Week 5 - Module 3 - GIS and Services Oriented Architectures

Karl Benedict

GEOG 485L/585L - Spring 2017

Introduction

Core the the development of distributed mapping systems over the internet is the concept of web services and the interoperability upon which they are based as the means of communication between systems. This week's lecture and focuses on the core concepts of geospatial *Services Oriented Architectures* and the open interoperability standards from the *Open Geospatial Consortium* that enable the exchange of map images and data over the web.

Expected Outcomes

By the end of this class module you should understand the following:

- The difference between raster and vector data formats and strategies for retrieving information about supported file formats
- The three general tiers of a geospatial services oriented architecture and the components that may exist in those tiers
- The key Open Geospatial Consortium standards for access, data, and representation

Key Concepts

- Raster and Vector Data Models
- The tiers of a geospatial services oriented architecture
- The constituent components of SOA tiers
- The role of OGC services in providing connectivity between SOA tiers
- The OGC WMS, WFS, WCS, GML, and KML standards and their respective capabilities and purposes

Class Prep

1. Yang C, Raskin R, Goodchild M, Gahegan M. Geospatial Cyberinfrastructure: Past, present and future. Computers, Environment and Urban Systems. 2010;34: 264–277. doi:10.1016/j.compenvurbsys.2010.04.001 http://www.sciencedirect.com.libproxy.unm.edu/science/article/pii/S0198971510000268
2. Granell C, Díaz L, Gould M. Service-oriented applications for environmental models: Reusable geospatial services. Environmental Modelling & Software. 2010;25: 182–198. doi:10.1016/j.envsoft.2009.08.005 http://www.sciencedirect.com.libproxy.unm.edu/science/article/pii/S1364815209002047
3. Foster I. Service-Oriented Science. Science. 2005;308: 814–817. doi:10.1126/science.1110411 http://science.sciencemag.org.libproxy.unm.edu/content/308/5723/814

Reference Materials

None

Weekly Milestone - Fun with data

Question 1 Define a data theme that you would like to focus on for this assignment

Download three data products from one or more of the following online data repositories or another data repository that has data that interest you.

- New Mexico Resource Geographic Information System
- The US National Map Data Download Site
- NOAA's National Climate Data Center *Climate data online: Data discovery* site
- US Census Bureau - Geography - TIGER Data

Question 2 For each of the three datasets provide the following information

- The name of the dataset
- The filename(s) for the dataset
- A short (1-2 sentence) description of the dataset's contents
- The bounding box (provided as the minimum and maximum extent in the N-S and E-W directions) in the native units and coordinate system
- The coordinate reference system - by name and EPSG code
