Applications Using MassGIS Web Mapping Services

Developed applications connecting to MassGIS' GeoServer

In addition to software such as desktop GIS that can connect to MassGIS’ GeoServer an number of specialized applications (mostly web based) have been deployed that connect to the MassGIS Web Mapping Services. Applications use a variety of toolkits, including OpenLayers, MapBuilder, Java Web Start, Google Maps API, Flex, JSP. Many are public so try them out and look at the source code. If you have questions about them contact the developer listed. Many MA state agencies, local governments, non profits, businesses and the federal government have developed applications.

For an overview, see the Powerpoint poster showing MassGIS Web Mapping Services system and clients using it. If your app is missing or described incorrectly please email Aleda.Freeman@state.ma.us. Also see: Web Mapping Services PowerPoint poster for screenshots of many client applications.

- **The Massachusetts Broadband Institute (MBI)** collaborated with MassGIS in May to create an online map-based survey using MassGIS' web mapping services. MBI is asking Internet users, particularly those in the western part of Massachusetts, to let them know what type of Internet access they have. The survey takes the user's address and plots it on a Google map. The user can move the marker to their exact location, then answer questions about their Internet access type, speed, and provider. The results are stored in MassGIS's database via web map services (PHP script is used). The results can be viewed as a WMS layer on top of Google maps. The survey was announced by Governor Patrick at a roundtable event in New Salem, MA on May 26th. Since then over 450 people have responded. Take the survey here: [http://maps.massgis.state.ma.us/broadband/broadband_survey_map.htm](http://maps.massgis.state.ma.us/broadband/broadband_survey_map.htm) There is also a version without a map (for r those with very slow connections).

- **Metropolitan Area Planning Council (MAPC)'s** Christian Spanning has created an OpenLayers application [http://maps.mapc.org/myrwa/](http://maps.mapc.org/myrwa/) for r the Mystic River Watershed Association that also showcases some of the great UI options of GeoExt, a JavaScript toolkit for rich mapping applications. Click the "Data Tables" to see tabular data that can be sorted and filtered. It connects to MassGIS Web Mapping Services for some of its layers.

- **PeopleGIS's MapsOnline** is a MapServer application that connects to MassGIS Web Mapping Services for some if its' data. See links to communities to use the applications. For more info email info@peoplegis.com.

- **MIT’s GeoWeb OpenLayers application** MIT GeoWeb application now incorporates MassGIS Web Mapping Service layers (as well as MIT layers from MIT's own GeoServer). For more info: Lisa Sweeney Head of GIS Services in the MIT Libraries

- **The Massachusetts Department of Fish and Game (DFG)'s** GIS program has developed for their Natural Heritage and Endangered Species Program (NHESP) an interactive map application delivered online using OpenLayers and the MassGIS Web Mapping Services. Kevin Robicheau worked on this project. This application was featured in the [New York Times’ Green Blog](http://maps.mapc.org/myrwa/) November 5th, 2010. More info: [Overview of BioMap2 program](http://maps.mapc.org/myrwa/). To see the maps view this web page: [BioMap2](http://maps.mapc.org/myrwa/).

- **The Massachusetts Department of Fish and Game (DFG)'s** GIS program has developed for their [Office of Fishing and Boating Access (O FBA)](http://maps.mapc.org/myrwa/) updated boat ramp maps delivered online using OpenLayers, Google maps, and the MassGIS Web Mapping Services. Kevin Robicheau worked on this project. In his words: "OFBA publishes an atlas of boat ramp locations throughout the Commonwealth. Those boat ramp maps have long been available online as PDFs. In replacing the PDFs our effort focused on creating a set of maps that are easy to update, have an easy to use user interface(UI), and print from all types of web browsers. To see the maps view this web page: [O FBA Boat Ramps](http://maps.mapc.org/myrwa/) and click the Facility Name link to see the associated map.*

- Select MassGIS / [Coastal Zone Management (CZM)](http://maps.mapc.org/myrwa/) datalayers are being used in the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) Map and Model Viewer. In the list of layers on the right side, scroll down to the "Mass. GIS / CZM" section. NERACOOS is an organization with a mission partly to lead the development, implementation, operation, and evaluation of a sustained, regional coastal ocean observing system for the northeast United States and Canadian Maritime provinces, as part of the United States Integrated Ocean Observing System (IOOS). MassGIS / CZM involvement in a broader regional data library shows the power of data integration with WMS.

- **Massachusetts Department of Education (DOE)** "Schools Near Me" - originally developed by John Kim, email Brian Philpot

- **Massachusetts Dept. of Education (DOE)** Special Education Data Reports - originally developed by John Kim, email Brian Philpot

- DEP's Welldriller program has an OpenLayers app that uses the MassGIS GeoServer web mapping services. Use the interface to Searchwell to narrow down the results on the map.

- David Lozzi of Delphi Technology Solutions has successfully embedded MassGIS WMS into SharePoint.

- **Liam Hon of Cambridge Systematics** is using MassGIS WMS with Flex.

- **Jerrard Whitten of Merrimack Valley Planning Commission (MVC)** has some apps using MassGIS Web Mapping Services.

- **United States Geological Survey (USGS)' The National Map Viewer** now connects to MassGIS Web Mapping Services (GeoServer cluster) for vector data such as libraries, schools, hospitals, and other layers. When using The National Map, look for (MassGIS) after the layer name as an indication the data is being streamed from MassGIS Web Mapping Services. Layers can be drawn and identify can be used to get feature information. Legends should appear soon. Although [shapefiles can be downloaded through the MassGIS WFS](http://maps.mapc.org/myrwa/), this is not supported in The National Map.
• Community Preservation Act Project Data Collection Application written by MassGIS. A user from the town logs in, fills out forms about their project and an address is geocoded through ArcGIS Server. (MapBuilder) User can move the point. Point edited in an SDE layer. Application deployed June 2007, in use. Developed by MassGIS for the Community Preservation Coalition. For more info email Aleda Freeman.

• Massachusetts DEP has many OpenLayers based applications that use the MassGIS' Web Mapping Services including UIC, WIRE, iProtect, and the Fish Mercury Access Portal. The Fish Mercury Access Portal allows the public to retrieve data on fish tissue mercury levels, water quality, or sediment chemistry collected since 1994. The site provides both GIS and text-based search. In the GIS-based search, a map is displayed which distinguishes lakes that have fish consumption advisories (red dots) from those that do not (blue dots). Sample locations and baseline mapping are provided through MassGIS web services. For more info email Gabriela Laird or email Aaron Richer.

• Massachusetts Department of Conservation and Recreation (DCR) has several OpenLayers based applications that use the MassGIS' Web Mapping Services including trails, historic landscapes and forestry. For more info email David Kimball.

• The Massachusetts Historical Commission (MassHistoric) has OpenLayers based applications that use the MassGIS' Web Mapping Services. For more info email Joshua Rosenthal.

• Christopher Wren and Gordon Jamieson used the MassGIS Web Mapping Services to publish a visualization of the geographic distribution of state aid to local municipalities. This work leveraged previous experience using the Google Maps API to visualize the geographic voting patterns within the Town of Arlington. Unlike the Arlington application, the State Aid application directs the Google API to request map tiles directly from the WMS servers via Web Map Service queries. The data used to color the maps is in turn provided to the WMS server as a Styled Layer Descriptor (SLD) file hosted on our application server. We combine several data layers on one map using the Google MapType mechanism. Once the layers are cached in the browser, this mechanism allows users to switch quickly between layers, enabling fast, visual comparisons between different data layers. Freed from a substantial coding burden, we were able to spend more time designing the visual style of the maps. Early draft versions of the application again employed the MapType mechanism to allow us to flip between choices of color schemes, implemented by different SLD files. We considered such factors as the connotations our color choices might have and the prevalence of color-blindness in our target audience. To facilitate this design process we automated the generation of the SLD files using a PERL script that processed information exported directly from the original spreadsheet. The MassGIS Geospatial Web Services allowed a pair of citizens to put together high-quality visualization very quickly. It is an indispensable tool for the citizen advocate. We are extremely grateful to the MassGIS for providing this tool and to Saul Farber and Aleda Freeman for their help and advice on this project.

• The Town of Amherst, MA has an number of applications including Amherst GIS Property Search, Amherst GIS Conservation Area and Trail Search, Amherst Landmark Locator, Amherst Street Search, Amherst GIS Utility System Search and the Amherst Public Pictometry Viewer (oblique imagery) which incorporates layers from MassGIS Web Mapping Services. For more info email Michael Olkin.

• The City of Boston's Department of of Neighborhood Development (DND) has an OpenLayers application that shows 2010 Distressed Private Property and incorporates orthophotos from MassGIS Web Mapping Services.

• MassGIS' OLIVER is an OpenLayers and GeoExt viewer which also uses YUI, Google maps and Bing geocoding. OLIVER provides access to hundreds of MassGIS datalayers and allows download of shapefiles and GeoTiffs. For more info email Aleda Freeman.

• Massachusetts Office of Coastal Zone Management (CZM)'s MORIS is a Java viewer which runs with Java Web Start. MORIS provides access to hundreds of CZM and MassGIS datalayers, focusing on ocean data and allows download of shapefiles and GeoTiffs and information on which regulations affect a user-selected point. For more info email Daniel Sampson or email Aleda Freeman.

• MassGIS' SPOLIVER is a Java viewer which runs with Java Web Start. SPOLIVER provides access to state police datalayers on crime by town and college as well as police employment and allows download of shapefiles. For more info email Aleda Freeman.

• MassGIS has 6 JavaServer Pages (JSP) based viewers which connect to the Web Mapping Services. These are: Legislative District Browser, Census Data by Town, Census Data by Legislative District, Areas of Critical Environmental Concern (ACECs), DOR Watershed Protection Act, Massachusetts Department of Revenue (DOR) Real Property Sales (LA3).

• Gabriela Laird of MassGIS developed a toolbar for ArcMap which connects to the MassGIS Web Mapping Services, downloads an openspace shapefile, and when the user is done editing, uploads the changes to the MassGIS SDE database via Web Mapping Services WFS.