

## **Developing an Open Source Indoor GIS Web Application**

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A GIS web server has been created that delivers campus building plans and associated indoor data to both desktop and mobile clients. This poster describes two aspects of the application development.

Firstly, the software platform is explained. The GIS web server was built using open source software including MapServer, PostgreSQL with the PostGIS extension, the PgDijkstra Routing module, and PHP. The GIS Data sets were created from CAD building floor plans and orthophotos. The user interface was designed for both small display mobile web clients and standard display size devices.

Secondly, several example indoor GIS applications are shown.

Database searches allow users to find and display floor plans around staff offices or campus services. The map display provides standard GIS actions such as zoom as well as navigation up and down building floor plan levels.

Location-based applications find location using WIFI or RFID. RFID phones provide precise position with passive RFID tags placed on key locations but these phones are expensive. WIFI is of no-cost if the client has a WIFI enabled device. The WIFI access point is used as the client location, though the location accuracy is improved with triangulation if multiple access points are available. WIFI tags are attached to assets and programmed to be motion-sensitive. Location-based applications include finding the current location of user or asset, showing a location history, or warning if an asset is moved.

Routing applications allow a user to find the shortest route between two different locations. A route is displayed over the building and campus map. The route may show that the user must navigate up or down floor levels, outdoors or into another building and the display will change as the user clicks on these options. A 'no-stairs' option finds a shortest route but only with elevators to change floor levels.