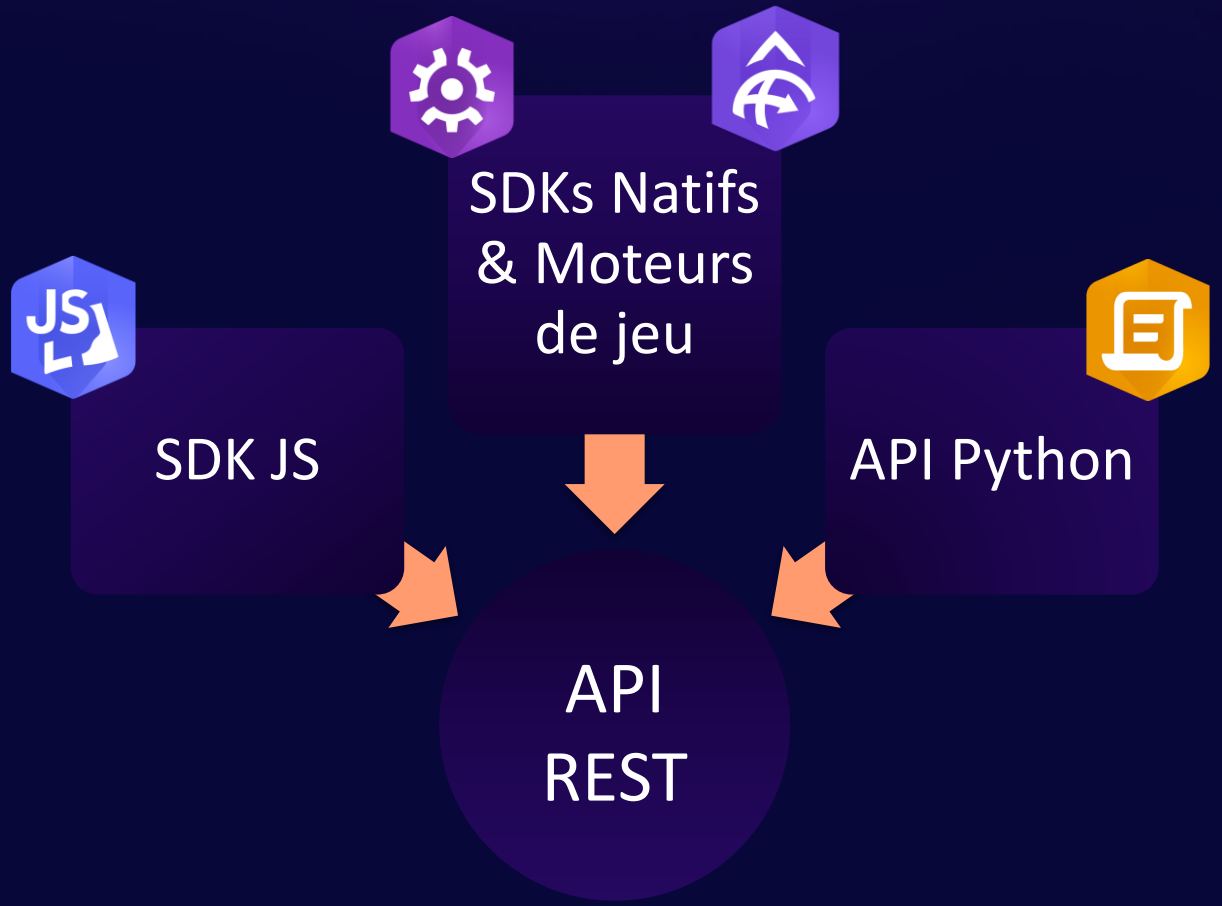
L'API REST

Clé de **l'interopérabilité** du SIG web d'ArcGIS




```
{
  "serviceName": "Bati",
  "type": "FeatureServer",
  "description": "",
  "capabilities": "Query",
  "provider": "SDS",
  "clusterName": "default",
  "minInstancesPerNode": 0,
  "maxInstancesPerNode": 0,
  "instancesPerContainer": 1,
  "maxWaitTime": 60,
  "maxStartupTime": 300,
  "maxIdleTime": 1800,
  "maxUsageTime": 600,
  "loadBalancing": "ROUND_ROBIN",
  "isolationLevel": "HIGH",
  "configuredState": "STARTED",
  "recycleInterval": 24,
  "recycleStartTime": "00:00",
  "keepAliveInterval": 1800,
  "private": false,
  "isDefault": false,
  "maxUploadFileSize": 0,
  "allowedUploadFileTypes": "",
  "properties": {
    "maxDomainCodeCount": "25000",
    "cacheDir": "",
    "maxImageWidth": "4096",
    "maxRecordCount": "2000",
    "antialiasingMode": "None",
    "enableDynamicLayers": "true",
    "dynamicDataWorkspaces": "",
    "isCached": "false",
    "virtualOutputDir": "/rest/directories/arcgisoutput",
    "exportTilesAllowed": "false",
    "maxImageHeight": "4096",
    "cacheOnDemand": "false",
    "minScale": "",
    "schemaLockingEnabled": "true",
    "useLocalCacheDir": "true",
    "outputDir": "C:\\arcgis\\arcgisserver\\directories\\arcgisoutput",
    "maxScale": "",
    "filePath": "C:\\arcgis\\arcgisserver\\directories\\arcgissystem\\arcgisinp
    "supportedImageReturnTypes": "URL",
    "maxSampleSize": "100000",
    "clientCachingAllowed": "true",
    "textAntialiasingMode": "Force",
    "maxExportTilesCount": "100000",
    "ignoreCache": "false",
    "maxBufferCount": "100",
    "disableIdentifyRelates": "false"
  },
  "jsonProperties": {
```

L’API REST : socle des API de niveau supérieur




```
{
  "serviceName": "Bati",
  "type": "FeatureServer",
  "description": "",
  "capabilities": "Query",
  "provider": "SDS",
  "clusterName": "default",
  "minInstancesPerNode": 0,
  "maxInstancesPerNode": 0,
  "maxInstancesPerContainer": 1,
  "maxWaitTime": 60,
  "maxStartupTime": 300,
  "maxIdleTime": 1800,
  "maxUsageTime": 600,
  "loadBalancing": "ROUND_ROBIN",
  "isolationLevel": "HIGH",
  "configuredState": "STARTED",
  "recycleInterval": 24,
  "recycleStartTime": "00:00",
  "keepAliveInterval": 1800,
  "private": false,
  "isDefault": false,
  "maxUploadFileSize": 0,
  "allowedUploadFileTypes": "",
  "properties": {
    "maxDomainCodeCount": "25000",
    "cacheDir": "",
    "maxImageWidth": "4096",
    "maxRecordCount": "2000",
    "antialiasingMode": "None",
    "enableDynamicLayers": "true",
    "dynamicDataWorkspaces": "",
    "isCached": "false",
    "virtualOutputDir": "/rest/directories/arcgisoutput",
    "exportTilesAllowed": "false",
    "maxImageHeight": "4096",
    "cacheOnDemand": "false",
    "minScale": "",
    "schemaLockingEnabled": "true",
    "useLocalCacheDir": "true",
    "outputDir": "C:\\arcgis\\arcgisserver\\directories\\arcgisoutput",
    "maxScale": "",
    "filePath": "C:\\arcgis\\arcgisserver\\directories\\arcgissystem\\arcgisinp
    "supportedImageReturnTypes": "URL",
    "maxSampleSize": "100000",
    "clientCachingAllowed": "true",
    "textAntialiasingMode": "Force",
    "maxExportTilesCount": "100000",
    "ignoreCache": "false",
    "maxBufferCount": "100",
    "disableIdentifyRelates": "false"
  },
  "jsonProperties": {
```

L'ArcGIS Maps SDK for JavaScript

Capacités, fonctionnement et démonstrations

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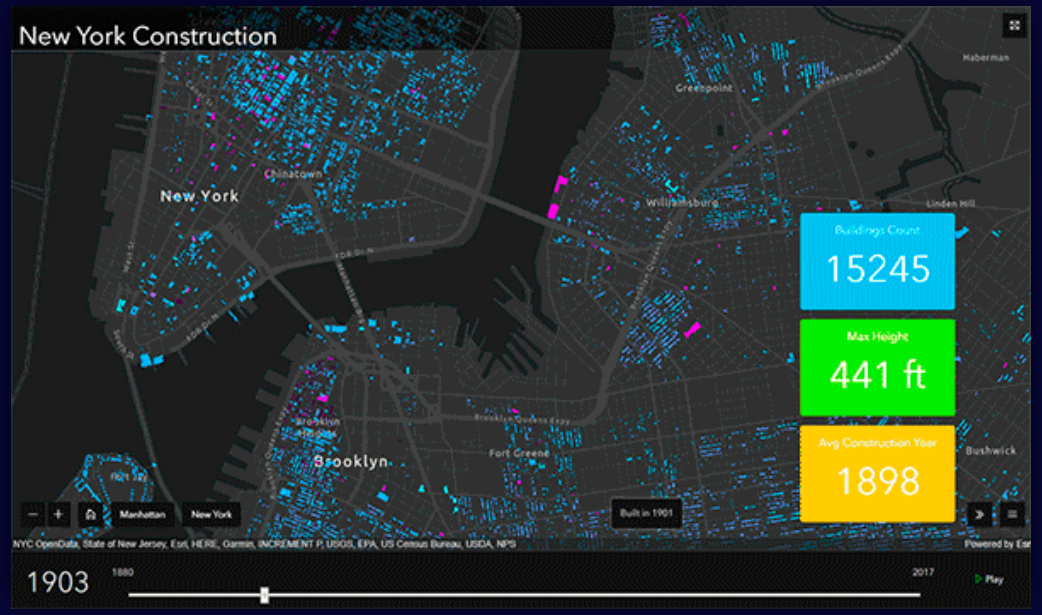
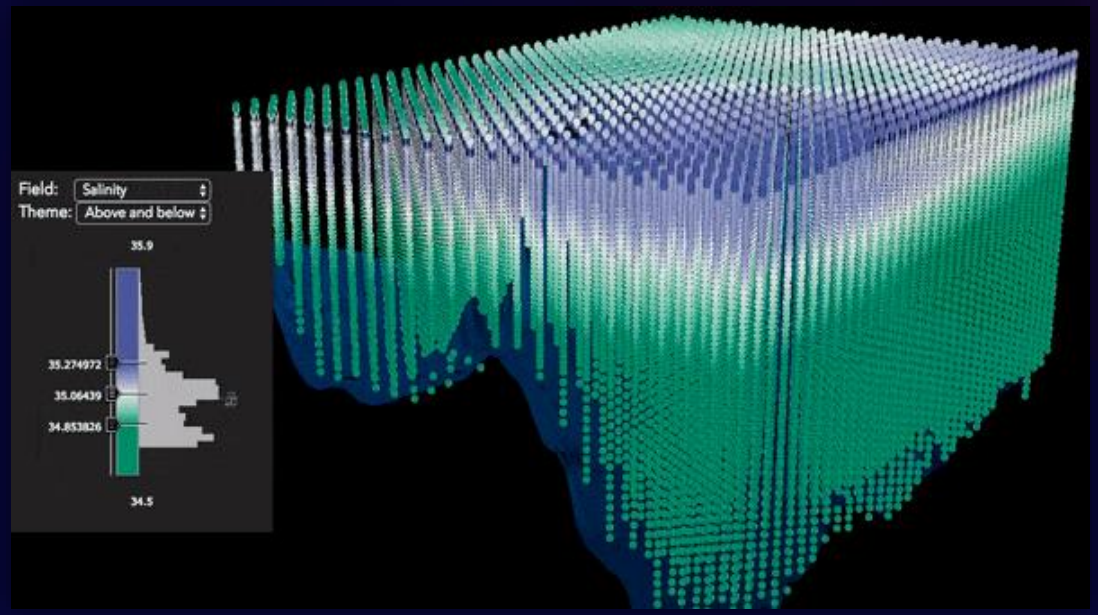
Capacités

Une API pour le web

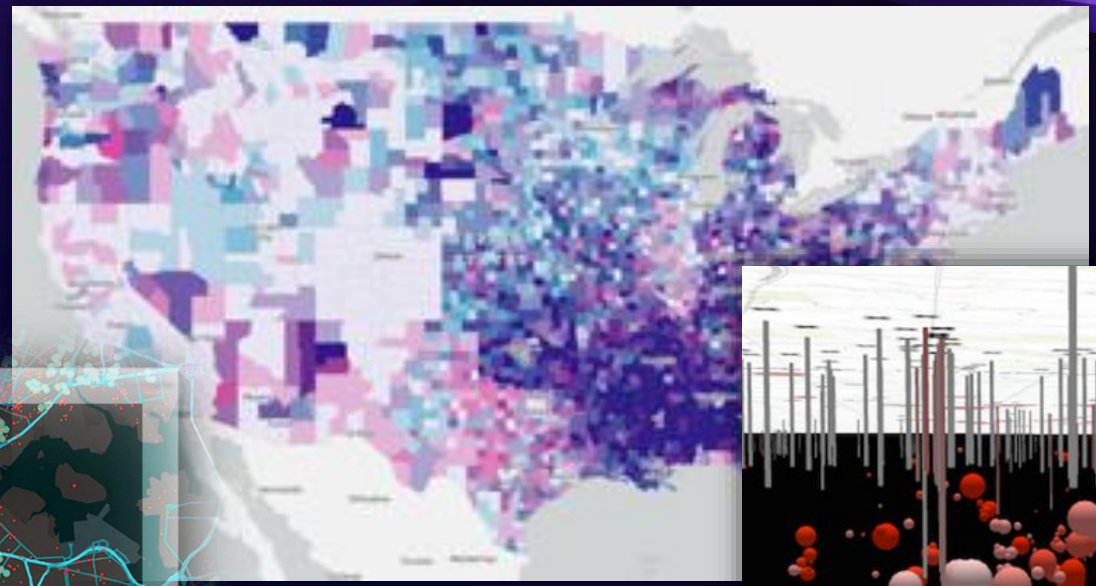


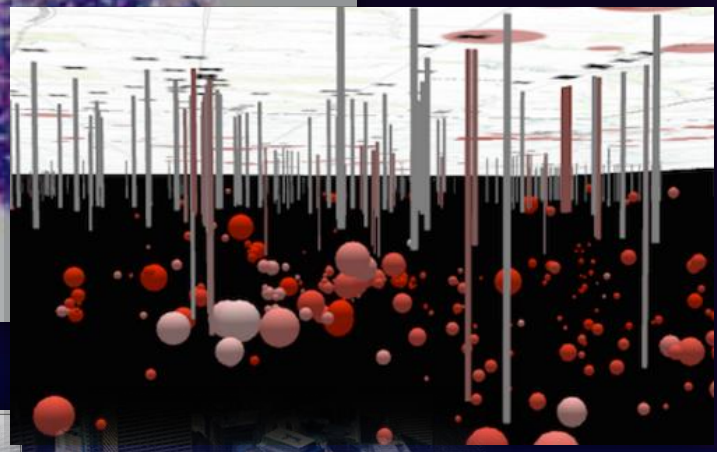


ArcGIS API for JavaScript (3.x) / ArcGIS Maps SDK for JavaScript (4.x)

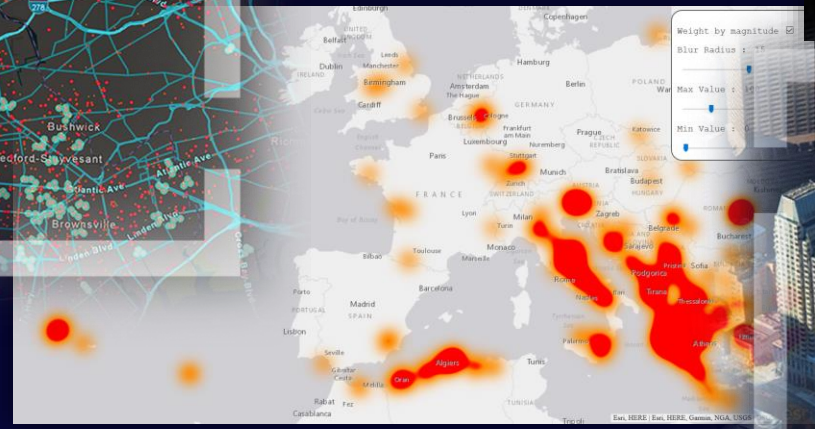
2D & 3D


Filter building by floor:
All
1
2
3
Building Wireframe
Interior Space
Walls
Doors



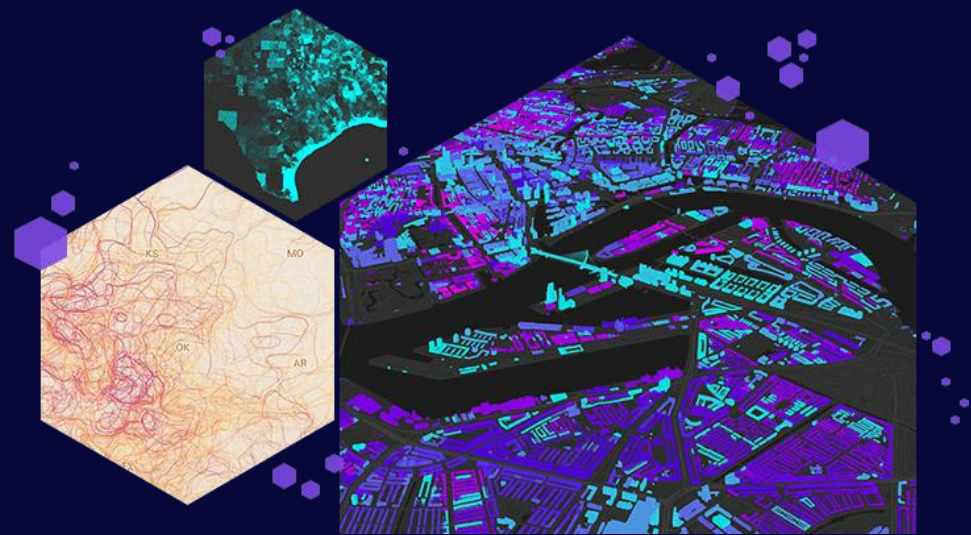



Jersey City
New York
Brooklyn
Bushwick
Bedford-Stuyvesant
Browsville
Northern Blvd
Queens Blvd
Atlantic Ave
Linden Blvd

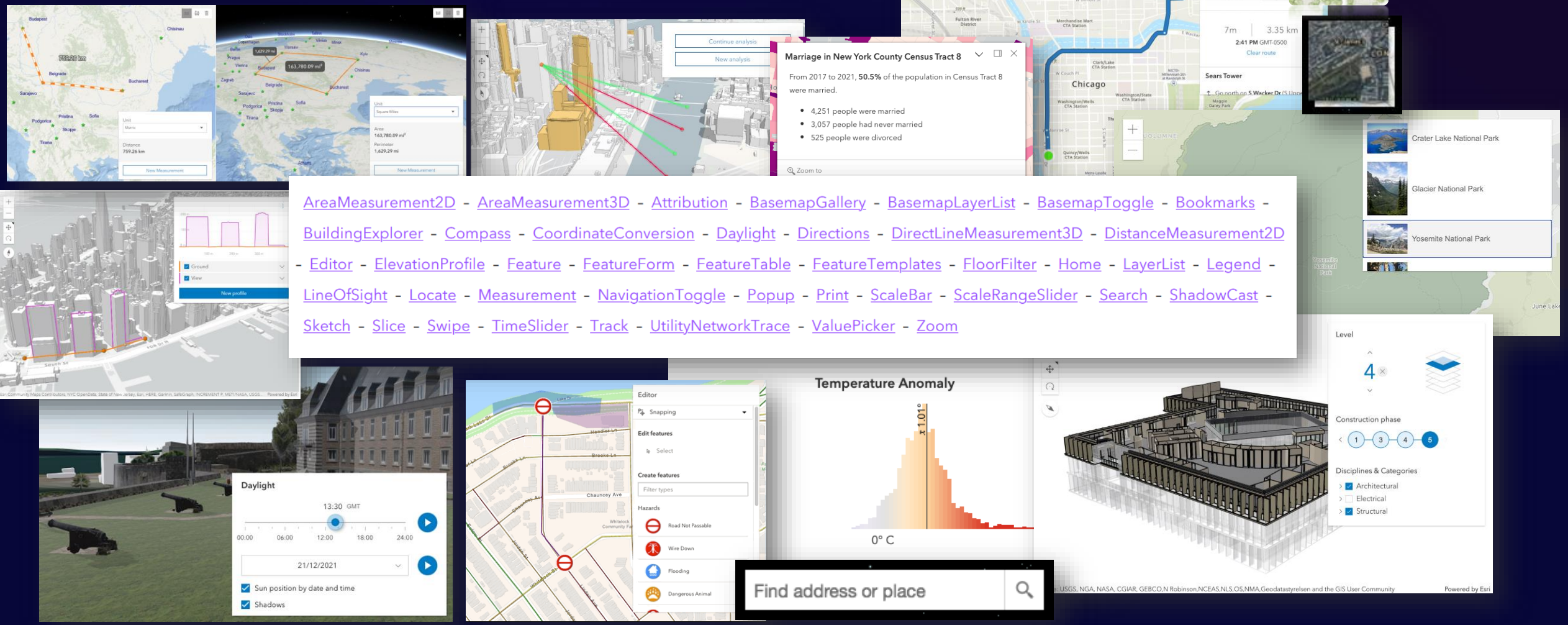

Weight by magnitude
Blur Radius :
Max Value :
Min Value :

De nombreuses sources de données

- Tous les items issus d'un portail ArcGIS Online ou ArcGIS Enterprise (couche d'entités, couche de graphique, couche d'image de carte, couche de scène, couche d'imagerie (tuilée ou non),couche de graphe de connaissance (knowledge), couche voxel, couche d'élévation, couche de nuage de points, couche de scène de bâtiment, etc.)
- Services issus d'API tierces (OpenStreetMap, Microsoft Bing, OGC API - Features)
- Services webs et flux OGC (WFS, WMS, WCS, WMTS, GeoRSS)
- Format de données ouverts (GeoJSON, CSV, KML)
- Autres (vidéos, image)

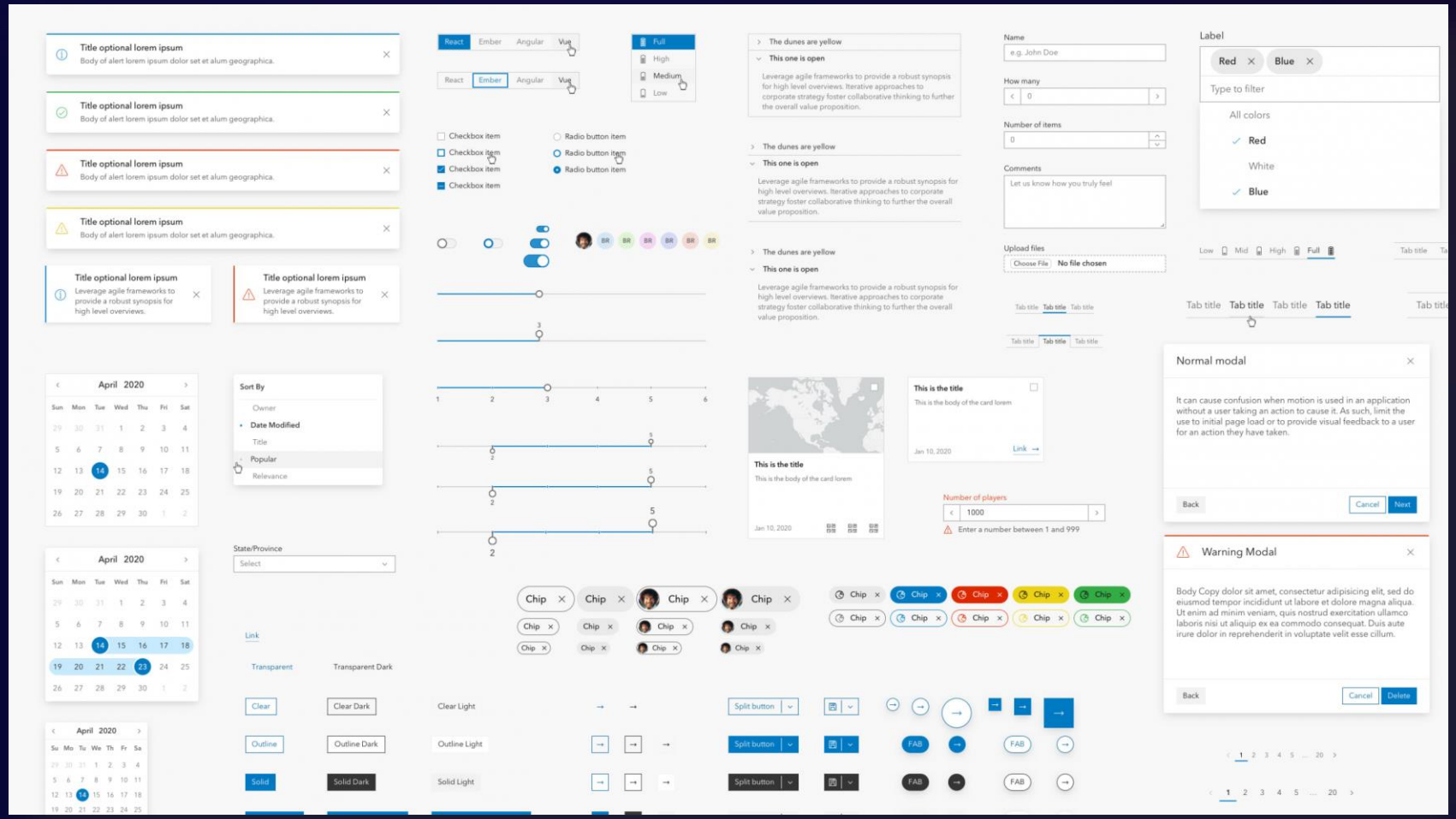


Des widgets pour enrichir les applications

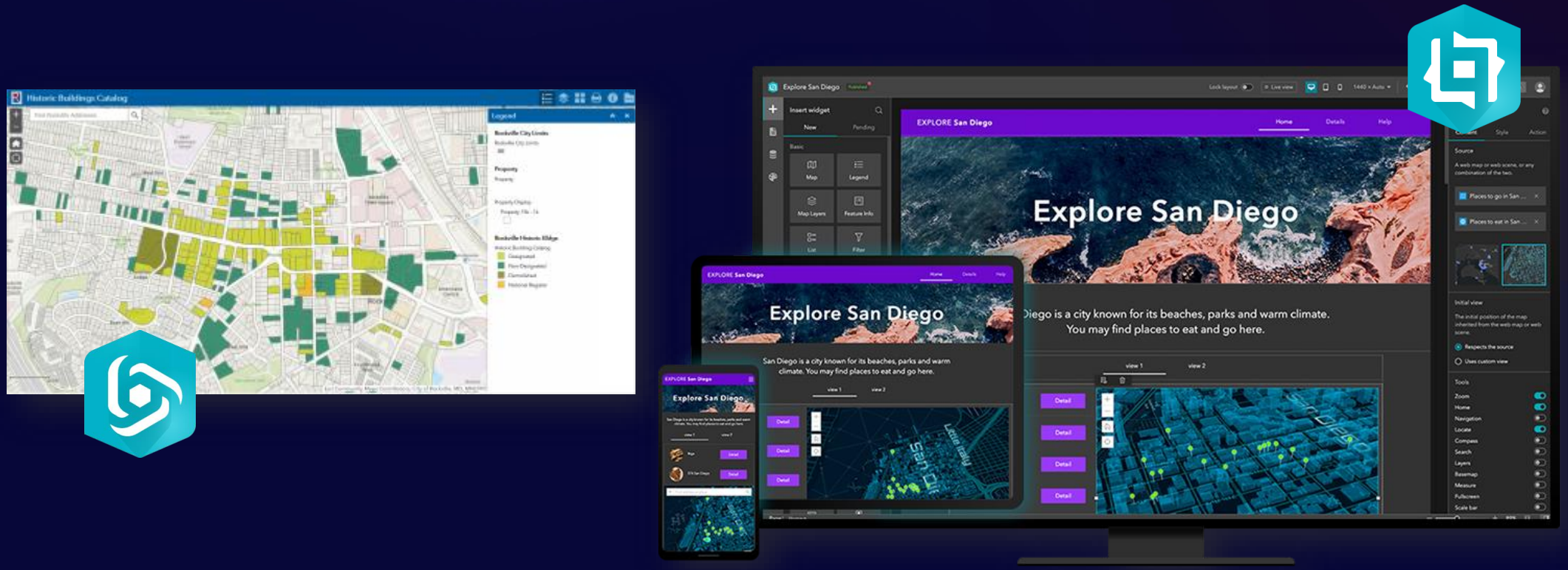


AreaMeasurement2D - AreaMeasurement3D - Attribution - BasemapGallery - BasemapLayerList - BasemapToggle - Bookmarks - BuildingExplorer - Compass - CoordinateConversion - Daylight - Directions - DirectLineMeasurement3D - DistanceMeasurement2D - Editor - ElevationProfile - Feature - FeatureForm - FeatureTable - FeatureTemplates - FloorFilter - Home - LayerList - Legend - LineOfSight - Locate - Measurement - NavigationToggle - Popup - Print - ScaleBar - ScaleRangeSlider - Search - ShadowCast - Sketch - Slice - Swipe - TimeSlider - Track - UtilityNetworkTrace - ValuePicker - Zoom

Un style cohérent et personnalisable



Le socle d’autres applications bien connues du système ArcGIS

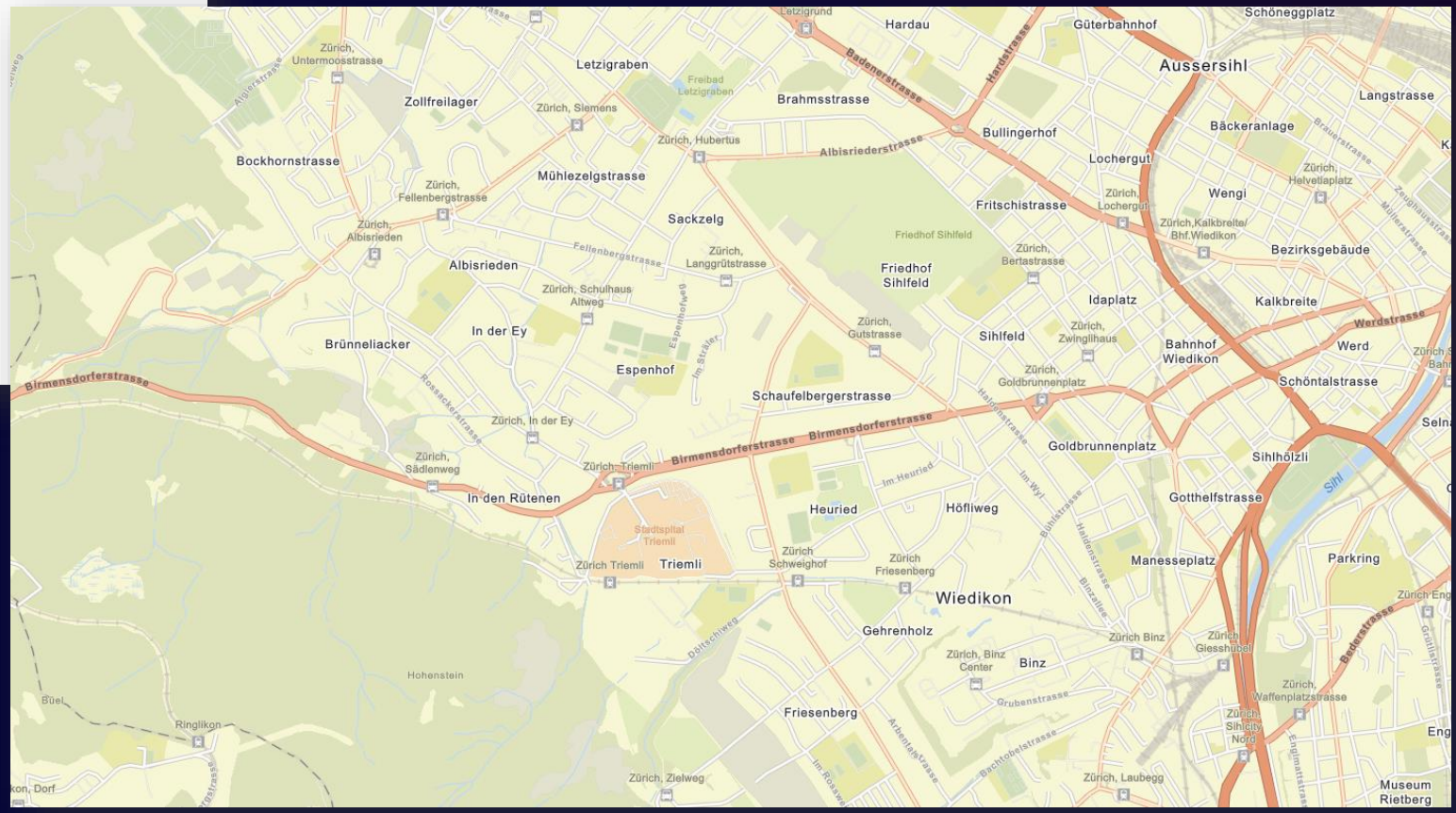


Les composants

```
require(["esri/Map", "esri/views/MapView"], (Map, MapView) => {
  const map = new Map({
    basemap: "streets-vector"
  });

  const view = new MapView({
    container: "viewDiv",
    map: map,
    zoom: 14,
    center: [8.5, 47.37]
  });
});
```

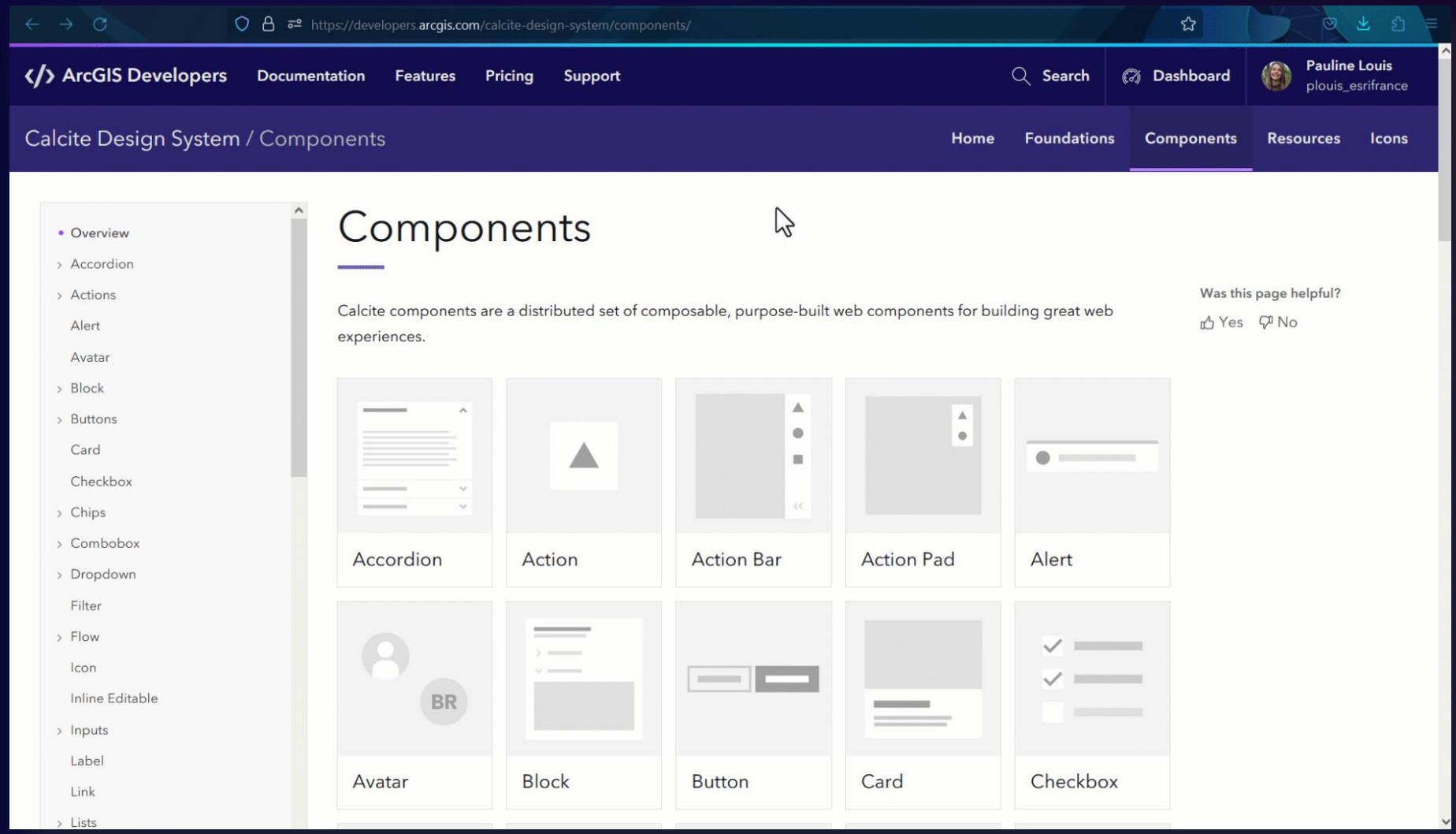
NOUVEAU

```
<arcgis-map zoom="14" center="8.5,47.37" basemap="streets-vector"></arcgis-map>
```



Calcite Design System

Faciliter le développement et la cohérence visuelle de vos applications



Quelques exemples

The City of Lights
Pauline Louis

Save | Settings

The City of Lights
Public Lighting of Paris

Item | About

HTML

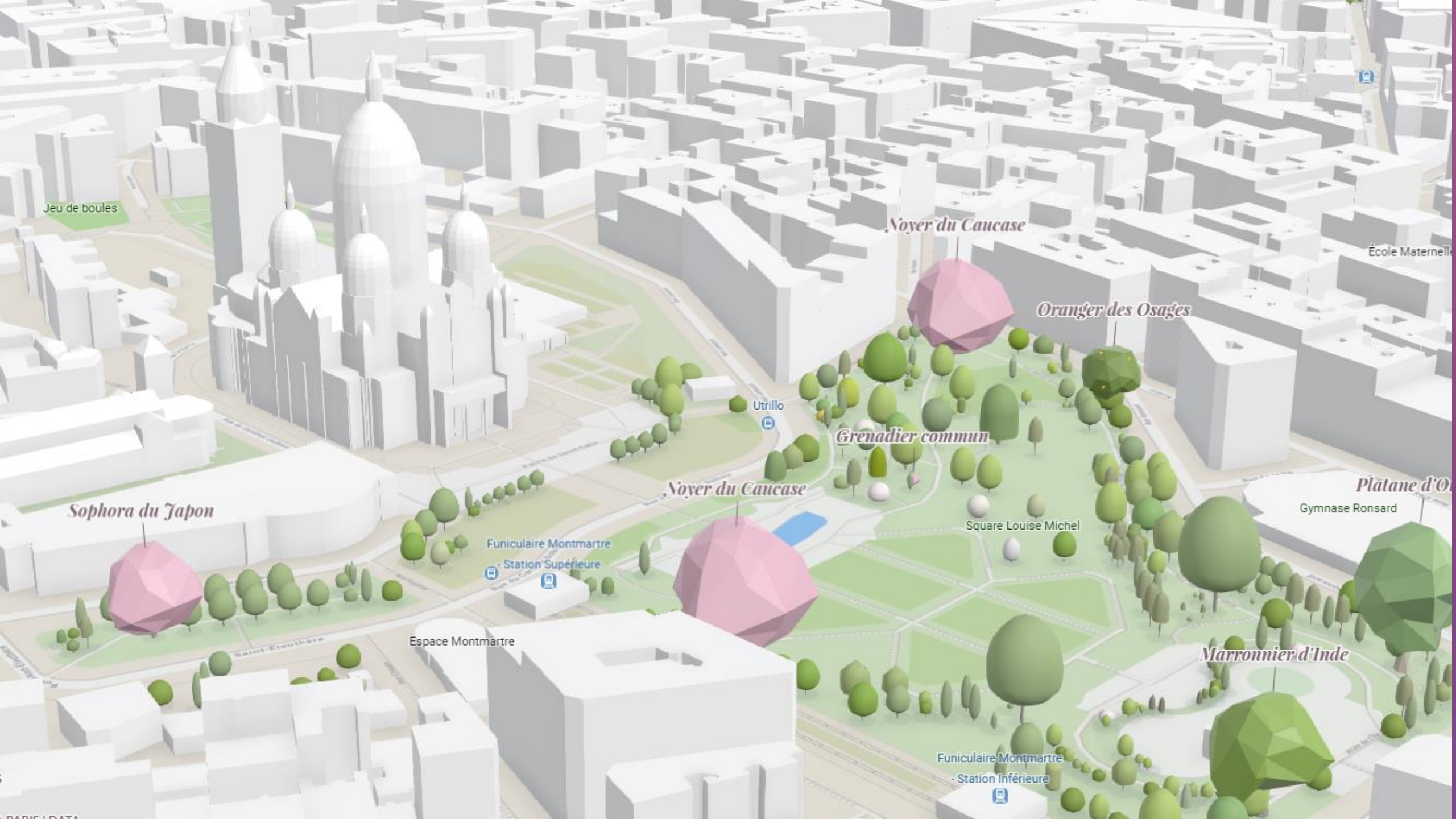
```
<html>

<head>
  <meta charset="utf-8" />
  <meta name="viewport" content="initial-scale=1,
maximum-scale=1, user-scalable=no" />
  <title>ArcGIS JS SDK map components X Calcite
components.</title>

  <link rel="stylesheet" href="https://
js.arcgis.com/4.28/esri/themes/dark/main.css">
  <script src="https://js.arcgis.com/4.28/"></
script>
  <script type="module" src="https://js.arcgis.com/
calcite-components/2.1.0/calcite.esm.js"></script>
  <link rel="stylesheet" type="text/css"
href="https://js.arcgis.com/calcite-
components/2.1.0/calcite.css" />
  <script type="module" src="https://js.arcgis.com/
map-components/4.28/arcgis-map-
components.esm.js"></script>
  <style>
    html,
    body,
    arcgis-map {
      padding: 0;
      margin: 0;
      height: 100%;
      width: 100%;
    }

    #contener {
      display: flex;
    }

    #desc {
      padding-left: 3%;
    }
```

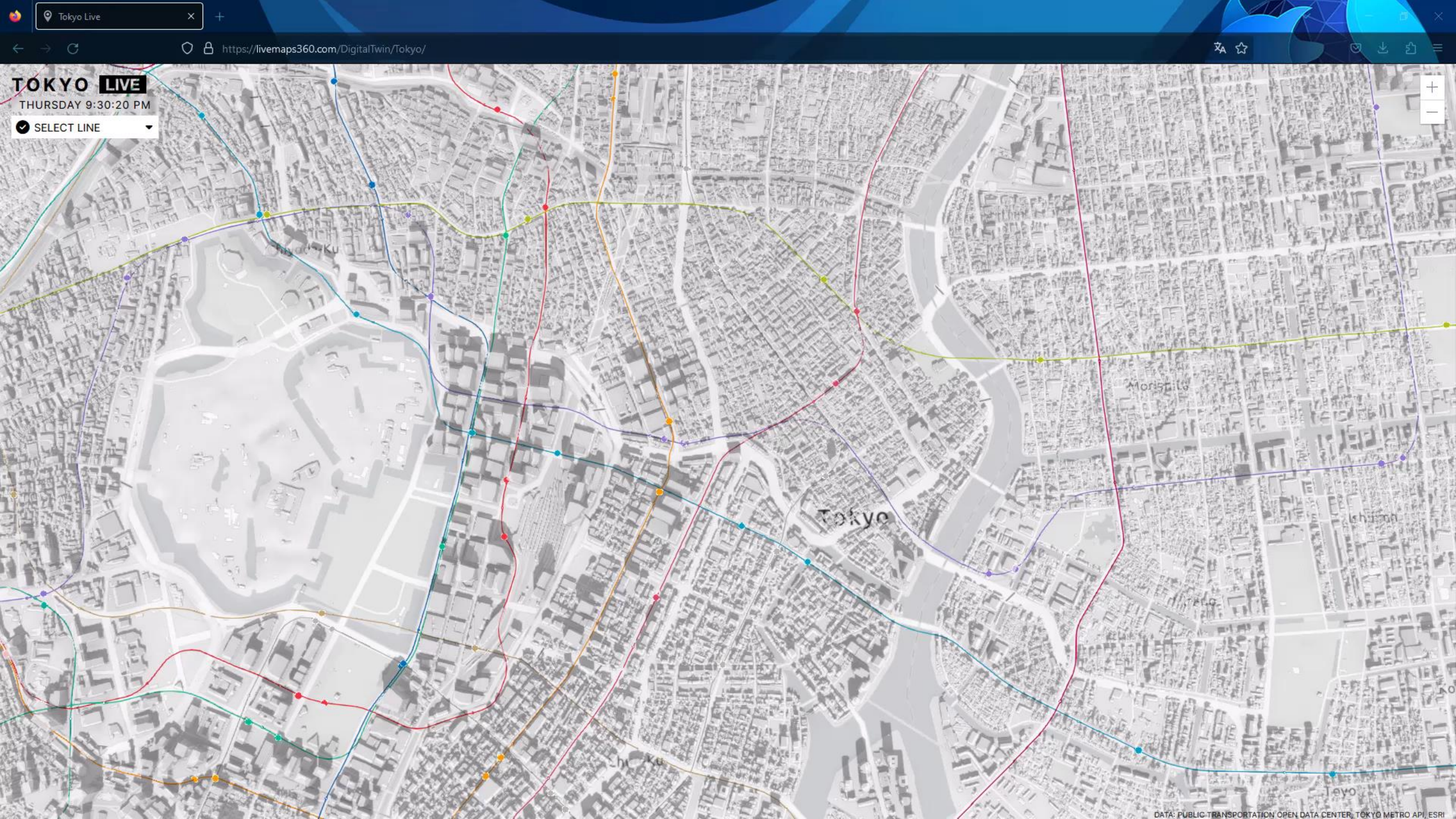
CSS

JS

Console | Assets | Comments | Shortcuts

Last saved IL Y A 8 MOIS | Delete | Add to Collection | Fork | Embed | Export | Share


Jeu de boules
Noyer du Caucase
École Maternelle
Oranger des Osages
Utrillo
Grenadier commun
Noyer du Caucase
Platane d'O
Sophora du Japon
Gymnase Ronsard
Square Louise Michel
Funiculaire Montmartre
- Station Supérieure
Espace Montmartre
Marronnier d'Inde
Funiculaire Montmartre
- Station Inférieure


Tokyo Live
https://livemaps360.com/DigitalTwin/Tokyo/
TOKYO LIVE
THURSDAY 9:30:20 PM
SELECT LINE
Tokyo
DATA: PUBLIC TRANSPORTATION OPEN DATA CENTER, TOKYO METRO API, ESRI

Fonctionnement

Appel à l'API, directive require et ouverture de la fonction

```
<html>
<head>
    <title>Visiter Strasbourg</title>


    <link rel="stylesheet" href="style/style.css"/>

    <!--Référencer l'API-->
    <link rel="stylesheet" href="https://js.arcgis.com/4.18/esri/themes/light/main.css">
    <script src="https://js.arcgis.com/4.24/"></script>

    <script>

        require(["esri/config","esri/Map", "esri/views/MapView", "esri/layers/FeatureLayer",
        "esri/popup/content/AttachmentsContent", "esri/popup/content/TextContent",
        "esri/renderers/UniqueValueRenderer","esri/widgets/Legend","esri/widgets/BasemapGallery","esri/widgets/Expand"],

         function (esriConfig, Map, MapView, FeatureLayer, AttachmentsContent, TextContent,
         UniqueValueRenderer,Legend,BasemapGallery,Expand) {
```

```
         });
     </script>
 </head>
 <body>
         <div id="viewDiv"></div>
 </body>
 </html>
```

L’architecture du code en poupées russes

```
const view = new MapView({
  map: map,
  center: [7.7588522, 48.588221],
  zoom: 14,
  container: "viewDiv"
});
```

MapView / SceneView

```
const map = new Map({
  basemap: "topo-vector",
  layers : [POI]
});
```

Map

Widgets

```
let legend = new Legend({
    view: view
});
view.ui.add(legend, "bottom-right");
```

```
const POI = new FeatureLayer({
    url: "https://services.arcgis.com/d3voDfTFbHOCRwVR/ArcGIS/
    outFields: ["Adresse","Description","Type","Site","Nom"],
    popupTemplate: popupPOI,
    renderer: symbo
});
```

Layers

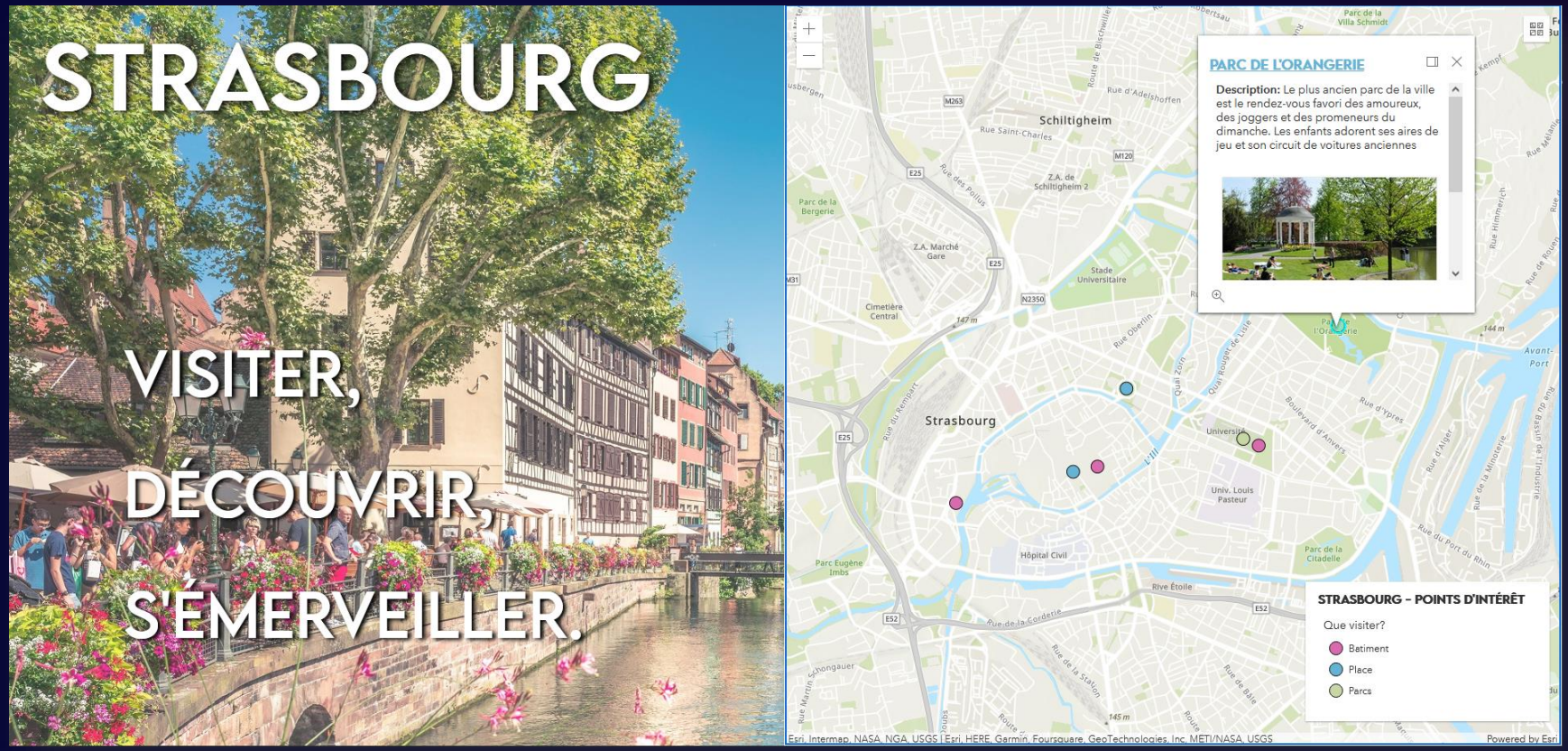
```
let symbo = {
    type: "unique-value",
    field: "Type",
    defaultSymbol: null,
    uniqueValueInfos: [{
```

Renderers

Popups

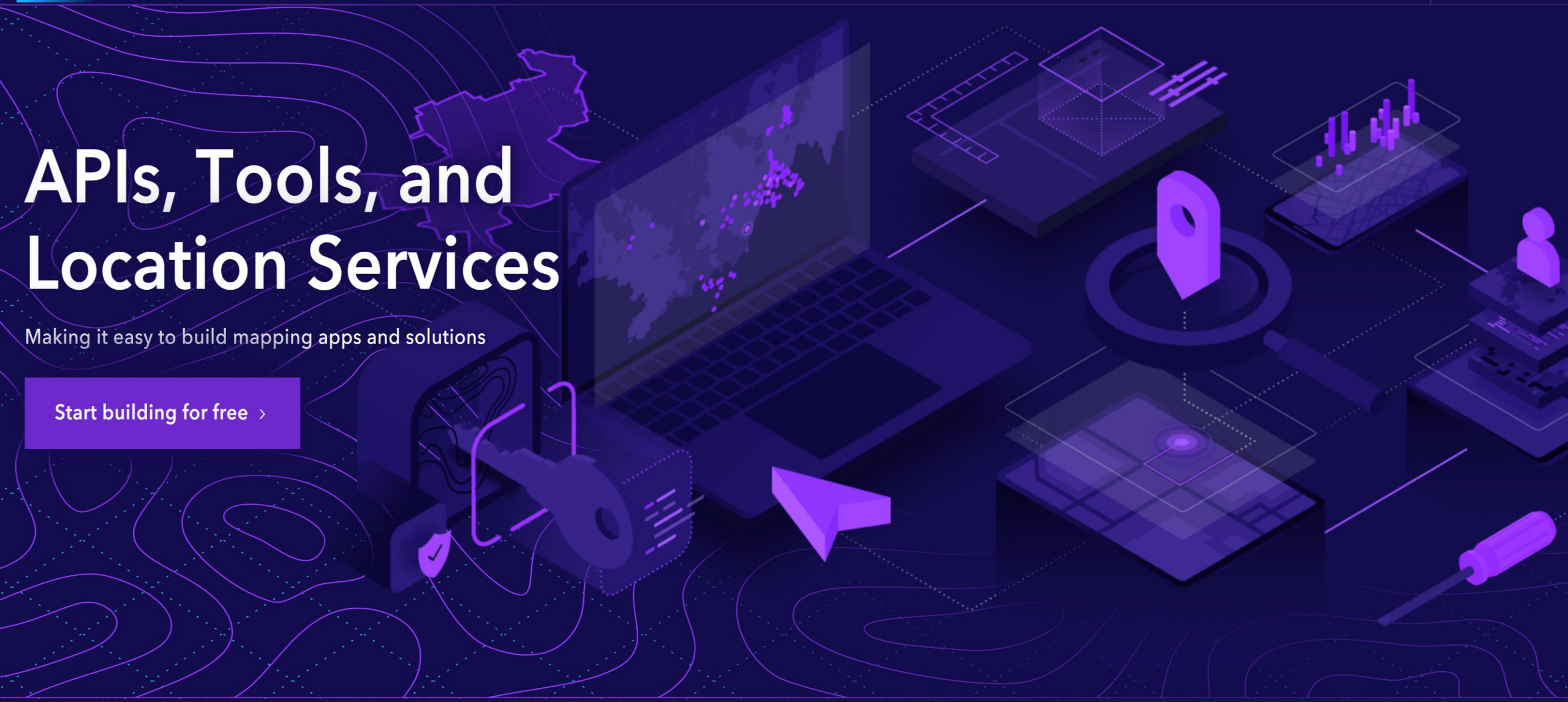
```
const popupPOI = {
    "title": "<a href='{Site}' target='blank'>{Nom}</a>",
    "content": [textElement1,attachmentsElement,textElement2]
}
```

Démo commentée : création d'une application cartographique basique pour un site web



Utiliser la documentation

Site développeurs : Overview/Tutorials, Sample Code, API Reference, Showcase



APIs, Tools, and Location Services

Making it easy to build mapping apps and solutions

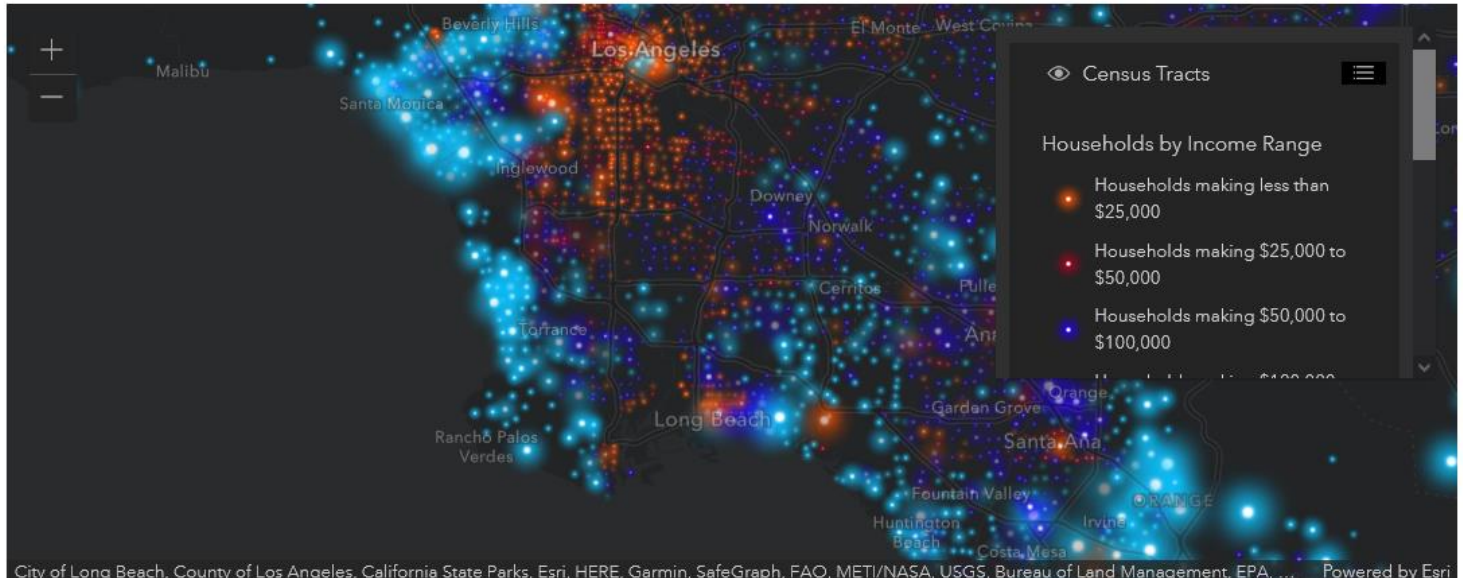
Start building for free ›

Overview

Overview

Current version: 4.25 (November 2022)

This guide describes how to use ArcGIS API for JavaScript to build compelling web apps that unlock your data's potential with interactive user experiences and stunning 2D and 3D visualizations.



Looking for 3.x ?

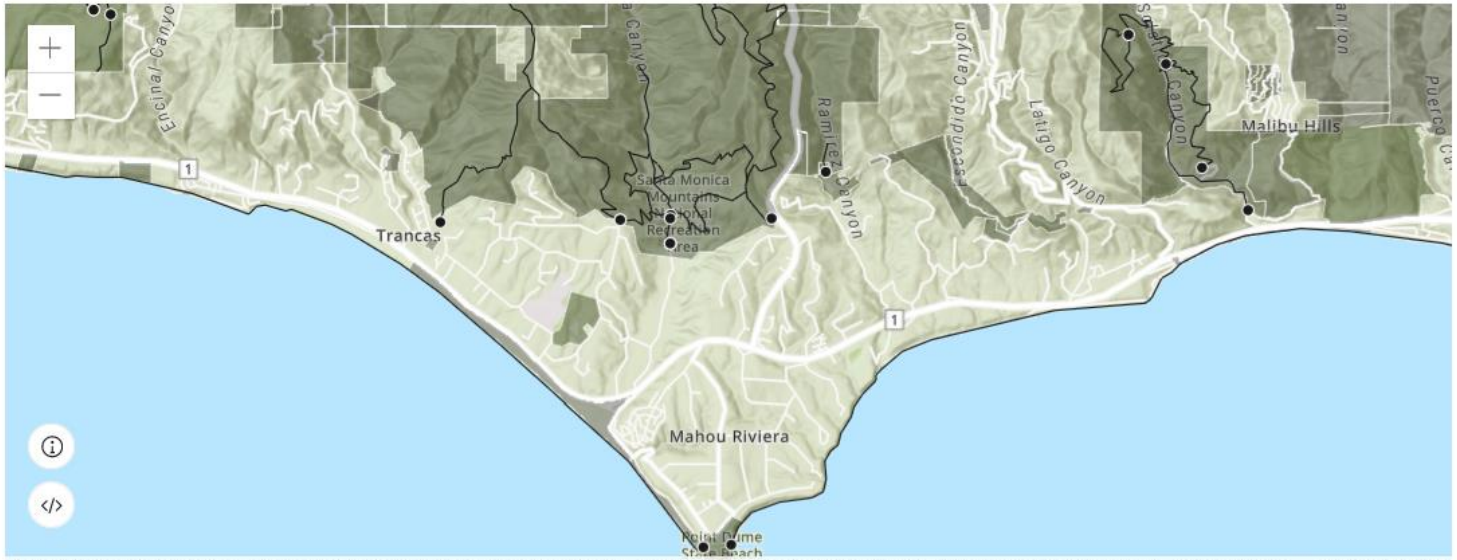
Was this page helpful?

Yes No

Overview – Tutoriels de prise en main

Add a feature layer

Learn how to access and display point, line, and polygon features in feature layers.



A feature layer is a dataset in a hosted feature service. Each feature layer contains features with a single geometry type (point, line, or

Solution
View in CodePen

Estimated time
10 minutes

API Reference

Find page...

esri
- arcade
- Basemap
- Camera
- Color
- config
- geometry
- Graphic
- Ground
- intl
- kernel
- Map
- pointCloudRenderers
- PopupTemplate
- rasterRenderers
- renderers

Map

AMD:
```
require(["esri/Map"], (Map) => { /* code goes here */ });
```

ESM:
```
import Map from "@arcgis/core/Map";
```

Class: `esri/Map`

Inheritance: Map › Accessor

Subclasses: WebMap , WebScene

Since: ArcGIS API for JavaScript 4.0

The Map class contains properties and methods for storing, managing, and overlaying layers common to both 2D and 3D viewing. Layers can be added and removed from the map, but are rendered via a MapView (for viewing data in 2D) or a SceneView (for viewing data in 3D). Thus a map instance is a simple container that holds the layers, while the View is the means of displaying and interacting with a map's layers and basemap.

A single map may be referenced by multiple views. This sample for example, contains a single Map that is visible in two separate views - one in 2D and the other in 3D. Because one map may be accessed by multiple views in the same application, all user interaction with a map's layers is handled on the View, not the Map.

An instance of Map is an essential component of the MapView and SceneView. A Map object should be created prior to a view so it

On this page
- Constructors
- Properties
- Methods

Sample Code

ArcGIS Developers | Documentation | Features | Pricing | Support | Search | Dashboard | Pauline Louis plouis_esrifrance

ArcGIS API for JavaScript / Sample Code | Overview | Sample Code | API Reference | Showcase | Blogs

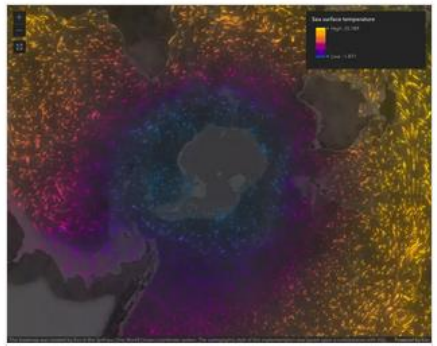
Find page...

- Get started
  - Featured samples
  - Intro to MapView (2D)
  - Intro to SceneView (3D)
  - Intro to layers
  - Intro to popups
  - Intro to widgets
- Latest samples
- Mapping and views
- Layers
- Query
- Editing
- Labels
- Draw
- Visualization
- Popups

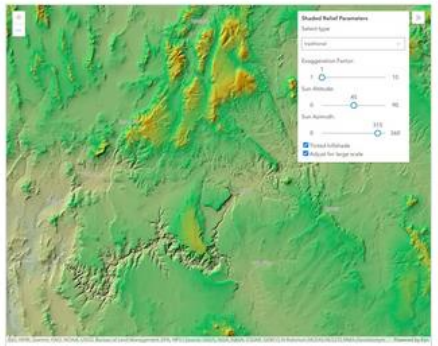
Featured samples

Basemaps with different projections

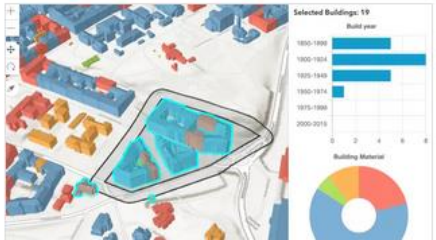
Point clustering - advanced configuration



FlowRenderer with effects and blending



ImageryTileLayer - shaded relief renderer



Showcase

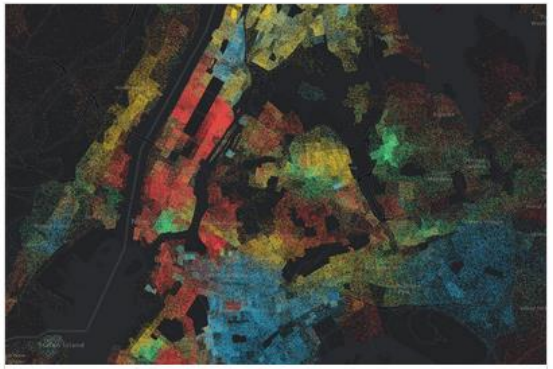
Showcase

Visualize Arctic and Antarctic Sea Ice

Visualize and explore monthly and historical sea ice extents.

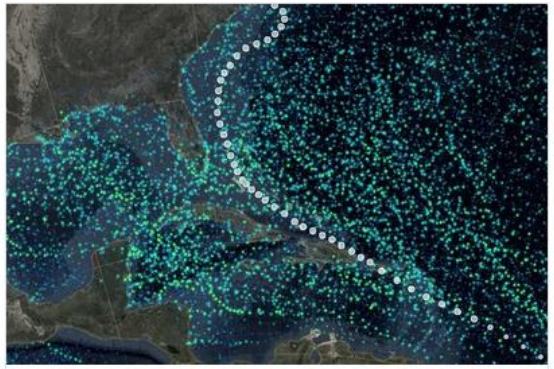
Building Viewer

Create a website that showcases your BIM data



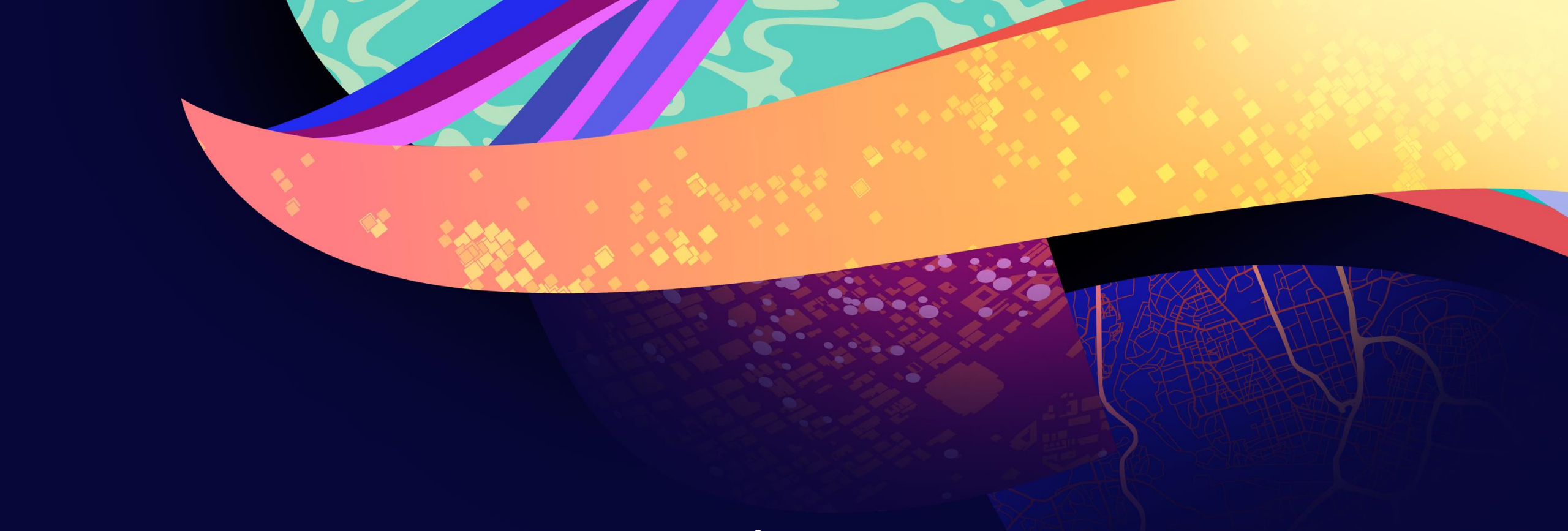
Population Density by Race in the United States

This app visualizes population density by race in the U.S. based on current population estimates as determined by the American Community Survey (ACS).



Hurricane Explorer

Visualize and query hurricanes using powerful client-side processing



La consommation de services

Services à disposition, Pay as you Go, Crédits, Authentification

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Pourquoi Esri fait ça?

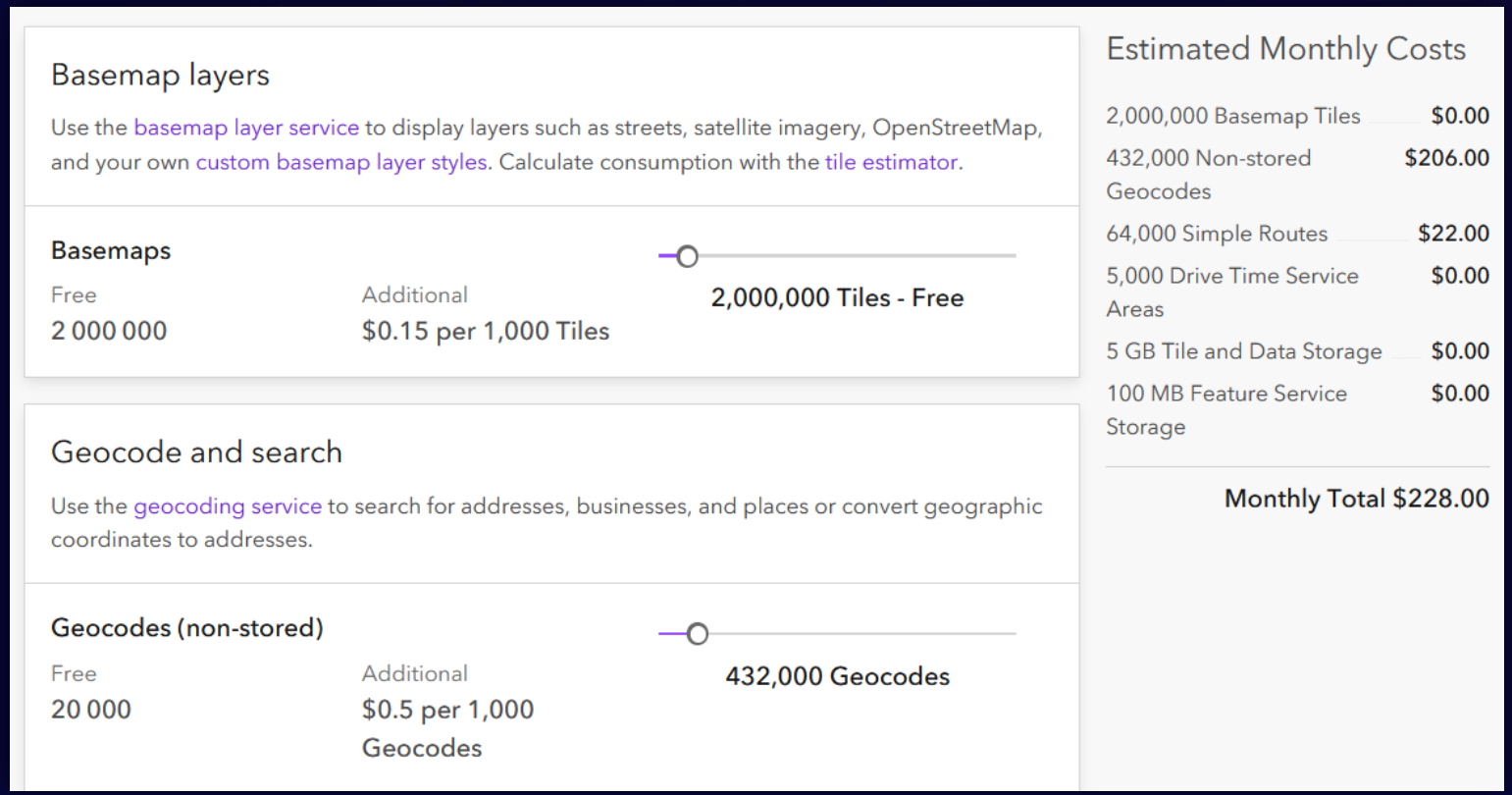
Les services disponibles

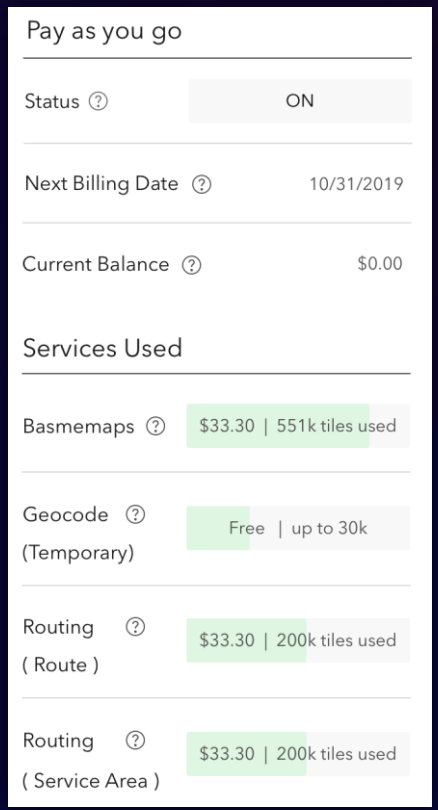
Une offre de services basés sur l'intelligence géographique d'ArcGIS

- Fonds de cartes et couches
- Géocodage
- Places (POI) - *beta*
- Itinéraires & directions
- Géo-enrichissement
- Analyse spatiale
- Hébergement de données

Comment consommer ces services ?

Pay as you go





Comment consommer ces services ?

Abonnement ArcGIS Online et consommation de crédits

Comment consommer ces services ?
Authentification

API Key

- **Méthode d'authentification standard de l'industrie** permettant de s'authentifier avec une **clé d'accès préconfigurée**
- Donne accès aux services de localisation ArcGIS et au contenu développeurs
- Token permanent

Application credentials

- **Méthode d'authentification basée sur OAuth 2.0** permettant de s'authentifier avec les informations d'authentification **délivrées à *l'application***
- Donne accès aux services de localisation ArcGIS et au contenu premium
- Token temporaire

ArcGIS Identity

- **Méthode d'authentification basée sur OAuth 2.0** permettant de s'authentifier avec les informations d'authentification **délivrées à *l'utilisateur***
- Donne accès aux ressources et aux capacités attribuées à l'utilisateur
- Token permanent

Comment consommer ces services ?
Authentification

	API keys	ArcGIS identity	Application credentials
Permanent tokens	✓	✗	✗
Short-lived tokens	✗	✓	✓
Serverless authentication	✓	✓	✗
Server-based authentication	✓	✗	✓
Restrict to specific services	✓	✗	✗
Restrict to specific referrers	✓	✗	✗
Ready-to-use services	✓	✓	✓
Data hosting services	◔ [1]	✓	✗
Content management	◔ [2]	✓	✗

1. ArcGIS Developer subscriptions only

2. ArcGIS Developer subscriptions only, limited

✓ *Full support* ◔ *Partial support* ✗ *No support*

Démo commentée : création d’une clé d’API et consommation d’un service de localisation dans une application

Conseils et ressources

developers.arcgis.com, codethemap.fr, GitHub

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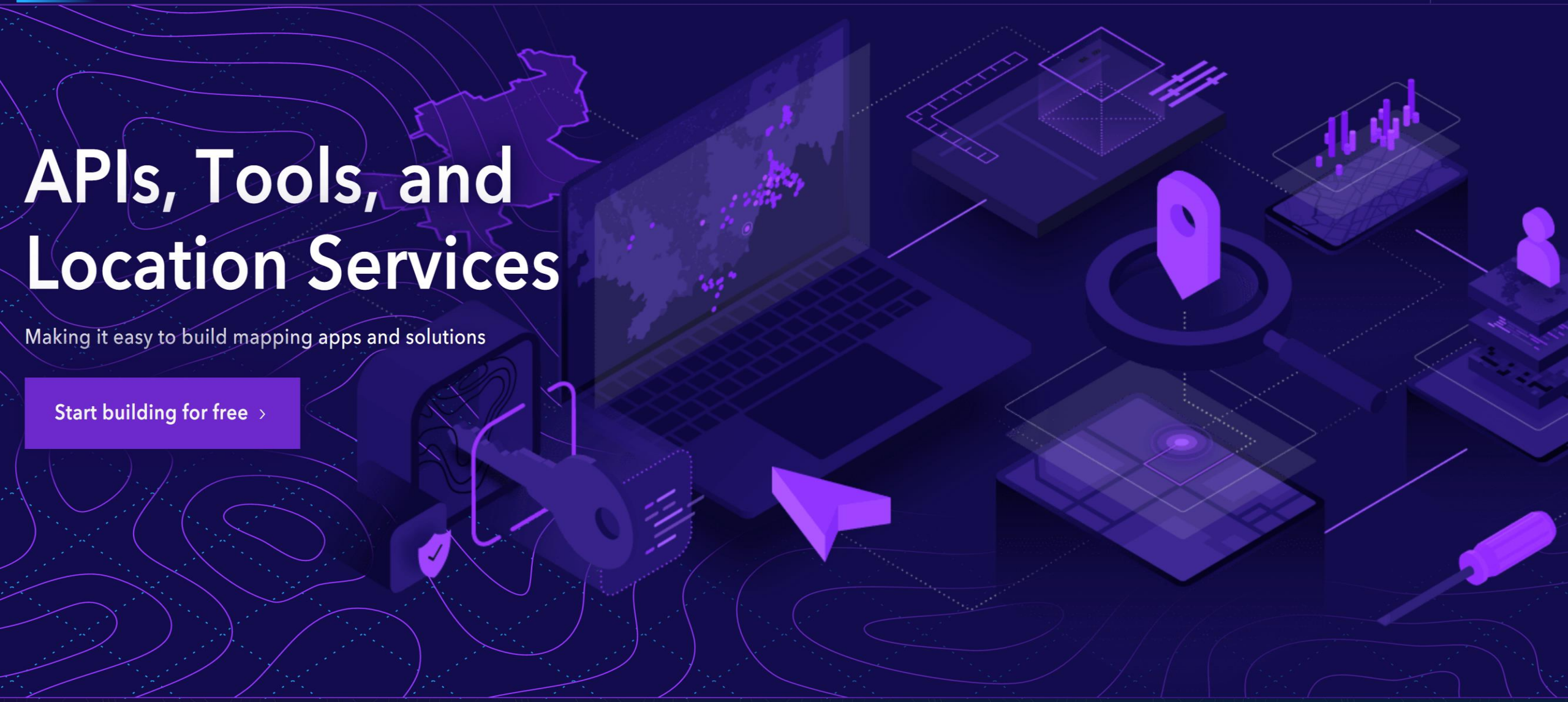

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Étape 2 : Afficher sa carte

2.0 Créer une vue

Nous allons commencer par créer la vue dans laquelle sera affichée la carte par la suite. Nous travaillons en 2D, nous allons donc utiliser une **MapView**.

Rendez-vous sur la page de documentation de MapView.

Le haut de la page vous indique toujours ce qu'il faut ajouter à require et à la fonction ; nous utiliserons le format AMD.

AMD:
```
require(["esri/views/MapView"], (MapView) => { /* code goes here */ });
```

Mettez à jour votre require avec ces informations. Voici ce à quoi il devrait ressembler :

JavaScript
```
    <script>
        require(["esri/config","esri/views/MapView"],
        function (esriConfig,MapView) {

            //Tout le reste du code ira ici
```


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