

# Introducing Web Services

## Wider access to GIS

### Introduction

Web services have been around for a few years now, but have recently become a buzzword in the world of GIS.

Web Services are a way of making a function or service widely available to many users over the internet. For GIS this means advances in speed and efficiency as well as expanded use of the web for transactions and integration of systems.

### Background

The easiest way to describe web services is to compare them to the telephone Directory Enquiries. You don't need to know how to search the directory yourself – all you need to do is pick up the phone, dial a number, and ask a question. The actual call centre does the work for you, whether it is around the corner, or on another continent (provided you speak the same language!).

A web page or application can use Web Services in a similar way, but using the internet rather than the phone system. In other words the internet becomes your phone and the web service is the operator at the other end retrieving the requested information. The advantage in this scenario is that the internet communicates with the web service using “open standards” so there are no potential language barriers. This means data or functionality can be hosted anywhere in the world and accessed by applications using the web!

The standards for creation of GIS Web Services are governed by the Open Geospatial Consortium, Inc.<sup>TM</sup> (OGC) and there are essentially two types - Web

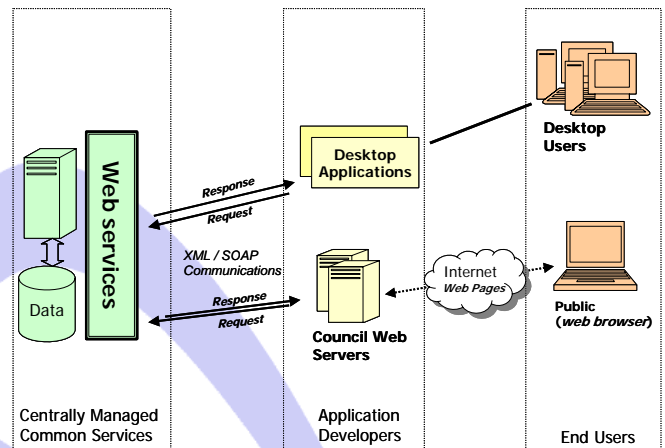


Diagram showing how Web Services fit in with service delivery

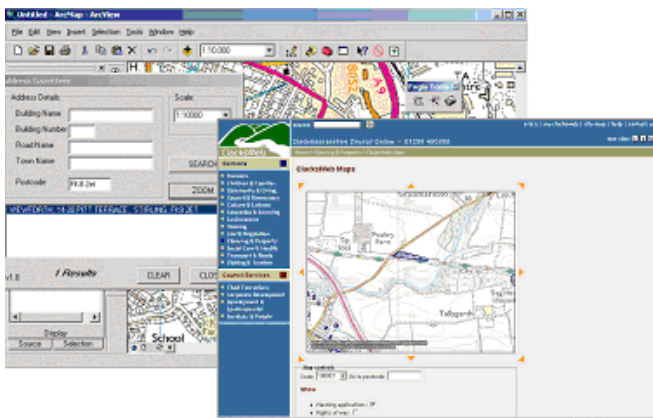
Mapping Services (WMS) and Web Feature Services (WFS). A WMS returns maps as images and may be used where the application simply requires mapping as a wallpaper. A WFS returns actual features so that an application can interact with the individual points, lines and polygons that make up the map data.

Forth Valley GIS are presently using web services to make maps and data more widely available within Clackmannanshire, Falkirk, and Stirling Councils through websites and business applications.

### Requirement

Forth Valley GIS has created a centrally managed GIS infrastructure for Clackmannanshire, Falkirk, and Stirling Councils. This includes an Oracle<sup>®</sup> database (GeoStore) and an intranet mapping application (GeoLink). This platform is capable of distributing geographic data and GIS functionality to all Council staff.

Although this solution offers enormous potential as a stand-alone application, there are many situations where a Council service would like to embed the map or use the geographic data in their own application or website. This could be for simply displaying a map or enabling queries such as “where’s my nearest?” or “what’s in my area?” Web services are the ideal tool to provide this functionality allowing the application to retrieve geographic data via the web.



*Address Search service used in desktop application; Map and address search service as used on Clackmannanshire Council's website*

## Solution

By using the Oracle® and Intranet Mapping foundation, web services have been used to integrate GIS with other business applications. The examples show how the Forth Valley GIS web services are already being used to provide valuable information to the public and to enhance applications.

- The Planning and Property section of the Clackmannanshire Council website is using web services to display interactive mapping and allow property search queries.

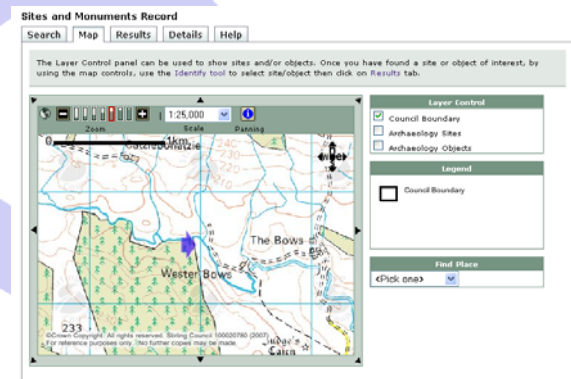
<http://www.clacksweb.org.uk/property/maps>

- The Stirling Council website uses web services to search the Corporate Address Gazetteer and retrieve additional information about the property such as the Council catchment ward, primary and secondary school. You can also find out your nearest library or local Council office and

view a map showing where they are.

<http://www.stirling.gov.uk/search>

- A toolbar has been created for ArcGIS® which provides enhanced functionality for measuring areas and zooming to coordinates. This uses web services to provide address searching and a layer library tool.
  - Web services are used to search archaeological Sites and Monuments information on the Stirling Council website, and show their locations on a map. <http://www.stirling.gov.uk/archaeology>
- The services are also used for mapping within the desktop application used to manage this information.



*Screenshot of the Sites & Monuments Record application on Stirling Council Website.*

Forth Valley GIS & Glasgow City Council have been working with WDM Software to enable the WDM Highway Maintenance System to display background mapping from a Web Mapping Service (WMS). This means that the WDM Highway Maintenance System can use OS Mastermap® data managed in the GeoStore database. WDM are also producing a Web Mapping Service so data created in the Highways Maintenance System can be served back to GeoLink and GeoStore.

## Benefits

All three partner Councils are using web services and are benefiting from:

- wider access to maps and data within their own web sites

- centrally managed data and maps – this means that information is always up to date
- more flexible application development. The GIS functionality is separated from the presentation, so web developers can concentrate on page design rather than the GIS functionality

***There is enormous potential for the use of web services. This has been made possible because of the excellent technical framework provided by Forth Valley GIS.***

***Daniel Champion, Clackmannanshire Council.***

### **Future Developments**

The expansion in use of web services for GIS deployment will continue to multiply. As development tools improve, more robust web-based and embedded GIS applications will be delivered across all service areas.

The use of location-based services, wireless web services for business applications and the greater integration and exchange of geographic data will all improve the efficiency and scope of use for GIS.

For the Councils and its partner agencies this presents an exciting opportunity to maximise the potential to use geographic information in more innovative and cost-effective ways.

<b>Project type:</b>	Systems Integration
<b>Software Platform:</b>	ESRI ArcIMS®; Macromedia ColdFusion® Mx; Oracle® 9i locator; Microsoft® IIS
<b>Services used within:</b>	VB; ASP.NET; PHP; Obtree content management system;
<b>Customers:</b>	Clackmannanshire, Falkirk and Stirling Councils

For further information, visit our web site where you can fill in an on-line request for further information:

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