

[Live+] SIG 2022
Le Géo évènement

Développer avec ArcGIS

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Etendre ArcGIS (ArcGIS Pro, ArcGIS Enterprise)

01

ArcGIS et l'offre développeurs

ArcGIS et l'offre développeurs



02

ArcGIS REST API



<https://developers.arcgis.com/rest/>



Clé de l'interopérabilité du SIG web d'ArcGIS

Permet l'exposition du Portail ArcGIS et des services web

Groupée en 4 sous-categories :

- Services basés sur la **localisation**;
- Services de **gestion du contenu**;
- Services liés aux tâches d'**administration d'Enterprise**;
- Services **référence**

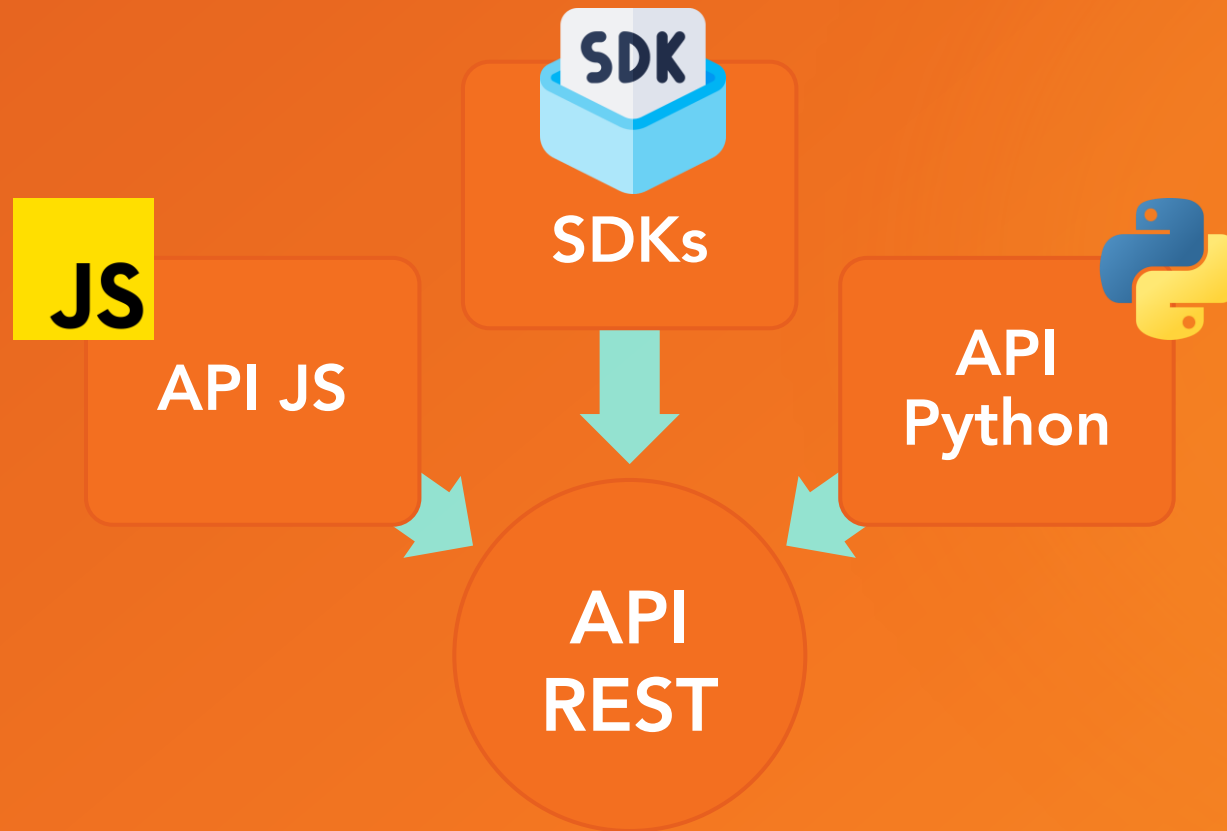
```
{
  "serviceName": "Bati",
  "type": "FeatureServer",
  "description": "",
  "capabilities": "Query",
  "provider": "SDS",
  "clusterName": "default",
  "minInstancesPerNode": 0,
  "maxInstancesPerNode": 0,
  "instancesPerContainer": 1,
  "maxWaitTime": 60,
  "maxStartupTime": 300,
  "maxIdleTime": 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/arccgisoutput",
    "exportTilesAllowed": "false",
    "maxImageHeight": "4096",
    "cacheOnDemand": "false",
    "minScale": "",
    "schemaLockingEnabled": "true",
    "useLocalCacheDir": "true",
    "outputDir": "C:\\arccgis\\arccgisserver\\directories\\arccgisoutput",
    "maxScale": "",
    "filePath": "C:\\arccgis\\arccgisserver\\directories\\arccgisystem\\arccgisinp",
    "supportedImageReturnTypes": "URL",
    "maxSampleSize": "100000",
    "clientCachingAllowed": "true",
    "textAntialiasingMode": "Force",
    "maxExportTilesCount": "100000",
    "ignoreCache": "false",
    "maxBufferCount": "100",
    "disableIdentifyRelates": "false"
  }
}
```

ArcGIS REST API



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Socle des APIs de niveau supérieur



```
{  
  "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\\arcgisoutput",  
    "supportedImageReturnTypes": "URL",  
    "maxSampleSize": "100000",  
    "clientCachingAllowed": "true",  
    "textAntialiasingMode": "Force",  
    "maxExportTilesCount": "100000",  
    "ignoreCache": "false",  
    "maxBufferCount": "100",  
    "disableIdentifyRelates": "false"  
  }  
}
```

03

ArcGIS API for JavaScript



<https://developers.arcgis.com/javascript/>

ArcGIS API for JavaScript JS



ArcGIS API for JavaScript JS

Démo : Intégration d'une carte



04

Les API Python ArcGIS



<https://developers.arcgis.com/python/>

Python dans ArcGIS

Python est partout dans ArcGIS



Les API Python ArcGIS

ArcPy ou ArcGIS API for Python?

ArcPy

Utiliser, automatiser et étendre le SIG Desktop (ArcMap et ArcGIS Pro) et Server

Principalement pour l'automatisation des géotraitements et des cartes sur des **données locales**

Bibliothèque comprehensive et puissante pour les analyses spatiales, la gestion des données et les conversions

ArcGIS API for Python

Prise en charge du SIG Web

Fonctionne sur ArcGIS Online ou ArcGIS Enterprise

Administration du portail, la gestion des contenus/groupes/utilisateurs, traitement des données web, analyse Big Data.....

Bibliothèque "légère" pour l'analyse spatiale, gestion d'un SIG web et réaliser des études de données spatiales

Les 2

Les API Python ArcGIS



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ArcGIS API for Python : une API pour votre SIG Web

```
publishing_web_maps_and_web_scenes (unsaved changes)
Python 3

File Edit View Insert Cell Kernel Widgets Help

In [11]: search_result = gis1.content.search("title:Montreal, Canada Buildings AND owner:esri_3d",
                                             item_type="scene service", outside_org = True)
display(search_result)

[<Item title:"Montreal, Canada Buildings" type:Scene Service owner:esri_3d>,
 <Item title:"Buildings_Montreal" type:Scene Service owner:esri_3d>]

In [12]: buildings_layer = search_result[0]
display(buildings_layer)

Montreal, Canada Buildings
This layer provides 3D models of buildings for Montreal, Canada to support your work in 3D
Scene Layer by esri_3d
Last Modified: September 27, 2016
0 comments, 3,849 views

In [13]: # Update web scene's operational layer with properties of buildings_layer
web_scene_dict['operationalLayers'][0]['itemId'] = buildings_layer.itemId
web_scene_dict['operationalLayers'][0]['layerType'] = "ArcGISSceneServiceLayer"
web_scene_dict['operationalLayers'][0]['title'] = buildings_layer.title
web_scene_dict['operationalLayers'][0]['url'] = buildings_layer.url
```



Les API Python ArcGIS

ArcGIS API for Python : les fonctionnalités

Automatiser la gestion du SIG Web

- Alimenter/ maintenir utilisateurs et groupes du portail
- Cloner portails
- Réassigner contenu d'utilisateur
- Effectuer des recherches de contenu
- Déterminer les relations entre éléments
- Créer des rapports sur les utilisateurs, leurs contenus

Automatiser la création de contenu

- Publication de contenu en dehors des heures de pointes
- Mettre à jour le cache et les entités
- Répliquer contenu d'un environnement à un autre (dev vers prod)
- Inspecter et mettre à jour éléments avec des liens éronnés

Analyse

- Accès aux outils d'analyse de Big Data
- Utilisation de packages python tierces pour analyser les données
- Créer des graphiques, des cartes 2D/3D dans l'environnement Jupyter notebook
- Partager ses recherches, notes et données (notebook)

Les API Python ArcGIS



Démo : Gestion d'utilisateurs, de contenu et de groupes avec ArcGIS API for Python

```
Ajouter Analyser Extraits de code Fichiers Tâches Instantané Partager Infos Enregistrer
File Edit View Insert Cell Kernel Help Python 3 (ipykernel)

Entrée [ ]: #gis.users.license_types

Entrée [ ]: #role_mgr = gis.users.roles
#for role in role_mgr.all():
#    print(f"{role.name} {role.role_id}")

Recherche des groupes partagés [...]

Lecture du csv et conversion en pandas dataframe

Entrée [8]: import pandas as pd
df = pd.read_csv('https://raw.githubusercontent.com/JapaLenos/SIG2022_Demos/main/Developer_avec_ArcGIS/API_Python/New_users.csv', sep=";")
df
#print(df.to_string())

Out[8]:
```

| | Prenom | Nom | Role | Description | RemplacementPrenom | RemplacementNom |
|---|--------|---------|-------------|---|--------------------|-----------------|
| 0 | Sylvie | Prost | advanced | Sylvie utilise ArcGIS Pro au quotidien pour de... | NaN | NaN |
| 1 | Sarah | Comte | storyteller | Sarah cree des storymaps pour la mise en avant... | Marie | Serva |
| 2 | Jean | Creason | creator | Jean cree et edite diverses applications sur A... | NaN | NaN |

```
Création des utilisateurs à partir du dataframe, ajout dans les groupes commun et modification des tags, de la bio et de la photo de profil

Entrée [20]: for i in df.index:
    new_user = gis.users.create(username = '{0}_{1}_{2}'.format(df["Prenom"][i], df["Nom"][i], time),
                                password = 'passw*rd',
                                firstname = df["Prenom"][i],
                                lastname = df["Nom"][i],
                                user_type = "{0}UT".format(df["Role"][i]),
                                email = "demo@esrifrance.fr",
                                groups = new_user_groups)

    user = gis.users.get('{0}_{1}_{2}'.format(df["Prenom"][i], df["Nom"][i], time))
    pp = '/arcgis/home/{0}_{1}_pp.jpg'.format(df["Prenom"][i], df["Nom"][i])
    user.update(description=df["Description"][i], tags="nouveau", thumbnail=pp)
```



05

SDKs ArcGIS Runtime

Titre de la slide

Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to corporate strategy

Leverage agile frameworks to provide a robust synopsis for high level overviews. Iterative approaches to corporate strategy foster collaborative thinking to further the overall value proposition.

Organically grow the holistic world view of disruptive innovation via workplace diversity and empowerment. Bring to the table win-win survival strategies to ensure proactive domination. At the end of the day, going forward, a new normal that has evolved from generation

X is on the runway heading towards a streamlined cloud solution. User generated content in real-time will have multiple touchpoints for offshoring.

Leverage agile frameworks to provide a robust synopsis for high level overviews.

06

Etendre ArcGIS

Titre de la slide

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Leverage agile frameworks to provide a robust synopsis for high level overviews.



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