

SW Maps for Low-Cost GNSS Receiver Systems

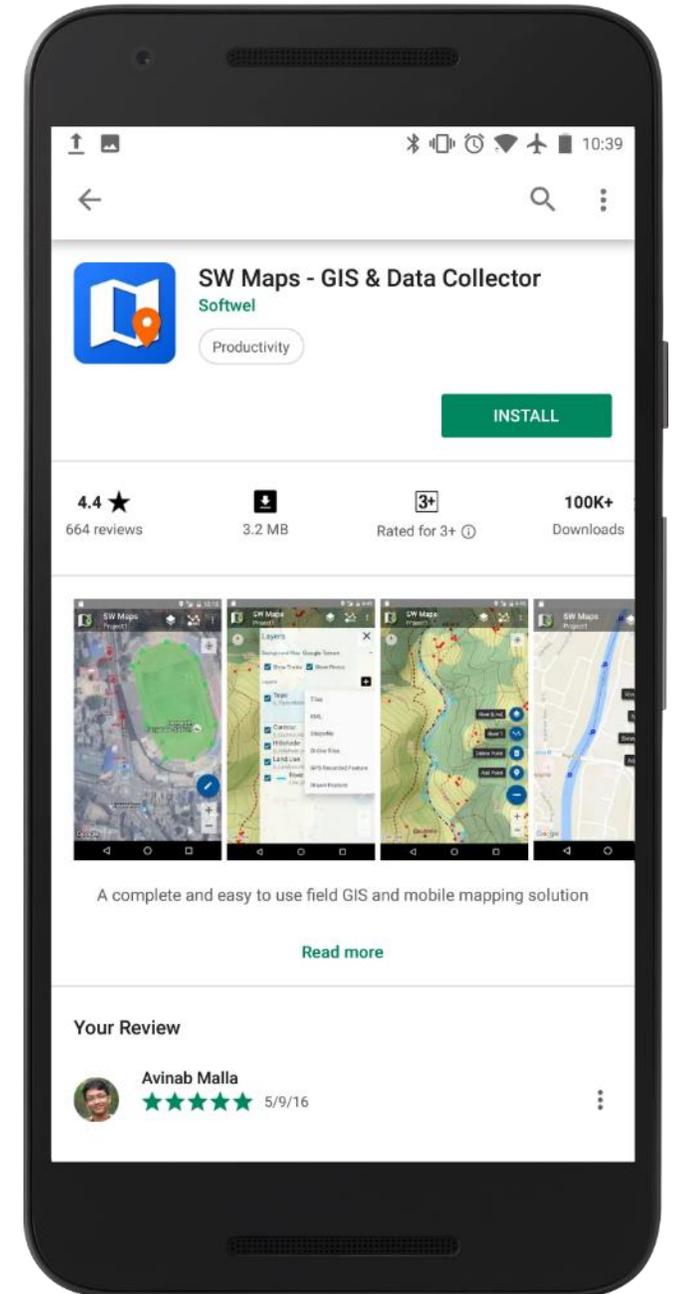
Presented by Dinesh Manandhar, The University of Tokyo on behalf of
Avinab Malla

Space System Applications and Geospatial Engineering, Nepal
avinabmalla@yahoo.com



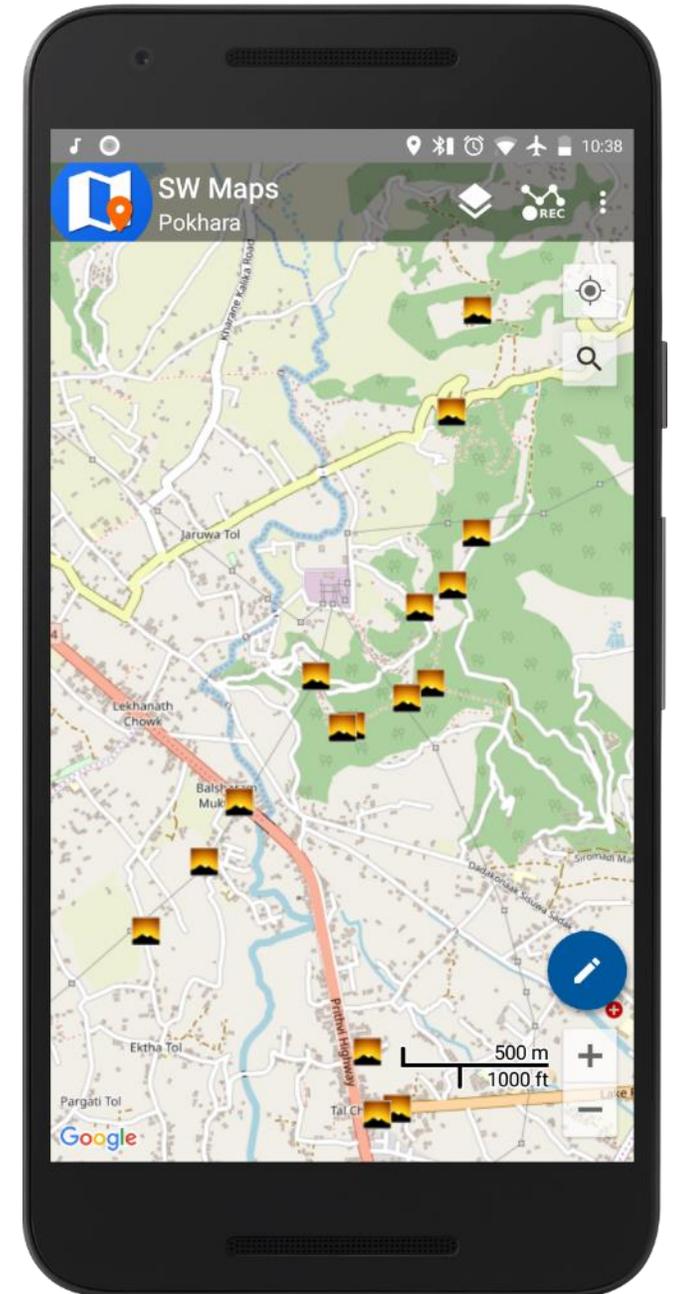
SW Maps

- **Free** Android Application
 - For collecting, presenting and sharing geographic information
- More than 140,000 downloads
 - As of June 2019
- Large scale GNSS surveys possible



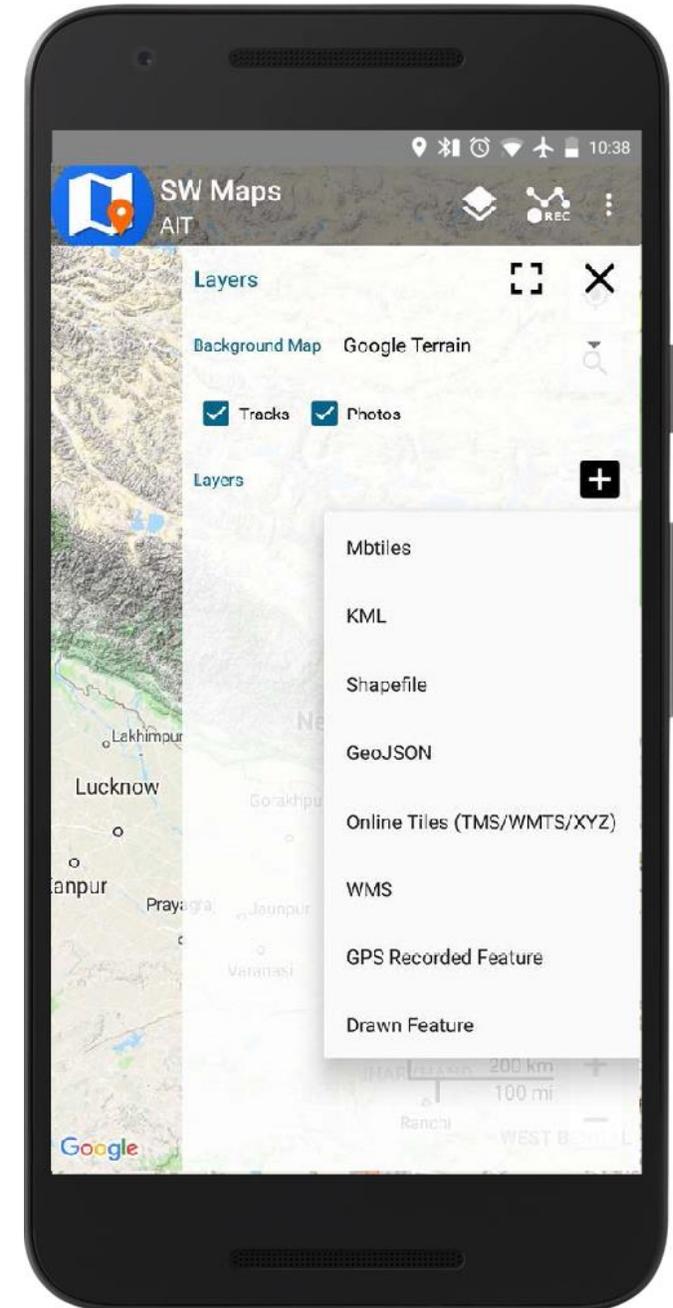
SW Maps Features

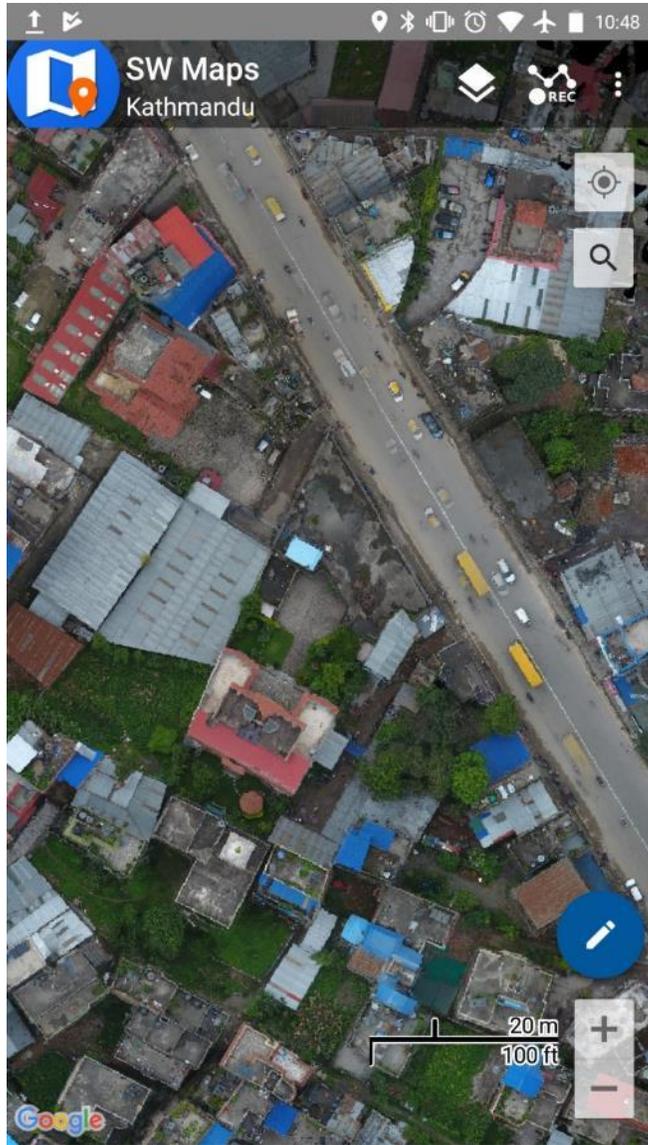
- Collect GIS data using internal and external GNSS receivers
 - Bluetooth or USB
 - Connect RTK capable receivers for high accuracy surveying.
- Import and display **popular GIS Data formats**
 - KML, Shapefiles, GeoJSON, Mbtiles, GeoPackage
- Export or share collected data directly to
 - KMZ, Shapefiles, GeoJSON, GeoPackage and many other formats.
- Record tracks and geo-tagged photos



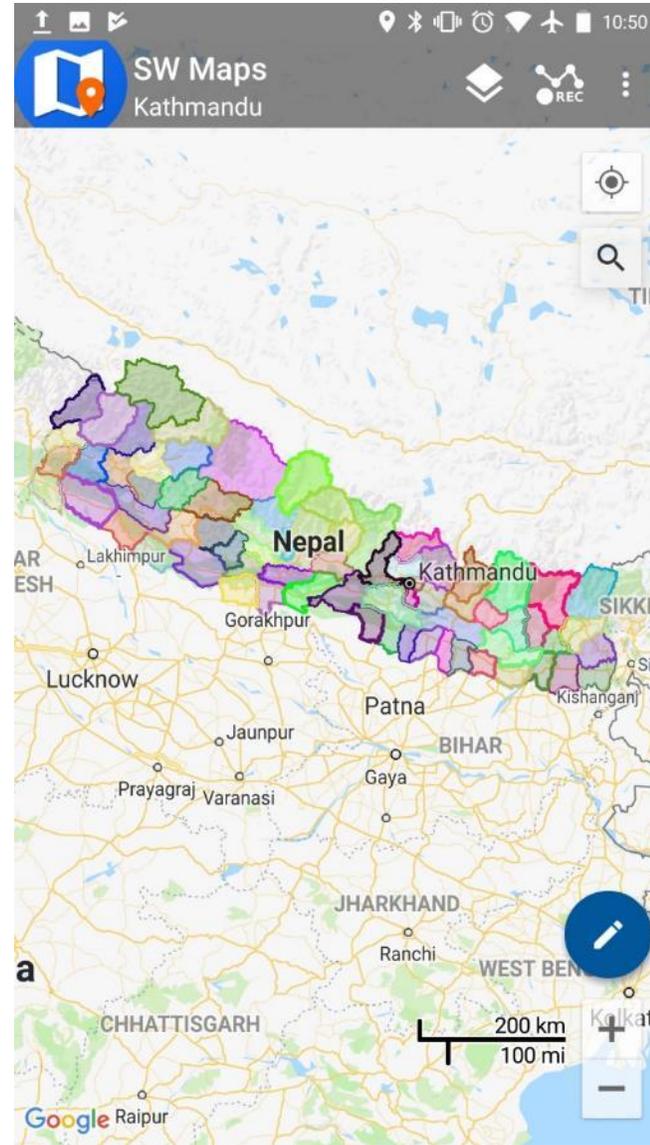
More Features

- Define and record multiple feature layers
- Google Maps or OpenStreetMap as background
 - Can also import and cache maps from online sources (WMS, XYZ Tiles)
- View Shapefiles
 - with attribute categorized styling.
- Draw features on map
- Measure distance and area on Map
- Share projects and templates with other users.

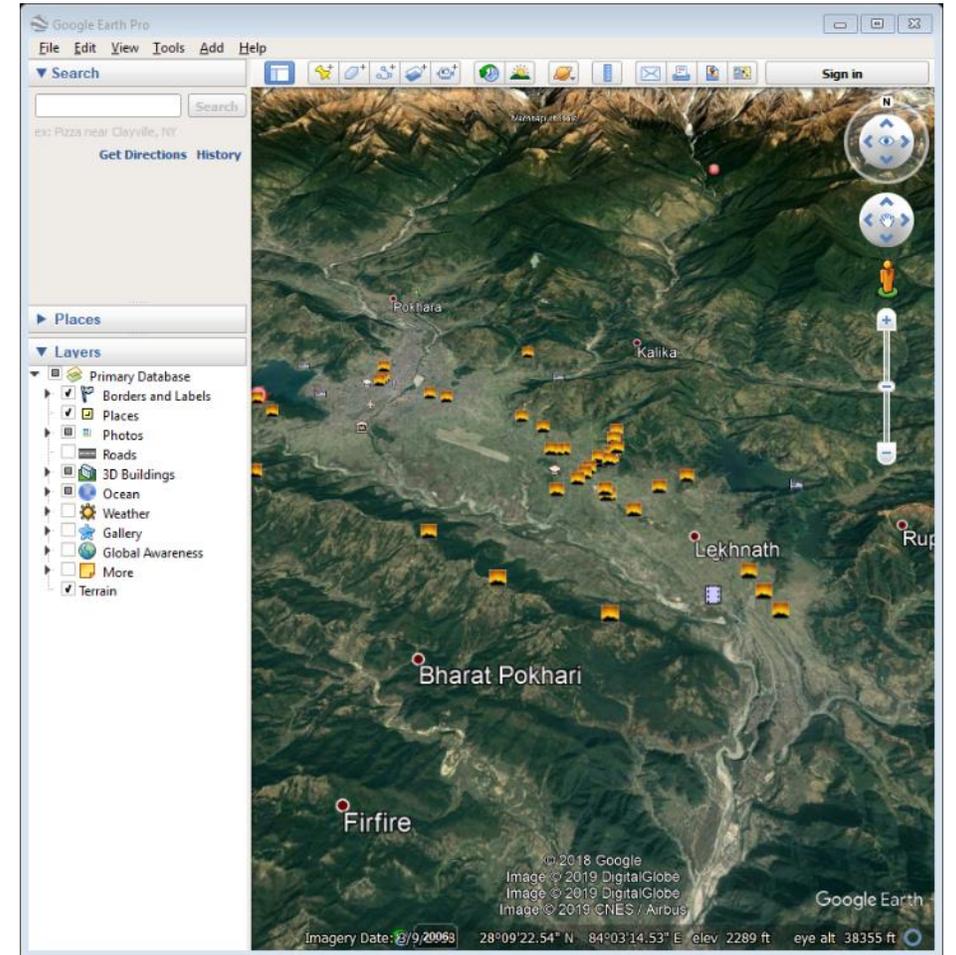




Drone Imagery Mbtiles



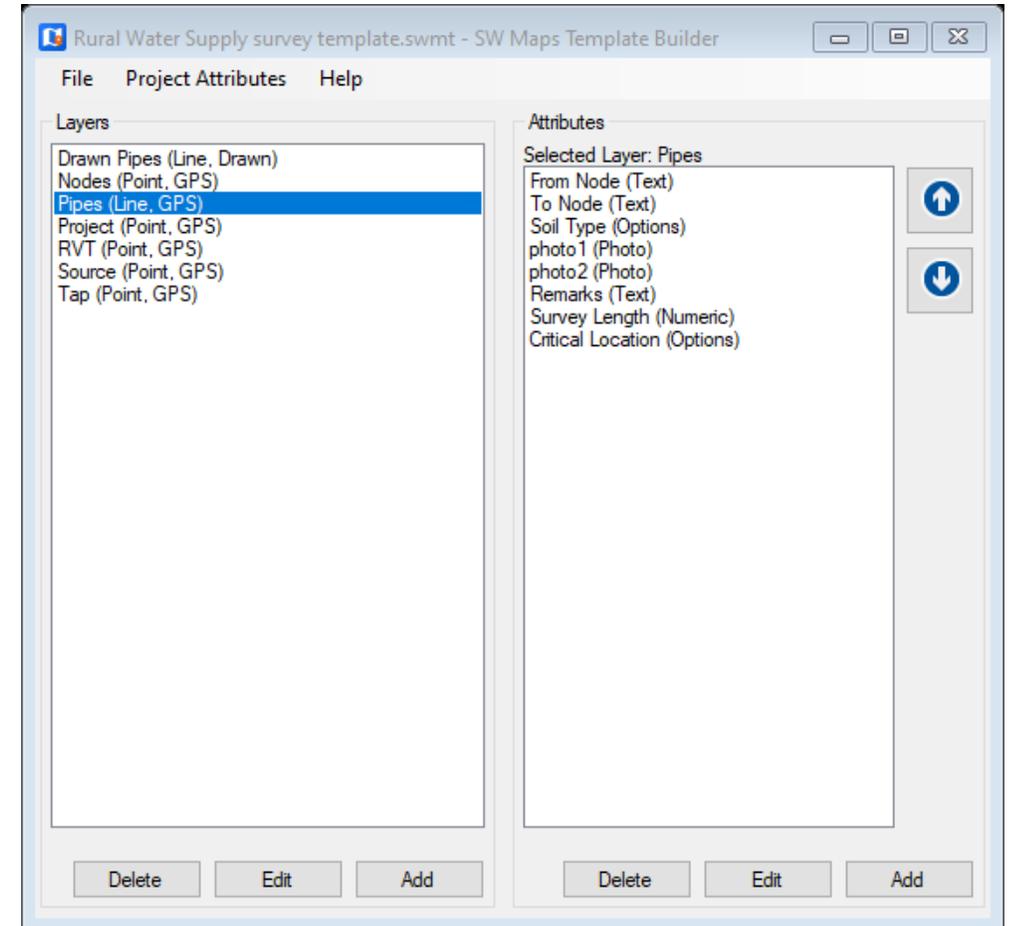
Shapefile Categorized Styling



Exported KMZ in Google Earth

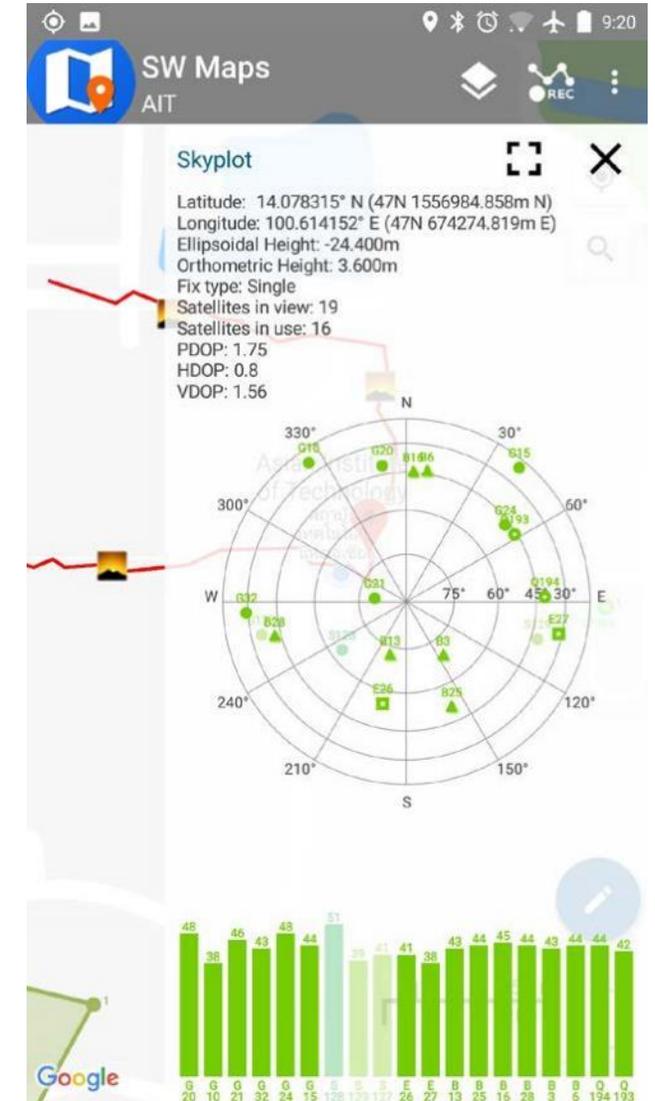
SW Maps Templates

- Projects once created can be exported as a template for other projects.
- Useful when many surveyors and instruments are deployed to collect the same type of data
- Templates can be made on a Windows PC using the **SW Maps Template Builder** tool, or exported from any existing project using SW Maps



RTK Surveying With SW Maps

- SW Maps can be used with RTK capable receiver through Bluetooth or USB



Low-Cost GNSS Receivers for SW Maps



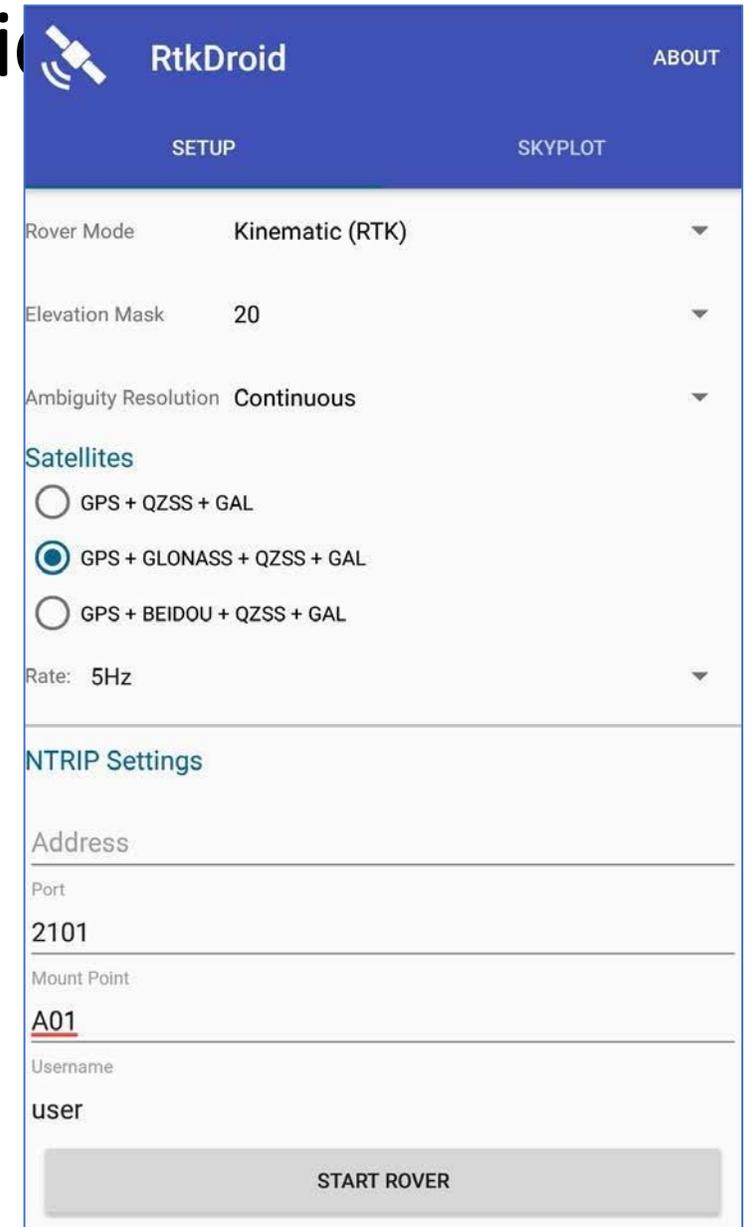
- USB Connection
- Costs approx. US \$ 150



- Bluetooth + Wi-Fi Connection
- Internal Rechargeable Battery, Lasts 12 Hours
- Micro-SD Card Slot for data recording
- 3D-Printed Enclosure
- Costs approx. US\$ 400

Low-Cost RTK with RtkDroid

- Low cost receivers do not have an in-built RTK capability
- The Android app RtkDroid was created for RTK positioning
 - Currently UBX file from M8T
 - Near Future, UBX file from F9P, F9T and MADOCA
- RtkDroid uses correction data from NTRIP casters (in RTCM3 format)
 - VRS is also available
- **RtkDroid is based on RTKLIB**



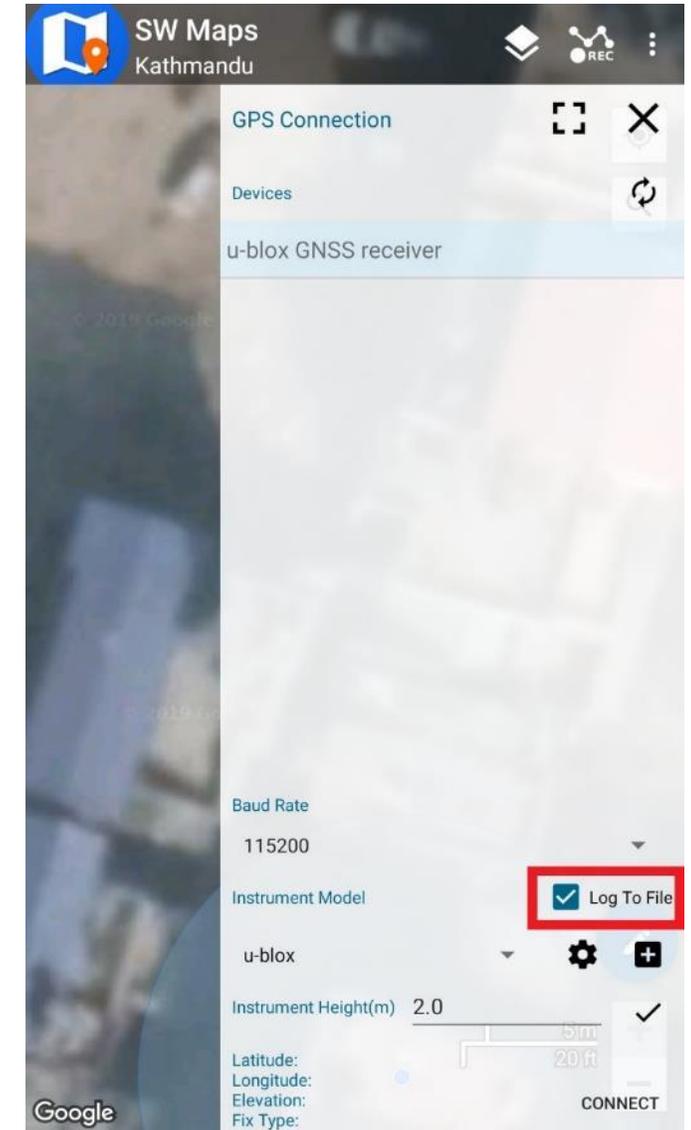
The screenshot shows the RtkDroid app interface. At the top, there is a blue header with the app name 'RtkDroid' and an 'ABOUT' link. Below the header, there are two tabs: 'SETUP' and 'SKYPLOT'. The 'SETUP' tab is active. The main content area is divided into several sections:

- Rover Mode:** Kinematic (RTK) (dropdown menu)
- Elevation Mask:** 20 (dropdown menu)
- Ambiguity Resolution:** Continuous (dropdown menu)
- Satellites:** A section with three radio button options:
 - GPS + QZSS + GAL
 - GPS + GLONASS + QZSS + GAL
 - GPS + BEIDOU + QZSS + GAL
- Rate:** 5Hz (dropdown menu)
- NTRIP Settings:** A section with four input fields:
 - Address:** (empty)
 - Port:** 2101
 - Mount Point:** A01
 - Username:** user

At the bottom of the screen, there is a large grey button labeled 'START ROVER'.

Post Processed Kinematic (PPK) with SW Maps

- Useful for places with unreliable internet connection
- SW Maps can **log Raw GNSS observations** when **using an external receiver**.
- Recorded files are exported with the project and can be used for post-processing
- Automatic tool has been developed for correcting recorded data points using CORS station in Kathmandu





Kathmandu Reference Station



Low-Cost RTK Receiver

SW Maps Applications

SW Maps used by IOM Bangladesh - Needs and Population Monitoring

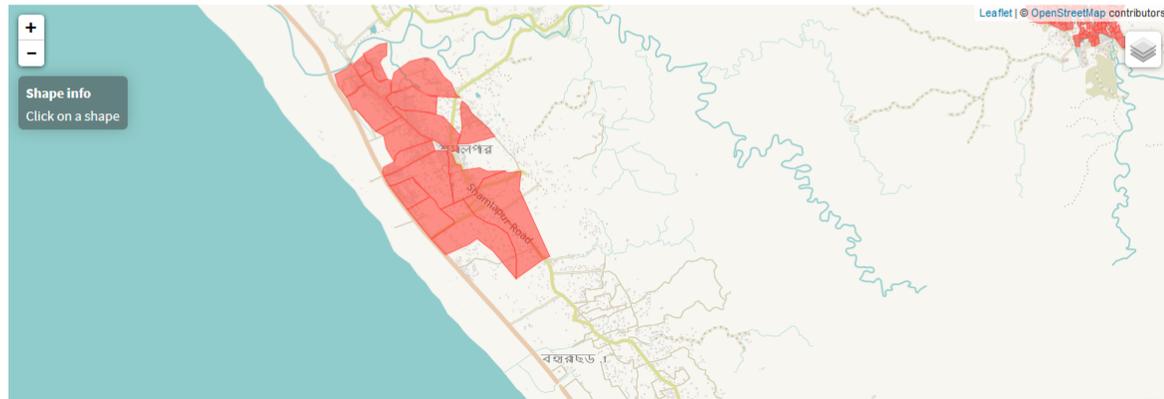
IOM Bangladesh - Needs and Population Monitoring (NPM) Cox's Bazar Rohingya Refugees Settlements UAV Imagery



NPM Bangladesh has produced a number of tools based on its regular data collection activities and drone flights.

SW Map package: for mobile use, this enables users to visualize the site maps and boundaries on their own mobile. Together with the relevant files, users can also find a manual showing step by step how to copy files from their own computer to SW Map ... [More](#)

5200+ Downloads | This dataset updates: Every three months



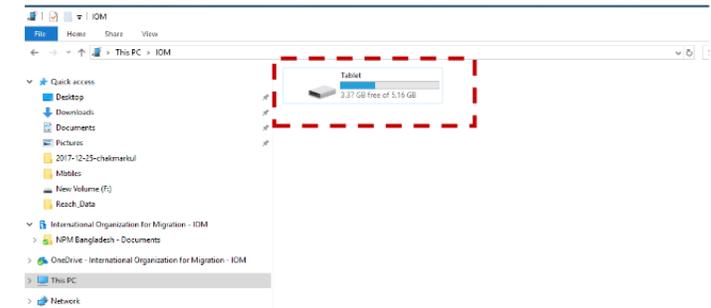
IOM – Needs and Population Monitoring
npmbangladesh@iom.int



How to copy files from a computer to SWMAPs running on a tablet or other device

After you copy the file your from computer you need to paste it in in SWmaps using the following path:

1. Open tablet.



2. Go to the folder SW_Maps.



SW Maps Use for 2020 Census in Indonesia



Bps Kabupaten Deli Serdang

17 October 2018 · 🌐

Selamat pagi #SahabatData

Selamat beraktivitas,

Terus berkarya,

Dan tetap semangat 🙌

Tak terasa Sensus Penduduk 2020 sudah di depan mata...

Berbagai persiapan sudah dilakukan,

diantaranya adalah pelaksanaan *ground check* oleh teman-teman Koordinator Statistik Kecamatan di wilayah Kabupaten Deli Serdang.

Kegiatan ini dilakukan Dalam rangka Persiapan Pemetaan Dan Pemutakhiran Muatan Wilayah Kerja Statistik SP2020.

Prosedur kegiatan lapangan dilaksanakan berkoordinasi dengan aparat desa untuk memperoleh informasi mengenai batas wilayah yang ingin dilakukan ground check Peta dasar.

Kemudian dengan menggunakan aplikasi SW Maps, KSK mencari titik batas dan mengambil gambar untuk memperoleh informasi detail mengenai batas wilayah tersebut.

Dengan suksesnya kegiatan ini, diharapkan akan mempermudah pelaksanaan SP2020 mendatang.

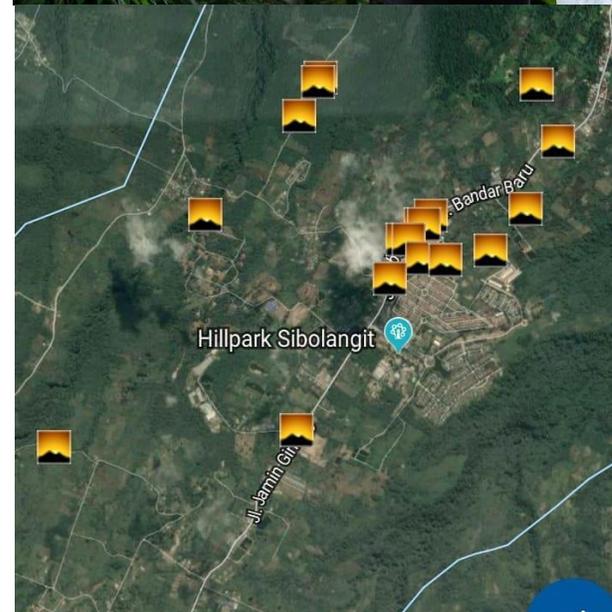
dear KSK,

G.a.n.b.a.t.t.e K.u.d.a.s.a.i 🙌

#GerakanCintaData

#DataMencerdaskanBangsa

#BPSDeliSerdang



SW Maps Use for 2020 Census in Indonesia



USE OF GEOSPATIAL TECHNOLOGY DURING ENUMERATION

The Indonesian Population Census 2020 (SP2020)

Presented by:
Nurma Midayanti
Director of Population and Labor Force Statistics Directorate
BPS-Statistics Indonesia

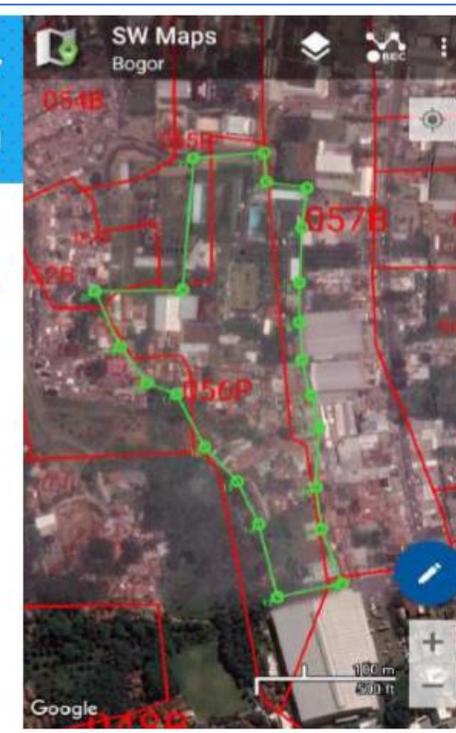
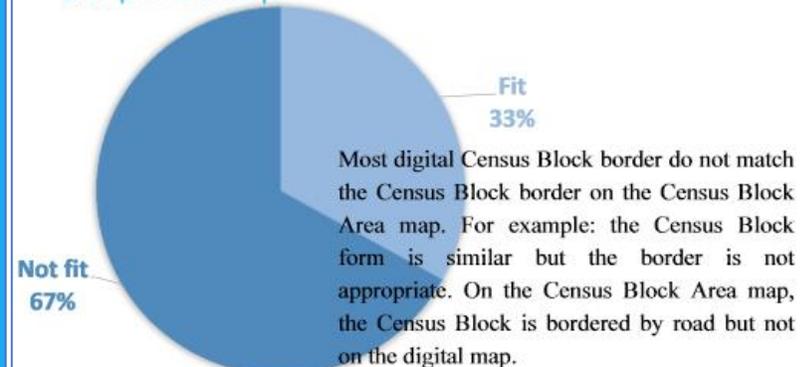
*SP2020: Sensus Penduduk 2020 (Eng: Population Census 2020)

II. Use of geospatial technology during enumeration (pp. 78-84)

Updating of EA maps...

Results

3. The compatibility of the boundaries between digital maps and printed maps



SW Maps Training by Bhutan GIS Society



Bhutan GIS Society

14 February · 🌐

Dear All,

Bhutan GIS Society at UWICER would like to propose the first workshop on GPS & Basic GIS for year 2019. The workshop is intended to impart skills on how to use smart phone as GPS and process the data using QGIS. If you are one to avail the opportunity, please express your interest by filling up the Google form on or before 20th February 2019.

Date: 22-24 February, 2019

Venue: Will confirm later

Time: 9:00Am-5:00Pm

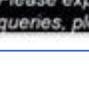
If you have any queries, please contact us at 17642189 or 77991755.



"REMOVING THE BARRIERS IN LEARNING"
"PAY, SHARE & LEARN"

GIS & GPS Workshop 4- Smartphone GPS and QGIS -BASIC

Date: 22-24 February, 2019
FOR INTERESTED FROM PUNAKHA & WANGDUE

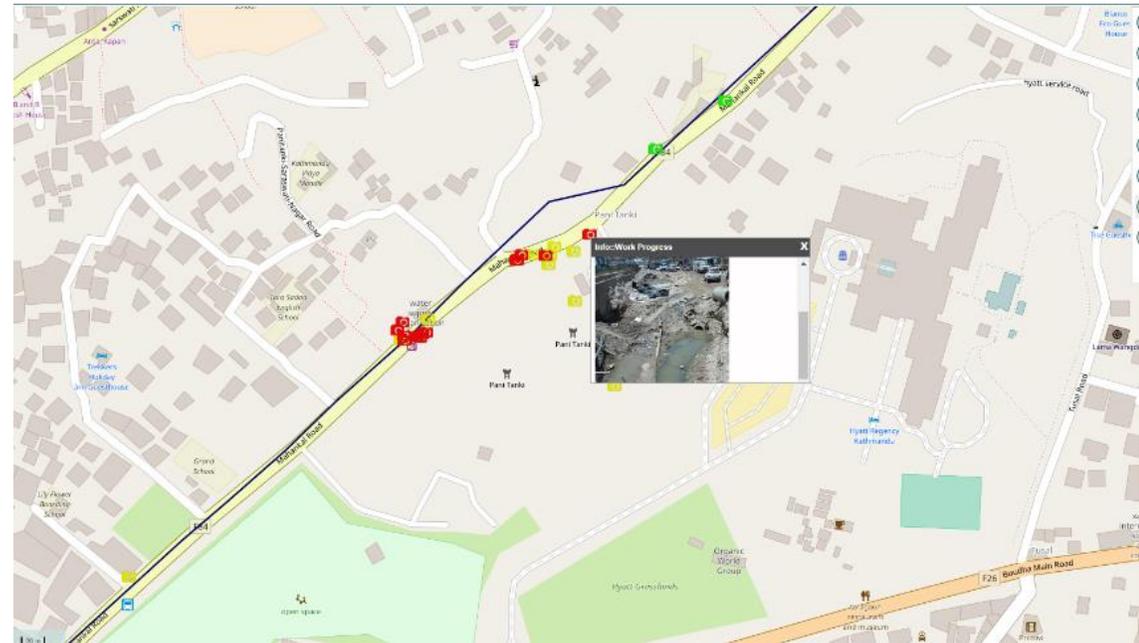
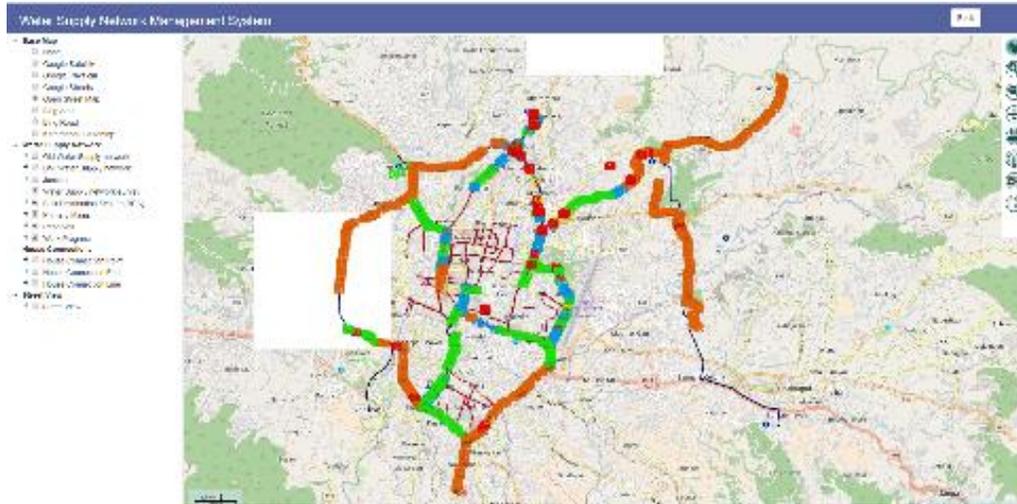
 DAY 1-GPS:	 DAY 2- QGIS:	 DAY 3- QGIS:
<ul style="list-style-type: none">• Downloading & Installation of GPS app (SW maps & Field Area Measure) in Smartphone; Configuration;• Creating project and data recording;• Exporting the data;• Download and upload GPS Data	<ul style="list-style-type: none">• Installation of QGIS Software• Getting to know about QGIS tools & functions• Projection of GPS data• Data Integration• Data preparation for uploading in SW maps- both shape file and kmz• Map Cartography	<ul style="list-style-type: none">• Simple Analysis- buffer, generation of grid and plots, estimating number of plots, area calculation

Own Survival Fee per 1 day : Nu. 500/-

Please express your interest by filling up the Google form and n or before 20th February 2019. For any queries, please call at 17642189/77991755.

Construction Monitoring of Water Supply Works in Kathmandu Valley

<http://wnms.softavi.com>



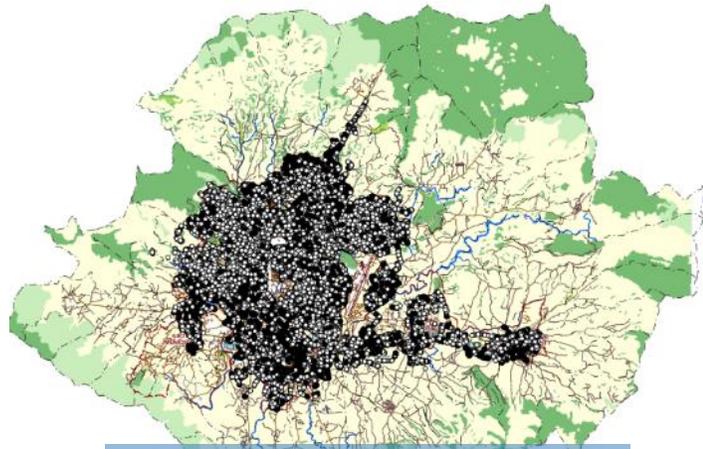
SW MAPS used for Data Capture

- SW MAPS was used for Survey of completed and ongoing works
- Uploading to server with photographs

- Web Based System with open source software
- Centralized PostgreSQL Database
- Web Interface for Data Query and Geometry Editing
- Details of Construction Progress
- Map Overlay

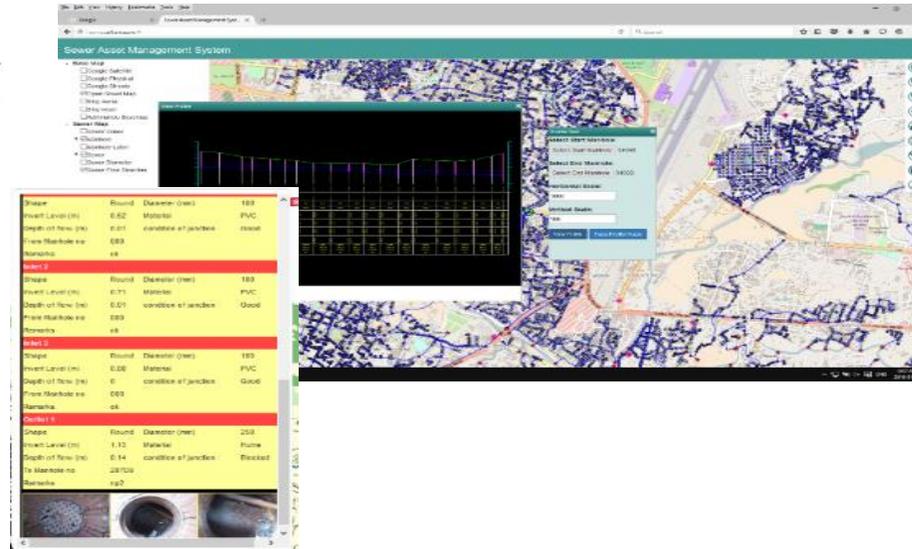
Sewerage Network Asset Condition Assessment and GIS Survey

<http://sams.softavi.com>



Total Covered=117 SqKm
Total Manhole Surveyed: 52,566
Sewer Line: 1,201 Km

Sewer Asset Management System



- Web Based System with open source software
- Centralized Database
- Web Interface for Data Query and Editing
- Sewer Profile and Manhole Details
- Map Overlay

SW MAPS used for Data Capture



- Customized SW MAPS system for tablet for onsite data entry and photographs
- Automated uploading to server with photographs
- Automated Server Data Update



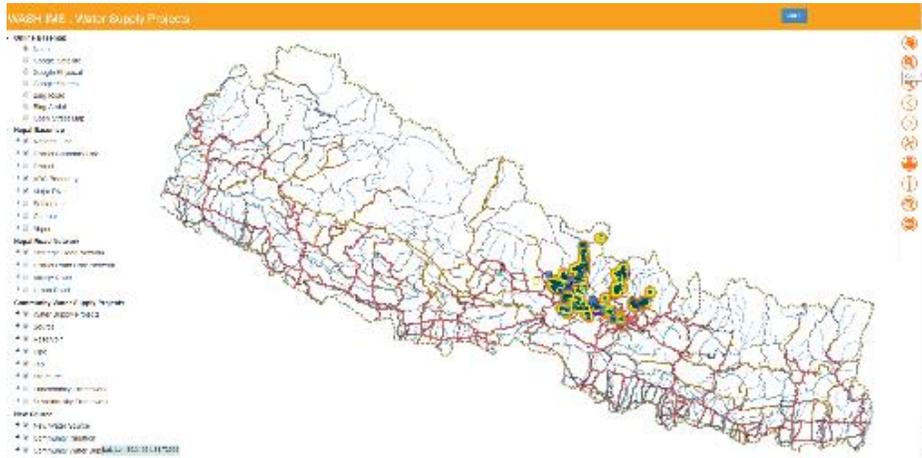
Survey using RTK GPS

Application

- Sewer Maintenance Management
- Public portal for sewer maintenance request
- Asset Management
- Sewer network expansion

Community Water Supply Information

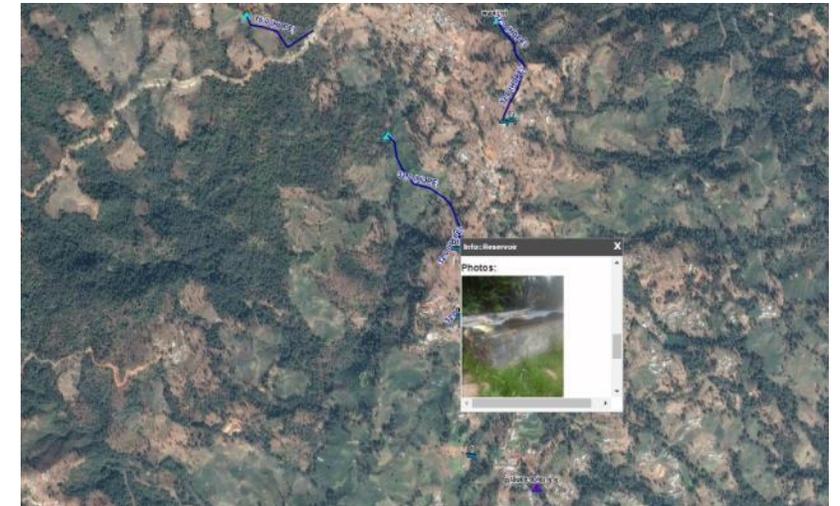
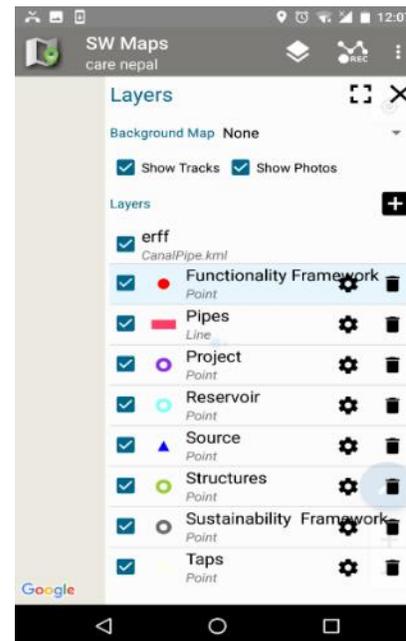
<http://careims.softwel.com.np>



Total Covered 5 Districts of Nepal

SW MAPS used for Data Capture

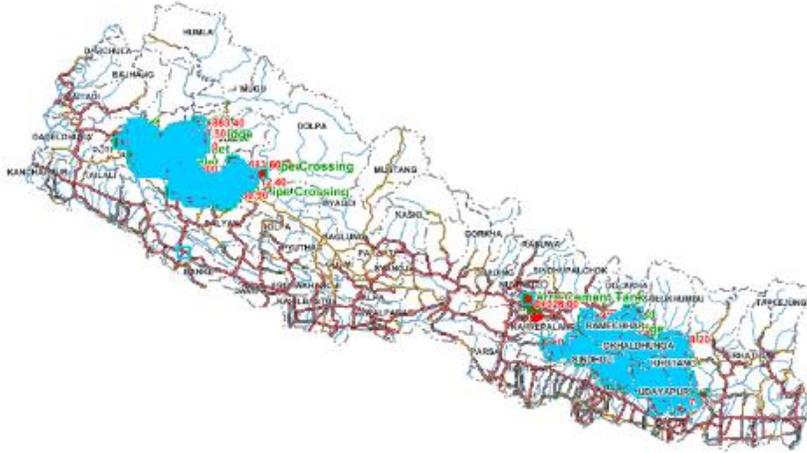
- SW MAPS was used for Survey of completed water supply works
- Survey of unserved Community and potential water sources
- Uploading to server with photographs



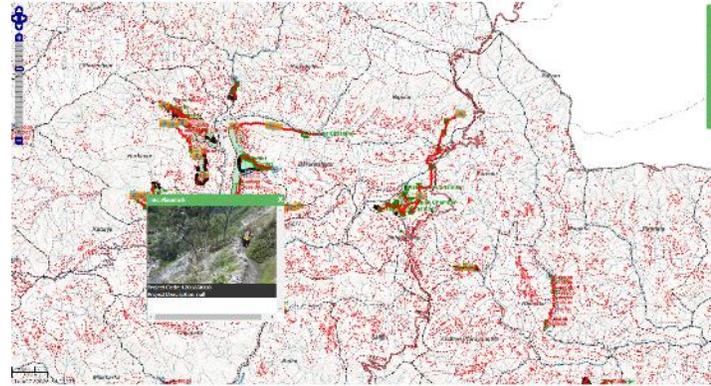
- Web Based System with open source software
- Centralized PostgreSQL Database
- Web Interface for Data Query and Geometry Editing
- Details of Water Supply Projects

Small Irrigation Project

<http://sipnepal.org>



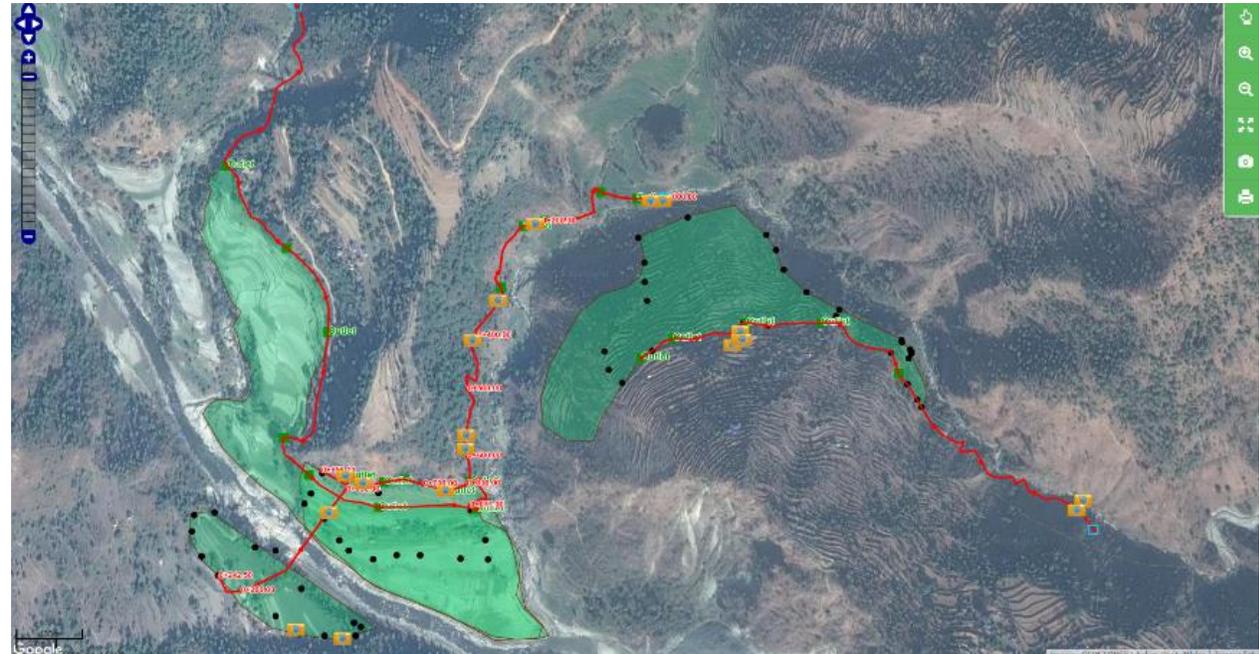
Total Covered = 9 Districts Total Project Surveyed: 1200 (till now)



- Web Based System with open source software
- Centralized PostgreSQL Database
- Web Interface for Data Query and Geometry Editing
- Irrigation Details
- Map Overlay

SW MAPS used for Data Capture

- SW MAPS was used for Survey works.
- Uploading to server with photographs
- Editing of Geometries in Server



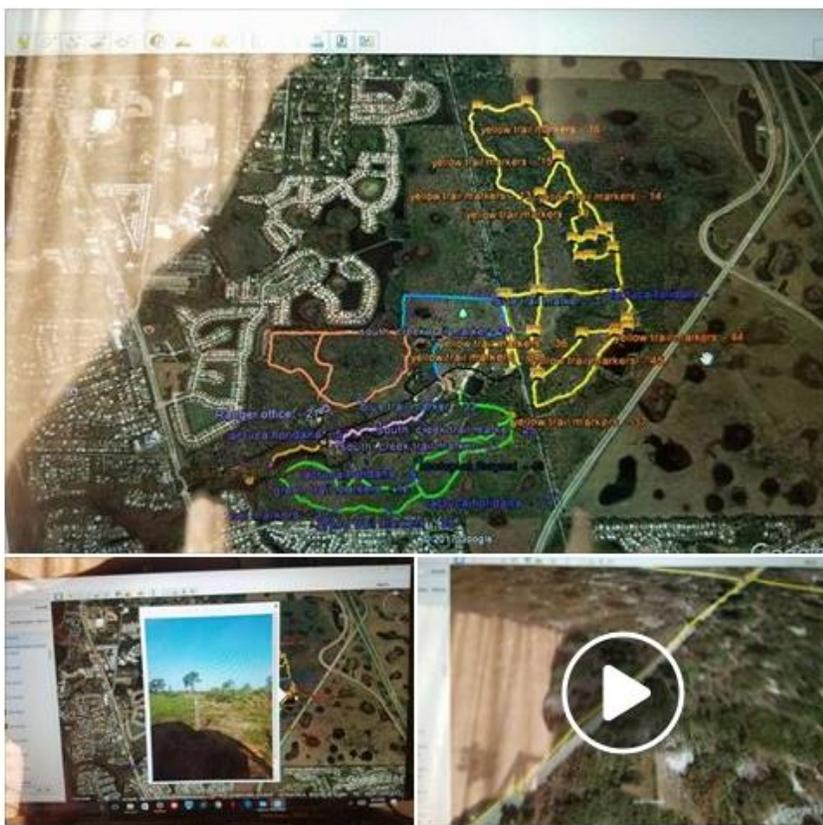


Brian Lutz

June 29 - Nokomis, FL, United States

So awhile ago i posted about a GIS app called sw maps. I recently mapped all the trails at Oscar Scherer park and used the app to do a trail assessment of all the trail markers . I made points everywhere i needed a marker. The accuracy isnt the greatest ... but its better than nothing! You can even pin pictures to points on the map! Theres also, a cool video option on google earth that allows you to follows the trails you created. (as if you were flying above the trail). Ive also used it to start pinning plants locations so that i can map out plants i come across at work.

All in all this could be a good app to use for geo-locating plants and trails without having to spend money on expensive equipment or programs.



Like Share

37



Leandro Gregorio

March 17

[Off topic] Conhecendo o SW MAPS: Um dos Melhores APP's GIS para Campo e Totalmente Gratuito

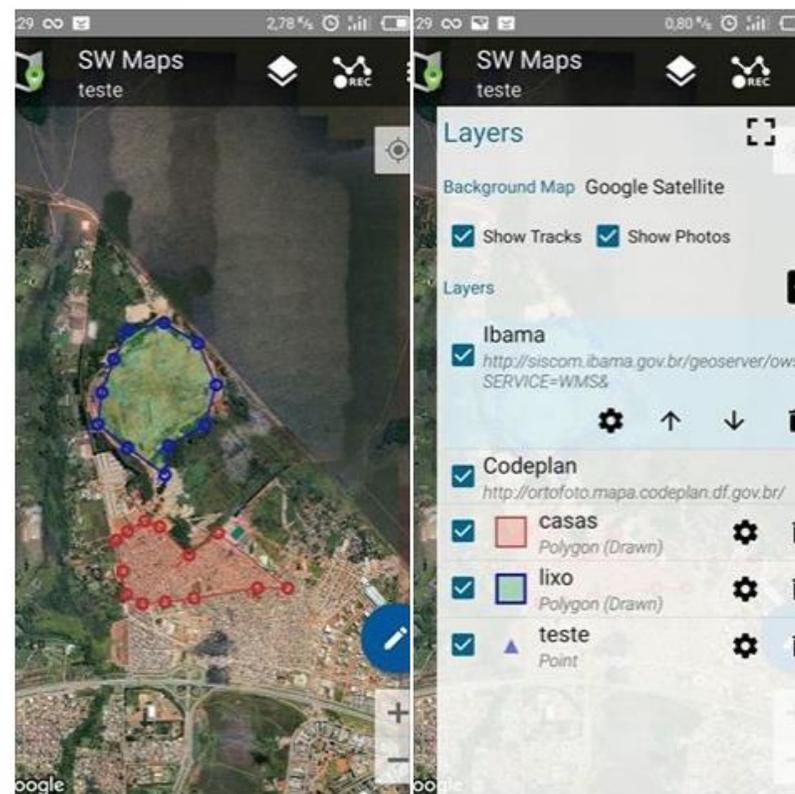
O SW Maps é um aplicativo de GIS e coletor de dados desenvolvido SOFTWARE Pvt Ltd, uma empresa do NEPAL (Isso mesmo que você leu), totalmente gratuito.

O Sw Maps é simples mas muito eficiente, pois ao utilizar o GPS do Smartphone, permite ao usuario, delimitar areas, linhas e pontos, criar atributos para os poligonos e exportar em formato Shape ou KML.

Leia o artigo completo em:

<http://www.sroopen.com/.../conhecendo-o-sw-maps-um-dos-melhores...>

See Translation



Like Share

96

Future Plans

- Precise RTK/DGPS positioning using internal GNSS receiver of smartphones
 - Using Android raw GNSS API
- Add support for exporting data in regional coordinate systems
- Improve application performance for very large projects
 - > 10000+ survey points

More Information

SW Maps on the Google Play Store

<https://play.google.com/store/apps/details?id=np.com.softwel.swmaps>

SW Maps Template Builder

http://swmaps.softwel.com.np/template_builder

SW Maps user manual

<http://swmaps.softwel.com.np/assets/resources/manual.pdf>

RtkDroid Demo

https://www.youtube.com/watch?v=Z_C33io_8S4