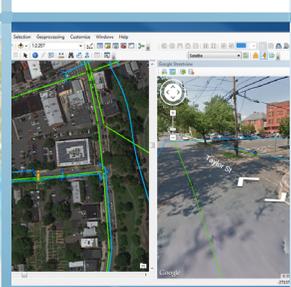
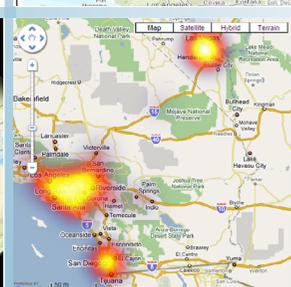
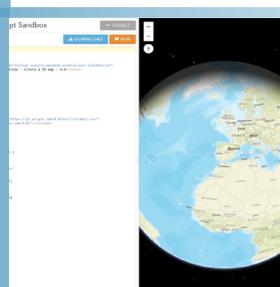
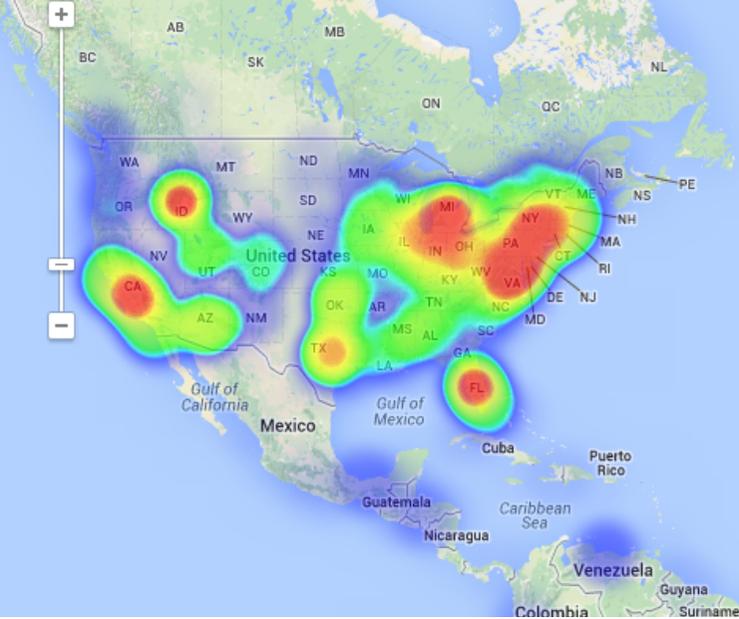


DEVELOPMENT OF WEB BASED GIS APPLICATIONS USING ARCGIS SERVER API 3.X FOR JAVASCRIPT

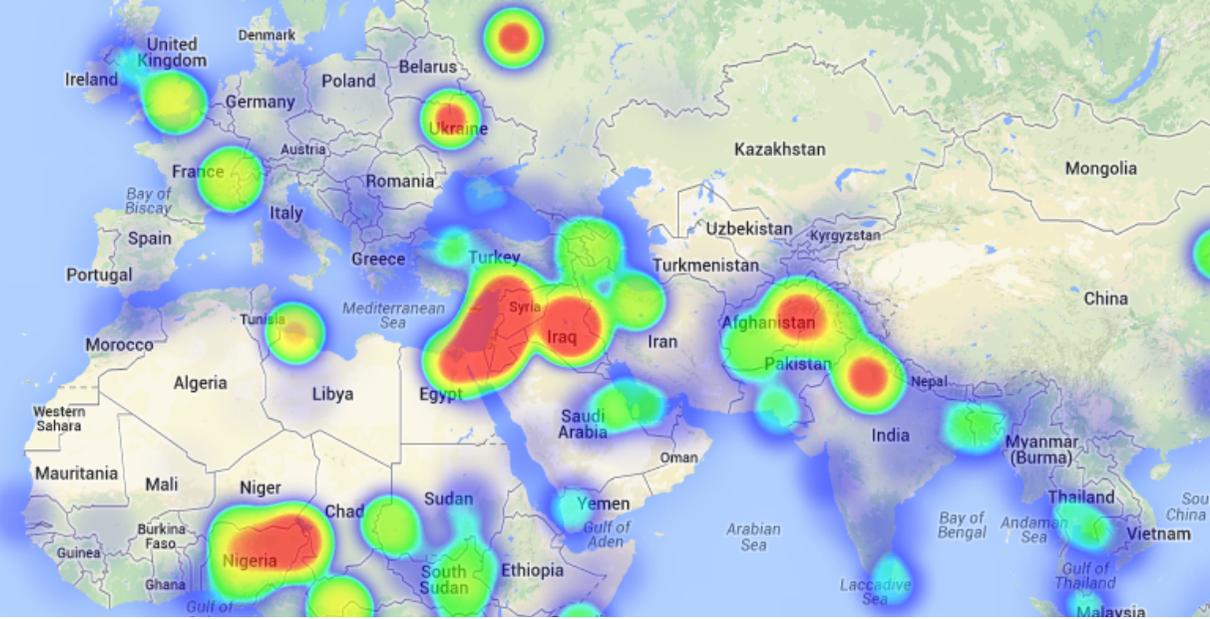
ONLINE TRAINING

```
http://localhost:6080/arcgis/rest/services/arcgis/MapServer/info/json?callback=?
{
  "name": "Pays ajout\u00e9: Suisse",
  "pays est dans le store ? true",
  "le pays est Suisse",
  "ET> Pays modifi\u00e9: Suisse",
  "ET> attribut: capitale: old: Geneve . new: Berne",
  "Verification 1. la capitale Suisse: Berne",
  "Verification 2. la capitale Suisse est: Berne",
  "ET> Pays modifi\u00e9: Suisse",
  "ET> attribut: capitale: old: Berne . new: Geneve",
  "De nouveau la capitale Suisse: Geneve",
  "ET> Pays modifi\u00e9: France",
  "ET> attribut: frontieres: old: { Object abbr=1 nom=1 capitale=1",
  "pays=1 R\u00e9gion S=Object O=2 nom=1 Object abbr=1 nom=1 capitale=1",
  "pays=1 R\u00e9gion S=Object O=2 nom=1 Object abbr=1 nom=1",
  "m=1 capitale=1 R\u00e9gion S=Object O=2 Object abbr=1 nom=1",
  "m=1 capitale=1 R\u00e9gion S=Object O=2 Object abbr=1 nom=1",
  "frontieres de La France",
  "sauvegarde personnelle",
  "sauvegarde effectu\u00e9e",
  "On supprime la Suede de la liste",
  "OK!>> Pays supprim\u00e9: Suede",
  "Suede est elle marqu\u00e9e comme modifi\u00e9e ? true",
  "Suede est encore pr\u00e9sente ? false"
}
```





North Atlantic Ocean



COURSE



You will learn how to develop web mapping applications using ArcGIS Server API (3.x and 4.x) for JavaScript. Students will learn to insert spatial data in their own Web applications through ArcGIS Server map services. They will be informed about the new released API version 4.x, and about all the new added features and capabilities. They will also learn about the differences between the two versions.

Learn the fundamentals of JavaScript, the most widely used web-based programming language, learn App design and development for iOS products (iPhone and iPad), integrate through advance programming techniques, online web mapping resources like Google Maps or Bing Maps. They will also gain knowledge in the developing 3D cartographic viewers using ArcGIS JavaScript API.

GOALS



- Learn the fundamentals of JavaScript, the most widely used web-based programming language and how to develop and manage online cartographic viewers.
- Get familiar with ESRI Web GIS technologies in a dynamic and interactive way.
- Create your own Web based GIS Applications using ArcGIS Server and ArcGIS API for JavaScript.
- Get an insight on how JavaScript API is connected with ArcGIS Server in order to share your new developed applications on the web.
- Gain experience in using ArcGIS online resources like ArcGIS Server and ArcGIS Online services.





METHODOLOGY

Enrolled students in this online course will have access to our virtual e-learning platform (which is available 24 hours), where they will find the content of the course, practical exercises, forum discussion and additional content. One of the advantages of this online platform, is that students can benefit of real time support and assistance offered by the instructor (2 hours per week), whom they can contact via direct messages, regarding course related issues, at any moment. They can also contact the instructor via email.

PERFILES



The course is aimed at professionals of the GIS world who, with knowledge or not of programming, want to know all the possibilities that programming with JavaScript offers.

INSTRUCTORS



Chencho Martín Lagunas

GIS Developer with extensive experience in Full-Stack software development, specialized in GIS data analysis and pre-processing using Python.



Alberto Santos Estévez

Consultant and Geospatial Developer with more than 15 years' experience in GIS integrated solutions and high performance systems.





INTRODUCTION TO JAVASCRIPT PROGRAMMING LANGUAGE

DEBUGGING APPLICATIONS

- What is Firebug?
- Using Console and Script tabs
- Highlighting HTML Elements
- Using CSS tab
- Debugging JavaScript code
- Error monitoring & reporting
- DOM Tab
- RED Tab
- Documentation

WORKING WITH DOJO AND ARCGIS SERVER

- Introduction to Dojo
- Dijit
- Dojox
- Dojo architecture
- Integrating Dojo with ArcGIS Server
- ArcGIS Server resources
- Initialization script
- Templates
- Dojo base and Dojo core
- Type checking
- String utilities
- Array processing
- JavaScript events and Dojo. What are the events?
- dojo.connect ()
- Managing events
- Should we record all the events?
- Mouse and Keyboard Event Normalization
- Publish/Subscribe Event Mechanism

ARCGIS SERVER FOR DEVELOPERS

- What is ArcGIS Server?
- GIS resources and services
- ArcGIS Server components
- ArcSDE
- ArcGIS Server editions
- What's new in ArcGIS Server 10.1.
- What's new in ArcGIS Server 10.3.1

INTRODUCTION TO JAVASCRIPT API FOR ARCGIS SERVER

- Aptana plugin
- Short overview of JavaScript API for ArcGIS Server
- Why JavaScript?
- Working with maps
- Tiled and dynamic/feature layers' services
- Working with map extension
- Working with graphics and graphic layers
- Feature layers
- Drawing graphics and elements
- Map events
- Info window
- Adding toolbars
- Controls (widgets)
- Editing
- Design a basic application
- ArcGIS templates
- API configuration parameters

ADVANCE TECHNIQUES USING JAVASCRIPT API FOR ARCGIS SERVER

- Introduction to ArcGIS Server tasks
- Performing Spatial and Attribute Queries
- Identifying Entities
- Finding elements
- Perform geocoding and reverse geocoding
- Geometry Service
- Route Task and Network analysis services
- Geoprocessing services
- Working with spatial data
- Multiple types of layers
- arcgis.com integration
- Using proxy with ArcGIS API for JavaScript
- Working with secure services

GOOGLE AND BING MAPS INTEGRATION

- ArcGIS Server extension for Google Maps
- Add an ArcGIS Server Dynamic Map Service to Google Maps
- Creating a query layer
- Search features
- Identify features
- Geocoding
- Geometry Service
- Geoprocessing services

ADVANCED RES OURCES OF DOJO

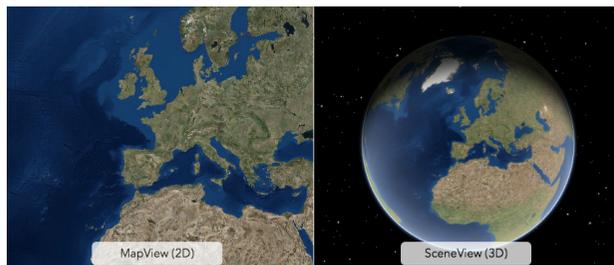
- Introduction
- Accessing Multiple Data Formats with the Dojo



Data API
 Working with JSON
 Reading JSON Data with Dojo
 Working with XML Data
 How to read CSV file
 Ajax for client-server communication
 dojo.xhr
 Cross Domain Scripting Issues & JSONP
 Using Iframe
 JSON-RPC
 User interface manipulation using DOM
 Display a simple dialog box and store input data from user
 Advanced Dijit Selects with Dojo
 Create dynamic graphs and charts using Dojo
 Display Image with Dojo

ADVANCED DESIGN TECHNIQUES FOR MAP APPLICATIONS

User-centered design (UCD)
 KISS Design principles
 Prototypes



INTRODUCTION TO USER INTERFACE DESIGN. CSS BASICS

What is User Centered Design?
 CSS Syntax
 Comments in CSS
 ID selectors
 Class selectors – CSS
 External Style Sheet
 Internal Style Sheet
 How to add CSS styles to HTML code
 Cascading Style Sheets
 CSS Backgrounds
 CSS Text
 Font styles
 Link styles
 List styles
 Use an image as a list marker
 Table styles
 Design better data tables
 CSS Box Model

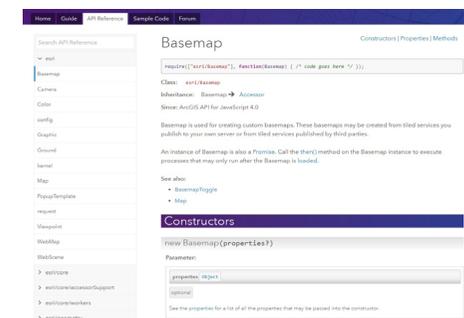
ADVANCED STYLING WITH CSS

Grouping Multiple CSS Selectors in One Style Property
 CSS Display and Visibility
 CSS Sizing
 CSS Positioning
 Overlapping elements in CSS
 Floating Elements with CSS
 CSS Image Transparency
 CSS image hover effects

USER INTERFACE DESIGN FOR IPHONE AND IPAD

Compact development (compact build)
 Initializing Display Parameters
 iOS Gestures
 Map interaction using IOS gestures
 API Geolocation
 Dojo.mobile

FINAL PROJECT





INTRODUCTION TO THE NEW JAVASCRIPT API VERSION 4.X

What are the new features added in the new version?

Restrictions

Practical Exercise 1: Where to find API help documentation and practical examples?

CONSTRUCTORS PROGRAMMING

What is a constructor in programming?

Constructor proprieties

Collections

Promise Object

Practical exercise 2: Proprieties.

Practical exercise 3: Working with Promise object.

MAPS, VIEWS AND LAYERS

Maps and Views

The new API version, MapView, SceneView and LayerView

Maps as a data sources

Web Mapping: Building Great Web Maps and manipulate data

Maps and Layers. Types of Layers:

- GraphicsLayer
- FeatureLayer
- MapImageLayer
- SceneLayer
- VectorTileLayer
- GroupLayer

How to access feature data via LayerView object?

Working with FeatureLayer object

Practical exercise 4: Create a 2D map.

Practical exercise 5: Create a web map.

Practical exercise 6: FeatureLayer access.

Practical exercise 7: Working with VectorTileLayer.

WORKING WITH 3D SCENES

Scenes and Web Scenes. How to add a Web Scene to your application?

Use Topographic Elevation Data to Create a 3D Map

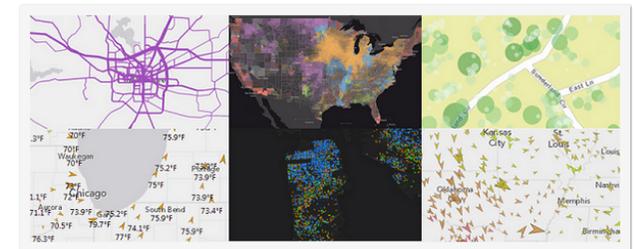
Edit the Scene View: Camera & Environment

- Display Sun and Shadows
- Local Scenes

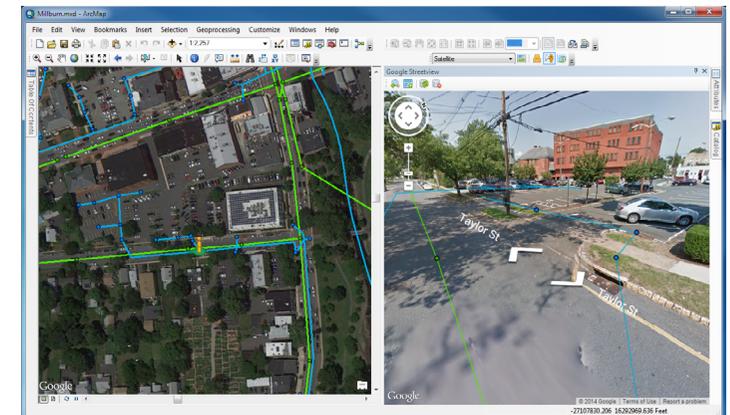
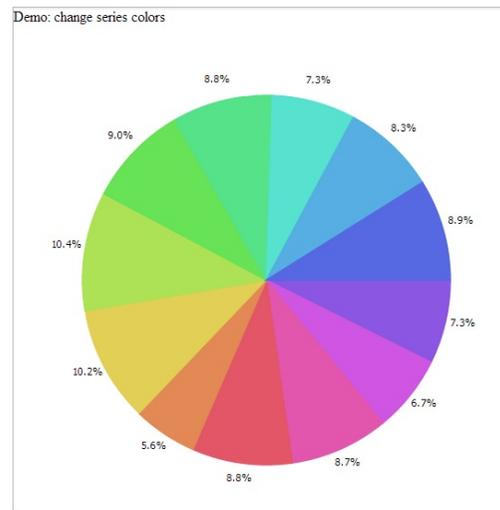
How to add Scene layers?

3D representation and symbology. Use of Visual Variables

Symbologies



CONCLUSIONS





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