

Building a developer community with container

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The background of the slide is a night photograph of the Taipei 101 skyscraper, illuminated with green and blue lights, viewed through a dark, silhouetted frame that resembles a window or a camera viewfinder.

Rex Tsai

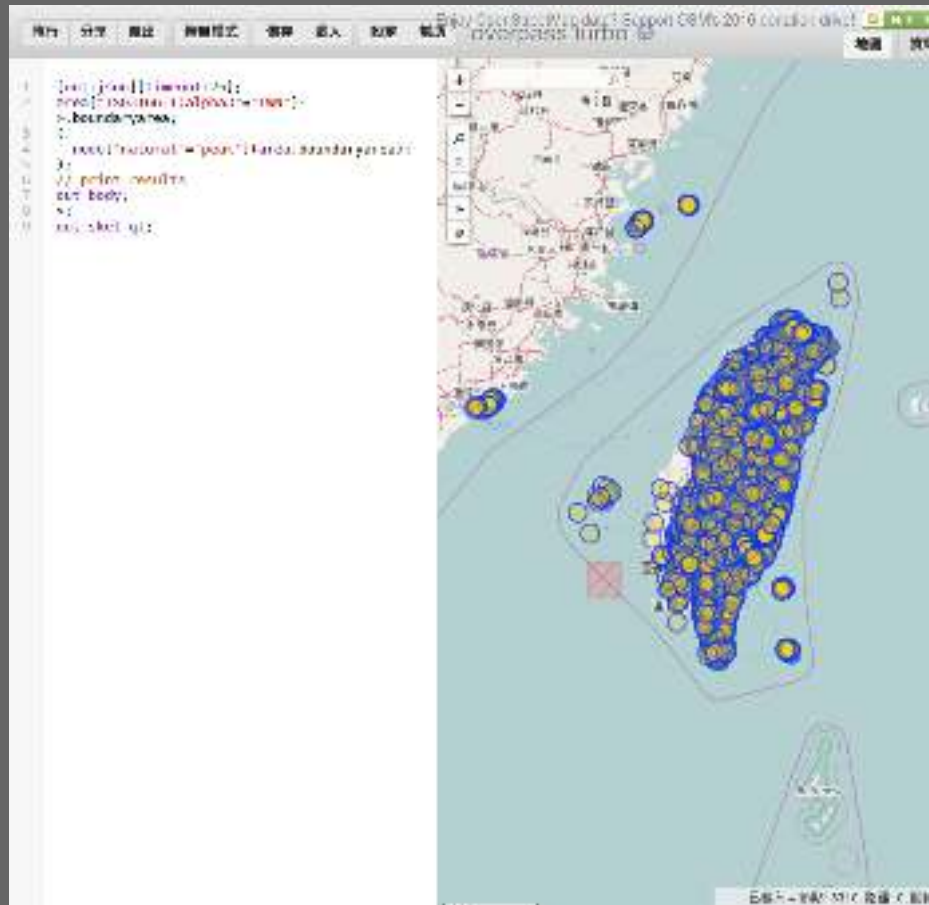
+15 years experience on Open source software development and community

Join the first OpenStreetMap Mapping party in Kaohsiung at 2008. Participating OSM community in free time as habit.

<http://about.me/chihchun/>

<http://www.openstreetmap.org/user/chihchun>

Mountains on the island



- 78% of island are rugged forest-covered mountains
- 3310 natural=peaks node in Taiwan
- 268 peaks with elevations of over 3,000 m (9,800 ft)



Taiwan is mostly mountainous in the east, with gently sloping plains in the west. https://en.wikipedia.org/wiki/Geography_of_Taiwan

What's the issue of maps



- There is no official maintained relief map. The latest one is 10 years ago.
- There are too many paths, surveyed and built by different expedition teams.
- After Typhoon season every year, the path can be damaged and too dangerous for hikers.



30~40% of search and rescue mission
are searching lost hiking people.



103 年消防機關執行山域意外事故救援案件統計分析 -

<http://www.nfa.gov.tw/main/Unit.aspx?ID=&MenuID=501&ListID=3611>

生活安全の確保に関する統計等 - <https://www.npa.go.jp/toukei/index.htm#safetylife>

Community

- Around 5 million citizen participated in hiking activities
- Several user groups
 - Building online tutorial and offline training on using OruxMap/Locus map and OSM in MapsForge format.
- Developer community
 - Customized style with countour line in mapsforge and Garmin map format.
 - Building customized android app using mapsforge.
- A new association will be focus on prevent hiking risk by teching people use osm on phone.



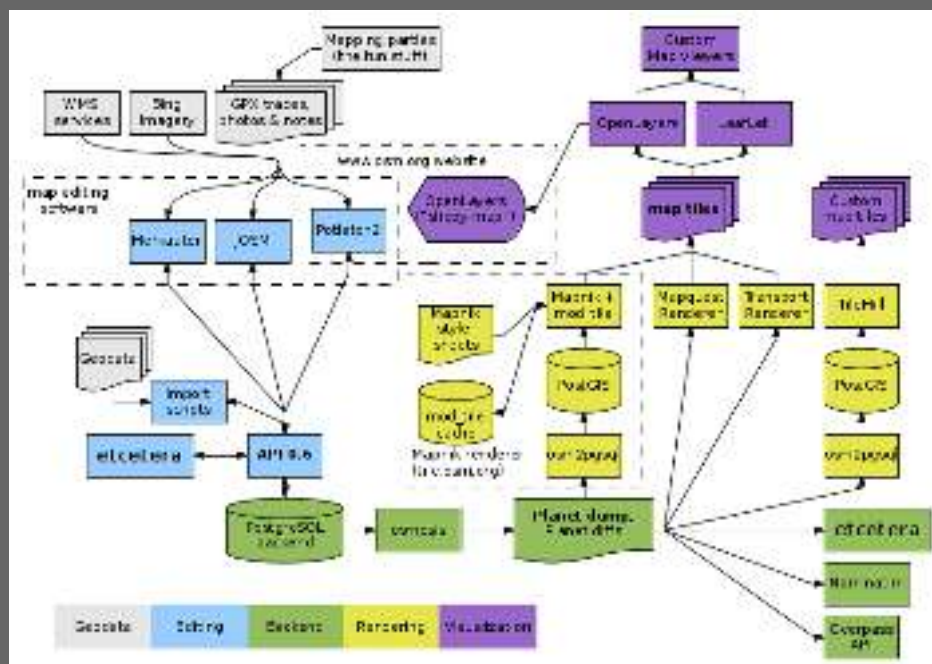
Requirements

- The default OpenStreetMap Carto, OpenCycleMap tile servicess is not enough, people need to customize the trails and POI.
- Users also need an offline map.



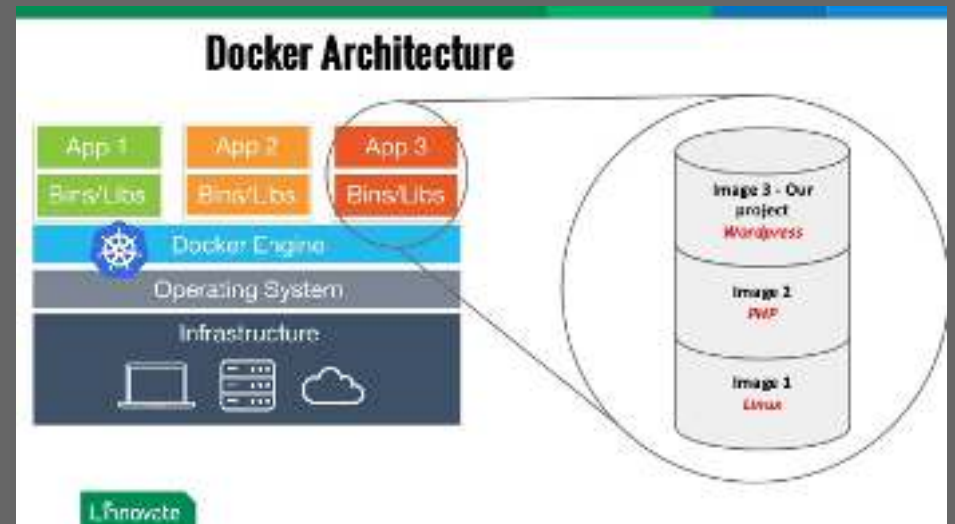
Challenges

- Complexity software stacks.
- Too many configs during the process – fonts, styles,
- Compatibility issues on different versions
 - mapnik2/mapnik3, python2/python3, etc..



Enviroment for DevOPs Community

- Software stacks with different version are split in small docker images, no dependency issue.
- Services can be shipped as docker compose config.
- Allow developer to quickly try out and build a prototype

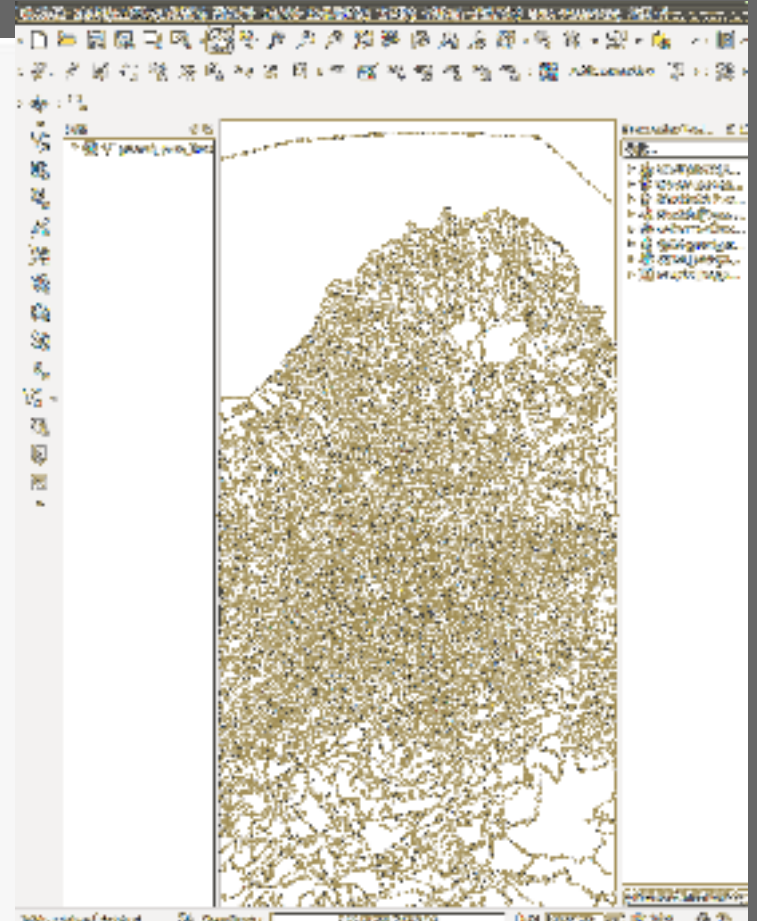


Import OSM data into PostGIS for QGIS

```
#!/bin/sh
# Run a postgres/postgis instance
POSTGRES_USER=postgres
POSTGRES_DB=postgres
POSTGIS_PASSWORD=$(cat /dev/urandom | tr -dc _A-Z-a-z-0-9 | head -c12)
POSTGIS_INSTANCE="osmdb"

docker run --name ${POSTGIS_INSTANCE} \
  -e POSTGRES_PASSWORD=${POSTGIS_PASSWORD} \
  -e POSTGRES_USER=${POSTGRES_USER} \
  -e POSTGRES_DB=${POSTGRES_DB} \
  -d osmtw/postgis

REGION="asia/taiwan"
DATADIR=/osm
LOOP=600
VERSION="0.88.1"
# run the osm2pgsql instance
# The osm-importer.sh script will run osmupdate every 600 seconds,
# to pull latest osm data from
docker run -t -i --rm \
  --link ${POSTGIS_INSTANCE}:pg \
  -e REGION=$REGION \
  -e DATADIR=$DATADIR \
  -e LOOP=$LOOP \
  -v ${POSTGIS_INSTANCE}-osm2pgsql:$DATADIR \
  --name osm2pgsql \
  osmtw/osm2pgsql:${VERSION}
```



<https://github.com/OsmHackTW/osm2pgsql-docker>

<https://github.com/OsmHackTW/postgis-docker>

<https://github.com/OsmHackTW/pgadmin3-docker>

Ship a tile server in 10 mins

```
$ git clone git@github.com:  
:OsmHackTW/osm-tiles-docker.git
```

```
$ cd osm-tiles-docker  
$ docker-compose up
```

- Postgis database to store OpenStreetMap data.
- osm2pgsql, Convert OSM planet snapshot data to SQL suitable for loading into a PostgreSQL database with PostGIS geospatial extensions.
- mapnik
- Cascadenik
- mod_tile + renderd
- carto & millstone
- leaflet



<https://github.com/OsmHackTW/osm-tiles-docker>
<https://github.com/OsmHackTW/modtile-docker>

Ghost Island (GD) Tiles

- Tile server aiming to highlight special criminal case, illegal incidents



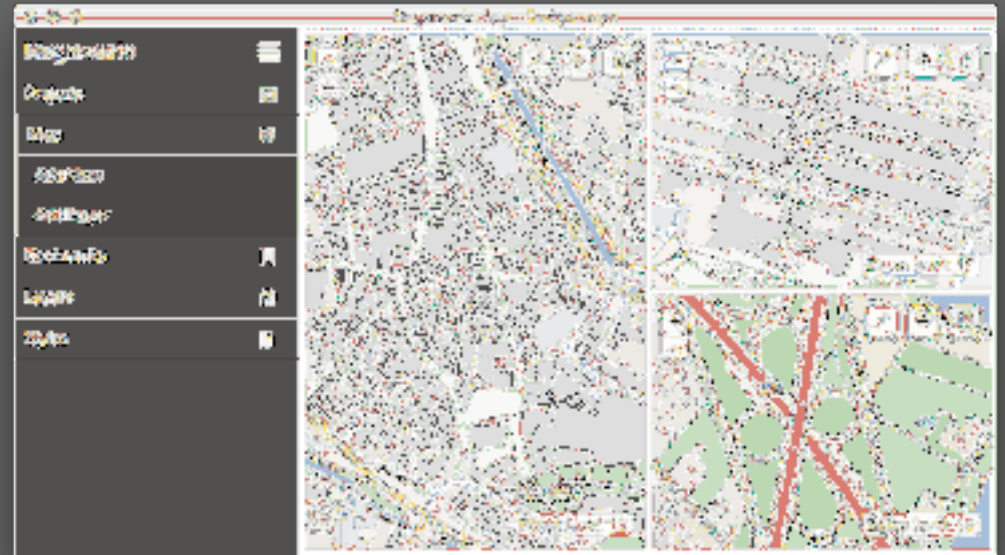
<https://github.com/OsmHackTW/gdtile-docker>

<https://github.com/OsmHackTW/tilestache-docker>

Customized tile style

- Magnacarto is a CartoCSS map style processor that generates Mapnik XML and MapServer map files.
- One command to get it running in local machine

```
docker run -t -i --rm -p  
8080:8080 osmtw/magnacarto  
magnaserv -listen 0.0.0.0:8080
```



Taiwan gov MOI – 20M DEM

- Resource of SRTM/ASTER DEM data is not enough for rescue mission or expedition.
- After two years negotiation and engagement with public sectors, Taiwan government released 20M DTM in GeoTIFF and ASCII gridded XYZ raster at 9 Sep 2016.



Converting DTM data



gdal/phyghtmap



- Convert from GeoTIFF to
 - Shapefile
 - Postgres/PostGIS SQL
 - SRTM HGT
 - OSM PBF



Tools for building relief map

- osmosis build mapsforge data -
<https://github.com/OsmHackTW/osmosis-docker>
- phyghtmap – convert shape file to OSM format -
<https://github.com/OsmHackTW/phyghtmap-docker>
- qmapshack – to render garmin map on deksto
<https://github.com/OsmHackTW/qmapshack-docker>
- gdal - <https://github.com/OsmHackTW/gdal-docker>



Visualized Geo data with tile server

- Export Drinking water POI into GeoJSON – faster for browsing with other tile server
 - <http://drinking.teia.tw/>
 - <https://github.com/OsmHackTW/drinking-vector-tile-docker>
- Build a tile server of New Taipei City bus stops data, which can be used with jism for data validation.
 - <https://github.com/OsmHackTW/ntpc-bus-stop-tile>
 -



TODO

- Vector based map server
- GeoR
- QA tool – osmose, to-fix
- Taginfo
- Overpass



References

OpenStreetMap Taiwan

- <https://github.com/OsmHackTW?query=docker>
- <https://hub.docker.com/u/osmtw/>

Related works

- <http://geocontainers.org/>

