

CHyF Pilot Technical Details, v1.0

Prepared by: Chris Hodgson, Refractions Research (chodgson@refractions.net)

Prepared for: Mark Sondheim, Natural Resources Canada (mark.sondheim@canada.ca)

Marie-Eve Martin, Natural Resources Canada (marie-eve.martin@canada.ca)

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The CHyF Application is Java 8 web application (.war file) which was developed in the Eclipse IDE using Maven for dependency and build management. The compiled .war file is about 20MB with all the various libraries included; notably it makes use of Spring Web MVC, JTS, GeoTools, and SLF4J. The code does make use of some Java 8-specific features and cannot run on earlier versions of Java without changes.

It is deployed on Tomcat 8 running on a AWS t2.micro instance with 1 vCPU and 1 GB of RAM, running Amazon Linux 2017.09. The application uses less than 500MB of RAM while running. The filesystem path to the ~36MB of data files can be overridden with a context-param in the Tomcat configuration. Shapefiles with the same names and attributes but different data, meeting the requirements of the specifications, could be substituted, however the memory usage of the application will grow with the size of the data.

The HTML5/JavaScript web application makes use of jQuery and Leaflet and has been most thoroughly tested in Chrome but is known to work on Firefox, Edge, up-to-date Safari on IOS and OS X, and even works in Chrome on Android 7. The web app references Javascript libraries from various CDNs and is not minified or optimized in anyway at this time. The Leaflet map makes use of various freely available web services for basemaps. Some of these services require registration for an API key to access them; if the application were to be taken over by another agency these keys should be updated by the maintainer.

The back-end REST API and front-end web app are hosted on non-secure HTTP for ease of implementation. Only configuration and implementation details prevent them from running in a secure HTTPS environment. The REST API allows for open access via CORS, and the front-end app makes use of CSP.

The source code for the application is available on github at:

<https://github.com/cmhodgson/chyf-pilot>

Here is a list of the 38 3rd-party Java library dependencies and their license as identified by Maven:

- (Public Domain) AOP alliance (aopalliance:aopalliance:1.0 - <http://aopalliance.sourceforge.net>)
- (Eclipse Public License - v 1.0) (GNU Lesser General Public License) Logback Classic Module (ch.qos.logback:logback-classic:1.1.7 - <http://logback.qos.ch/logback-classic>)
- (Eclipse Public License - v 1.0) (GNU Lesser General Public License) Logback Core Module (ch.qos.logback:logback-core:1.1.7 - <http://logback.qos.ch/logback-core>)
- (Apache 2.0) Gson (com.google.code.gson:gson:2.7 - <https://github.com/google/gson/gson>)
- (The Apache Software License, Version 2.0) EJML (com.googlecode.efficient-java-matrix-library:core:0.26 - <http://code.google.com/p/efficient-java-matrix-library/>)
- (GNU Lesser General Public License, Version 2.1) com.vividsolutions:jts-core (com.vividsolutions:jts-core:1.14.0 - <http://www.vividsolutions.com/jts>)
- (The Apache Software License, Version 2.0) Apache Commons Logging (commons-logging:commons-logging:1.2 - <http://commons.apache.org/proper/commons-logging/>)
- (The Apache Software License, Version 2.0) Commons Pool (commons-pool:commons-pool:1.5.4 - <http://commons.apache.org/pool/>)
- (Unknown license) jai_core (javax.media:jai_core:1.1.3 - no url defined)
- (Unknown license) jgridshift (jgridshift:jgridshift:1.0 - no url defined)
- (Eclipse Public License 1.0) JUnit (junit:junit:4.12 - <http://junit.org>)
- (BSD License) jsr-275 (net.java.dev.jsr-275:jsr-275:1.0-beta-2 - <http://maven.apache.org>)
- (The MIT License(MIT)) Java implementation of GeographicLib (net.sf.geographiclib:GeographicLib-Java:1.44 - <http://geographiclib.sf.net>)
- (GNU Lesser General Public License 2.1) GNU Trove (net.sf.trove4j:trove4j:3.0.3 - <http://trove4j.sf.net>)
- (Apache License, Version 2.0) Apache Commons Lang (org.apache.commons:commons-lang3:3.4 - <http://commons.apache.org/proper/commons-lang/>)
- (Unknown license) tomcat-servlet-api (org.apache.tomcat:tomcat-servlet-api:7.0.27 - no url defined)
- (Lesser General Public License (LGPL)) API interfaces (org.geotools:gt-api:18.2 - no url defined)
- (Lesser General Public License (LGPL)) DataStore Support (org.geotools:gt-data:18.2 - no url defined)
- (BSD License for HSQL) (EPSG database distribution license) (Lesser General Public License (LGPL)) EPSG Authority Service using HSQL database (org.geotools:gt-epsg-hsql:18.2 - no url defined)
- (Lesser General Public License (LGPL)) Main module (org.geotools:gt-main:18.2 - no url defined)
- (Lesser General Public License (LGPL)) Metadata (org.geotools:gt-metadata:18.2 - no url defined)

- (Lesser General Public License (LGPL)) (OGC copyright) Open GIS Interfaces (org.geotools:gt-opengis:18.2 - no url defined)
- (Lesser General Public License (LGPL)) Referencing services (org.geotools:gt-referencing:18.2 - no url defined)
- (Lesser General Public License (LGPL)) Shapefile module (org.geotools:gt-shapefile:18.2 - no url defined)
- (New BSD License) Hamcrest Core (org.hamcrest:hamcrest-core:1.3 - <https://github.com/hamcrest/JavaHamcrest/hamcrest-core>)
- (HSQLDB License, a BSD open source license) HyperSQL Database (org.hsqldb:hsqldb:2.3.0 - <http://hsqldb.org>)
- (Similar to Apache License but with the acknowledgment clause removed) JDOM (org.jdom:jdom:1.1.3 - <http://www.jdom.org>)
- (MIT License) SLF4J API Module (org.slf4j:slf4j-api:1.7.25 - <http://www.slf4j.org>)
- (Apache License, Version 2.0) Spring AOP (org.springframework:spring-aop:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Beans (org.springframework:spring-beans:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Context (org.springframework:spring-context:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Core (org.springframework:spring-core:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Expression Language (SpEL) (org.springframework:spring-expression:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Web (org.springframework:spring-web:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (Apache License, Version 2.0) Spring Web MVC (org.springframework:spring-webmvc:4.3.9.RELEASE - <https://github.com/spring-projects/spring-framework>)
- (The Apache Software License, Version 2.0) spring-security-config (org.springframework.security:spring-security-config:4.2.3.RELEASE - <http://spring.io/spring-security>)
- (The Apache Software License, Version 2.0) spring-security-core (org.springframework.security:spring-security-core:4.2.3.RELEASE - <http://spring.io/spring-security>)
- (The Apache Software License, Version 2.0) spring-security-web (org.springframework.security:spring-security-web:4.2.3.RELEASE - <http://spring.io/spring-security>)

Here is a list of the 3rd-party JavaScript libraries in use:

- <https://unpkg.com/clipboard@1.7.1/dist/clipboard.min.js> - to support copy to clipboard
- <https://maps.googleapis.com/maps/api/js> - for Google Maps base map layers
- <https://unpkg.com/leaflet@1.3.0/dist/leaflet.js> - mapping interface
- <https://unpkg.com/leaflet.gridlayer.googlemutant@latest/Leaflet.GoogleMutant.js> - adapts google maps layers to leaflet
- <https://unpkg.com/esri-leaflet@2.1.1/dist/esri-leaflet.js> - for ESRI base map layers
- <https://github.com/stefanocudini/leaflet-layerJSON> - locally customized version to support AJAX JSON layers
- <https://ajax.googleapis.com/ajax/libs/jquery/1.10.1/jquery.min.js> - for general DOM manipulation and event handling convenience