

MASSGIS Web Mapping Services

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(aka MassGIS)

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http://maps.massgis.state.ma.us/temp/MAPC_Data_Day_7_15_09.ppt



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History of Web Mapping Services at MassGIS

- 1999 Mass.gov E-gov initiative spurs development of mapping service
- 2002 MassGIS offers OGC standard based WMS/WFS with custom software (MapAccess) (requests translated to ArcIMS XML)
- 2004 Installation of GeoServer (open source, reference implementation of OGC standards)
<http://www.geoserver.org>
- 2005 MassGIS wins URISA ESIG and GITA Innovator awards for web mapping services



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2 Main Types of OGC Services

WMS – Web Map Service (GetMap)

- Image of a map returned (PNG, TIFF, etc)
- Can get a legend graphic

WFS – Web Feature Service (GetFeature)

- Feature info returned (attributes and/or coordinates)

For WMS or WFS:

- Request can be URL or XML
- Can filter on attributes or geometry
- Can get data back in > 3,000 projections

Many output formats: JPG, PNG, GML, KML, SHP, PDF
Coming soon: XLS, CSV



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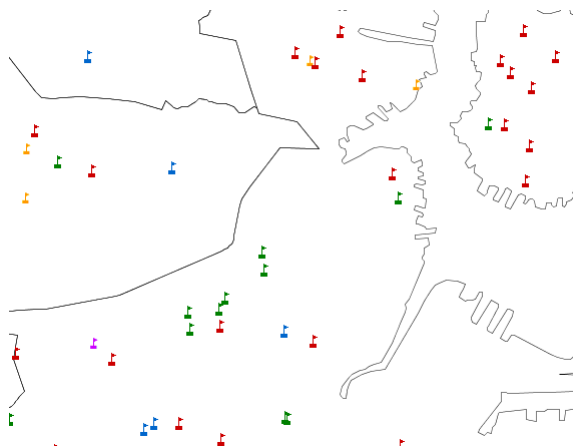
WMS URL Example

```
http://giswebservices.massgis.state.ma.us  
/geoserver/wms?VERSION=1.1.1&REQUE  
ST=GetMap&SERVICE=WMS&LAYERS=ma  
ssgis:GISDATA.TOWNS_POLYM, massgis:G  
ISDATA.SCHOOLS_PT&STYLES=Black_Lin  
es,&BBOX=232325.38526025353,898705.  
3447384972,238934.49648710093,90374  
9.1401484597&SRS=EPSG:26986&WIDTH  
=570&HEIGHT=435&FORMAT=image/png
```



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WMS Result



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WFS URL Example

```
http://giswebservices.massgis.state.  
ma.us/geoserver/wfs?request=GetFe  
ature&version=1.0.0&service=WFS&  
propertyname=TOWN,POP2000&type  
name=massgis:GISDATA.TOWNS_P  
OLYM&CQL_FILTER=POP2000>1000  
00
```



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WFS Result (partial)

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection xmlns:wfs="http://www.opengis.net/wfs" xmlns:gml="http://www.opengis.net/gml"
  xmlns:massgis="http://massgis.state.ma.us/featuretype"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://massgis.state.ma.us/featuretype http://giswebservices.massgis.state.ma.us
  <gml:boundedBy>
    <gml:Box srsName="http://www.opengis.net/gml/srs/epsg.xml#26986">
      <gml:coordinates xmlns:gml="http://www.opengis.net/gml" decimal="." cs="," ts=" "
        >107210.18360951201,868673.000913621
        252005.57369636302,935123.120655508</gml:coordinates>
    </gml:Box>
  </gml:boundedBy>
  <gml:featureMember>
    <massgis:GISDATA.TOWNS_POLYM fid="GISDATA.TOWNS_POLYM.35">
      <massgis:OBJECTID>35</massgis:OBJECTID>
      <massgis:TOWN>BOSTON</massgis:TOWN>
      <massgis:POP2000>588957</massgis:POP2000>
    </massgis:GISDATA.TOWNS_POLYM>
  </gml:featureMember>
  <gml:featureMember>
    <massgis:GISDATA.TOWNS_POLYM fid="GISDATA.TOWNS_POLYM.49">
```



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Clients to MassGIS OGC WMS/WFS

Clients using OGC WMS/WFS can connect to MassGIS' GeoServer for maps and data

Clients include:

- Simple URLs
- Viewers built w/ OpenLayers (JavaScript library) – DCR
- Viewers built w/ MapBuilder (JavaScript library) – DEP, DCR
- MassGIS desktop MORIS viewer (Java Web Start)
- ESRI ArcMap desktop GIS
- Google Maps
- Google Earth
- Open Source GIS desktop clients (such as uDig)
- USGS The National Map



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Agencies/Orgs Using MassGIS web map services

- **Programmers doing their own work:**
DEP, DCR, DOE, DFG, MassHistoric, Town of Amherst, Merrimack Valley Planning Commission, USGS
- **Groups getting benefit of MassGIS-created applications**
Community Preservation Coalition, State Police, CZM, Massachusetts Broadband Initiative



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ITD XML Gateway

Some agencies (DEP, EOHHS) not allowed to contact MassGIS web services server directly – requests must go through ITD XML Gateway and be validated by schemas

Available through the gateway:

- WMS
- WFS
- Geocoding requests to ArcIMS (AXL, not OGC)



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GeoServer statistics

- **738** layers (will increase to 840+ after upgrade)
- **1,138** SLD styles
- **13,000** requests/day
- images served from cache **22%** of the time



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Future Plans

- Upgrade GeoServer (from 1.6.5 to 1.7.5)
 - will have 100+ new rasters
 - XLS, CSV outputs
 - curved labels
 - faster
 - many other improvements/bug fixes
- Contact me to test your app against 1.7.5
 - WFS responses are formatted slightly differently



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Future Plans

- Convert last MapAccess viewers and turn off MapAccess (requests to <http://maps.massgis.state.ma.us/mapaccess/main.jsp?...> should be converted ASAP)
- Look into increasing performance (possibly change caching system)



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MassGIS Webservices Wiki

<http://lyceum.massgis.state.ma.us>

Working examples of requests and responses with MassGIS data

MassGIS Geospatial Web Services Homepage

This is the home of the MassGIS geospatial web services project. This site contains information on accessing, using and developing against MassGIS-maintained "Web Map Service" and "Web Feature Service" services. **Anyone may use these services.** Questions about how to use the MassGIS web services can be sent to:

- Aleda Freeman, Aleda.Freeman@state.ma.us, 617-626-1193

We can help you figure out how best to use the services, and help you construct your request syntax.

Who We Are

MassGIS is the Commonwealth's Office of Geographic and Environmental Information.

What We Do

MassGIS provides several OGC compliant XML-based web services for accessing spatial data about Massachusetts. Publicly available datasets include aerial photography, street maps, census data, environmental data and much much more. Much of this data is available for free download via the MassGIS data download page.

If, however, you are simply writing an application and want to use the data in your application, standard XML calls can be made to publicly available web services to fetch maps of interesting areas, query datalayers for relevant information, or validate locations or addresses.

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