

2019

MapDemoApp

QUICK TECHNICAL GUIDE
SACHIT RAJBHANDARI

REVISION HISTORY			
DATE	VERSION	DESCRIPTION	AUTHOR
26 March 2019	1.0	Initial Draft	Sachit Rajbhandari

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1 INTRODUCTION

1.1 PURPOSE

The aim of this document is to provide the technical specification of the developed web application – **MapDemoApp**, specifically developed for demonstration at the job interview in CSIRO Oceans and Atmosphere.

1.2 PROJECT SCOPE

The scope of this project is limited to demonstration of software development capabilities with geospatial data.

1.3 INTENDED AUDIENCE

The committee member of job interview panels.

2 DESCRIPTION

2.1 PRODUCT PERSPECTIVE

The product is designed to demonstrate the spatial data visualisation using OGC compliant web services as a web application.

2.2 FEATURES

The main feature of this web application is to visualise Local Government Areas (LGAs) in the map of Tasmania, Australia. Other features are list below:

- Ability to display different types of base maps (e.g. theList, USGS, OpenStreetMap).
- Ability to display different spatial layers (e.g. LGAs, Water Bodies)
- Ability to show spatial information in map and tabular form.
- Ability to connect to GeoServer to extract map and features information using WMS (Web Map Service) and WFS (Web Feature Service) functionalities.

2.3 OPERATING ENVIRONMENT

The software is deployed as a web application using Tomcat as a web container.

2.4 CONSTRAINTS

This is a demo/prototype application developed with time constraints limited time to 4 days.

2.5 ASSUMPTIONS / DEPENDENCIES

The application is designed to visualise spatial information of LGAs of Tasmania. The application is not limited to show information of a particular place but can be used to visualise spatial information of any location in the map and tabular form.

3 SYSTEM OVERVIEW

3.1 SYSTEM ARCHITECTURE

The system architecture is depicted in Figure 1 to show the system workflow between different components.

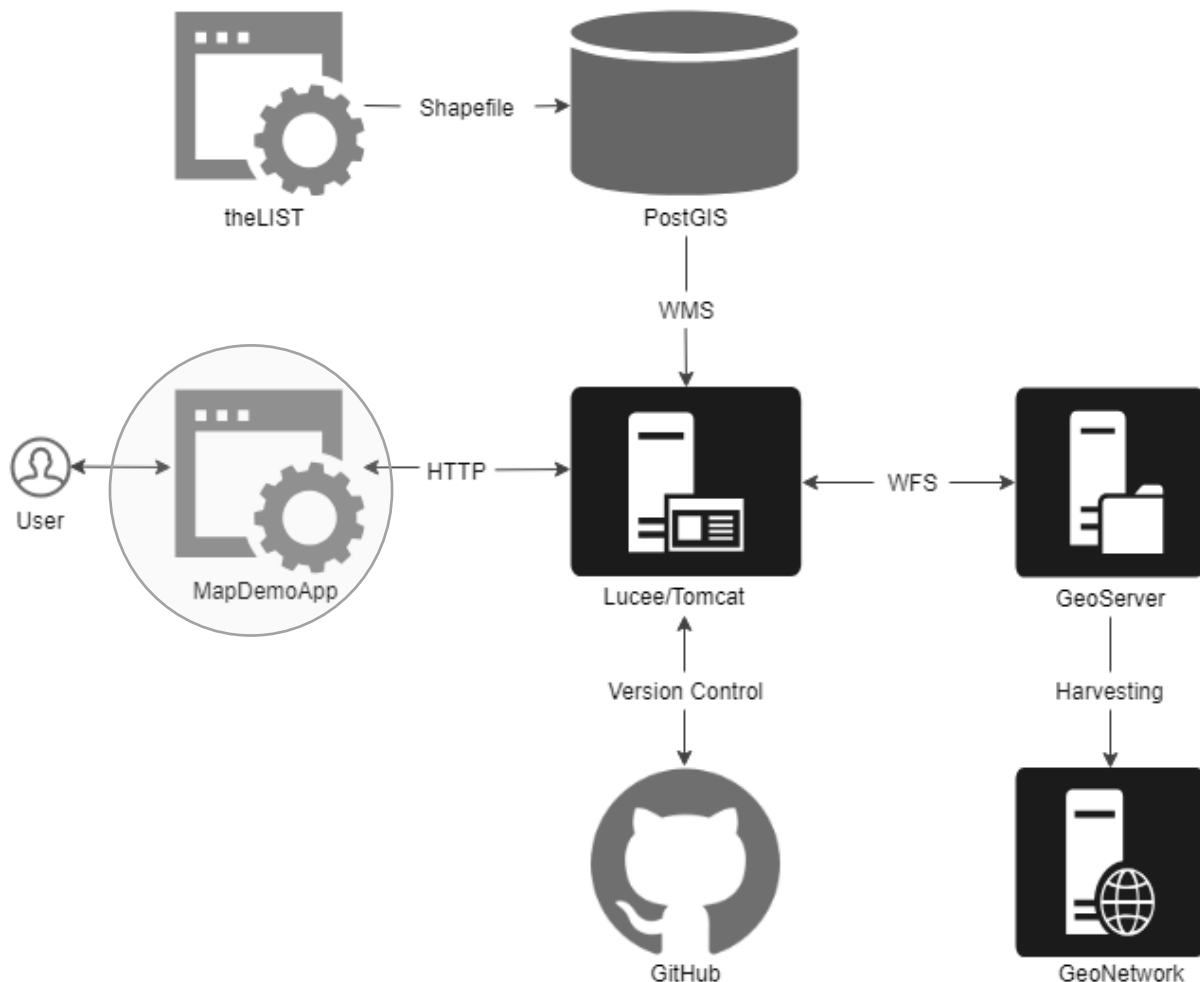


Figure 1: Overall system architecture of MapDemoApp

3.2 SYSTEM COMPONENTS

The system components are broken down as below.

- **MapDemoApp**
This is the web application we developed in Lucee using CFML (ColdFusion Markup Language) scripting language. The application provides a map and tabular interface to view spatial information of LGAs of Tasmania
Link: <http://localhost:8888/MapAppDemo/index.cfm>

- **Tomcat**
Apache Tomcat Server is an open-source Java Servlet Container developed by the Apache Software Foundation. We have used Tomcat as web container to serve web pages written in CFML.
Link: <http://tomcat.apache.org>
- **theList - External Website**
The LIST (Land Information System Tasmania) is a contemporary, online service that provides access to integrated land and property information and related services of Tasmania, Australia. In this project, we downloaded shapefile describing LGAs of Tasmania from theList website and exported to the PostGIS database.
Link: <https://www.thelist.tas.gov.au/>
- **PostGIS - Database**
PostGIS is an open source software program that adds support for geographic objects to the PostgreSQL object-relational database. The database server holds all the information populated in the web application.
Link: <https://postgis.net/>
- **GeoServer**
GeoServer is an open source server for sharing geospatial data. Designed for interoperability, it publishes data from any major spatial data source using open standards. We exported spatial data for data interoperability and easy access using WMS and WFS.
Link: <http://geoserver.org/>
- **GeoNetwork**
GeoNetwork is a cataloguing application to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an interactive web map viewer. We harvested the metadata of Tasmanian map webservice into the GeoNetwork server.
Link: <https://geonetwork-opensource.org/>
- **GitHub**
GitHub is a web-based hosting service for version control using Git. We used GitHub for a distributed version control and source code management.
Link: <https://github.com/>

4 REQUIREMENTS OF EXTERNAL INTERFACE

4.1 USER INTERFACES

The user interface has been developed using two framework Calcite and Bootstrap. The screenshots of the application are listed below based on their functionalities.

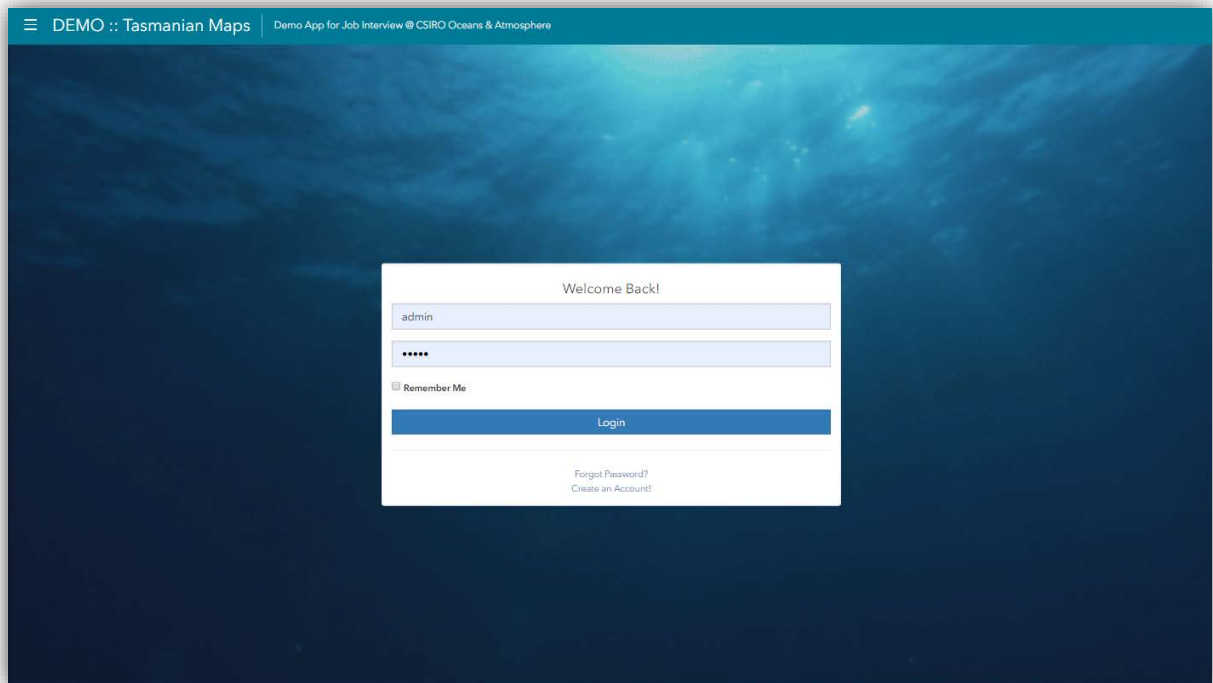


Figure 2: Application home page with a login interface

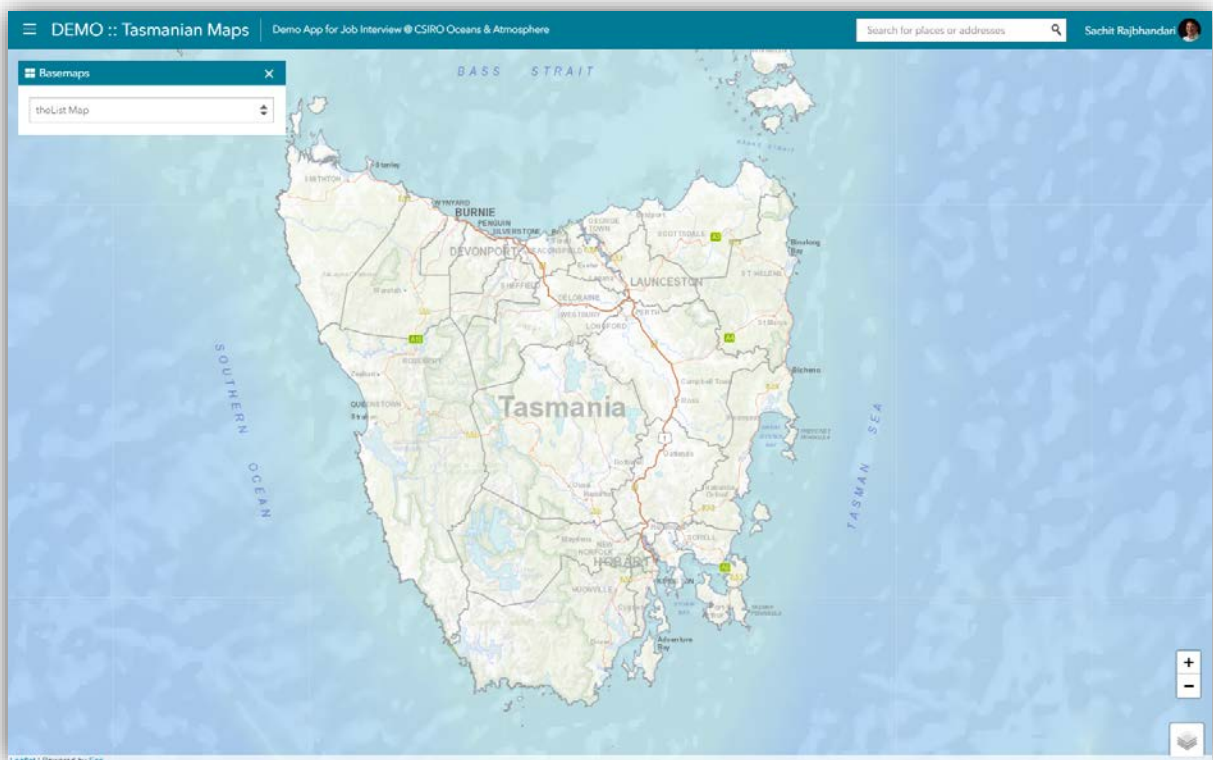


Figure 3: Application Map Viewer page

DEMO :: Tasmanian Maps

Demo App for Job Interview @ CSIRO Oceans & Atmosphere

Sachit Rajbhandari

LGAs of Tasmania

Show10entries

Search:

Name	Easting	Northing
West Tamar	488695.978960	5430202.89952
West Coast	386891.836055	5316441.44870
Waratah-Wynyard	374235.378315	5417701.52419
Tasman	567946.553493	5232884.22466
Southern Midlands	532969.912807	5301915.92908
Sorell	556465.839388	5263296.62349
Northern Midlands	538227.991849	5367885.15200
Meander Valley	457159.575991	5391528.85530
Launceston	525446.143654	5421176.52515
Latrobe	463115.814212	5434367.78695

Showing 1 to 10 of 29 entries

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Figure 4: Application Data View Page

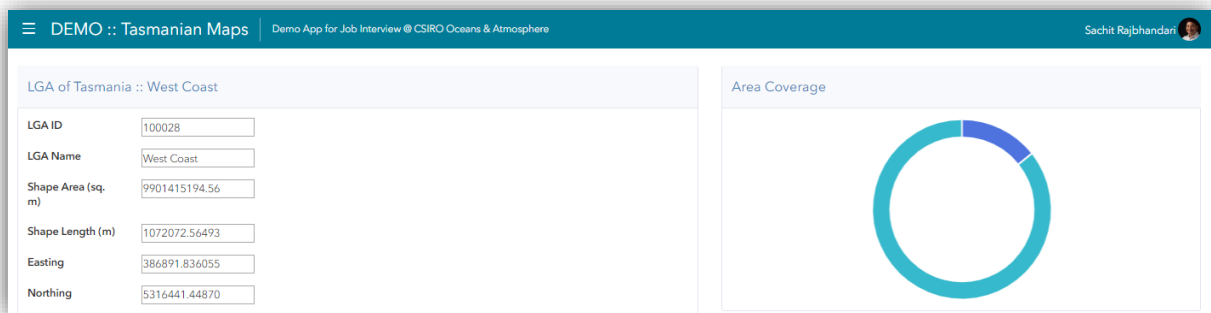


Figure 5: Application detail view page

4.2 SOFTWARE INTERFACES

The software is developed using a CFML scripting language and other web development frameworks.

- Lucee**
 Lucee is the leading open-source CFML application server/engine. Lucee provides a lot of functionality (tags and functions) to deal with all kinds of web related actions.
 Link: <https://lucee.org/>
- Calcite Web framework**
 Calcite Web is a branded CSS & JavaScript framework, web style guide, and visual design system for Esri.
 Link: <https://esri.github.io/calcite-web/>

- **Bootstrap**
Bootstrap is a free and open-source front-end web framework. It contains HTML and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions

Link: <https://getbootstrap.com/>

5 APPENDICES

5.1 APPENDIX A: WEB APPLICATION RELATED LINKS

- **MapAppDemo:** <http://localhost:8888/MapAppDemo/index.cfm>
- **GeoServer:** <http://localhost:8888/geoserver/>
- **GeoNetwork:** <http://localhost:8888/geonetwork/>
- **GitHub:** <https://github.com/sachitrajbandari/MapDemoApp>

5.2 APPENDIX B: GLOSSARY OF TERMS

CFML	ColdFusion Markup Language
CSIRO	Commonwealth Scientific and Industrial Research Organisation
LGA	Local Government Areas
LIST	Land Information System Tasmania
USGS	United States Geological Survey
WFS	Web Feature Service
WMS	Web Map Service