

Lessons from the Field: Disaster Risk Exposure Field Data Collection Using Kobo Collect and Qfield

PCRAFI Project

Brief Background

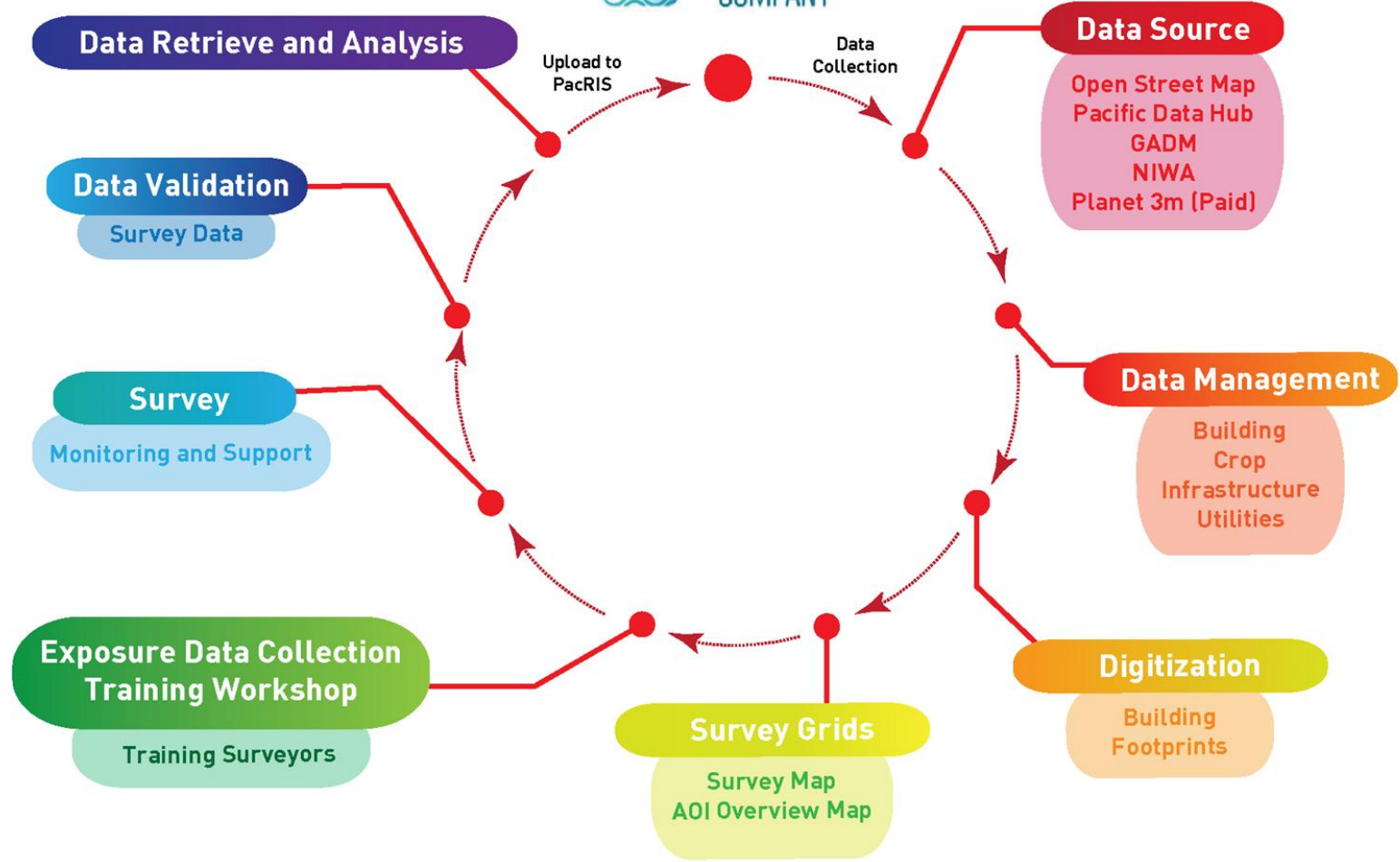
- Pacific Catastrophic Risk & Financing Initiative (PCRAFI) was launched in 2006
- Phase I started in 2007 & Phase II in 2016
- Develop disaster risk assessments tools and practical technical and financial applications to reduce and mitigate the impacts of natural hazards in 14 Pacific Island Countries
- Pacific Risk Information System (PacRIS), in which risk profiles were developed, and the largest collection of geo-referenced data organized for the region. This included population, assets, hazards, and risk modelling results as well as auxiliary data such as satellite imagery, topographic maps, bathymetry maps, surface geology maps, surface soil maps, land cover/land use maps, geodetic and fault data, historical catalogues of tropical cyclones and earthquakes. Based on this regional repository of hazard and exposure data risk profiles, the World Bank supported PICs with the development of an integrated risk financing and insurance solution to reduce national financial vulnerability to tropical cyclones (winds and storm surge) and earthquake

Scope of the Project

- a. Pillar I: the PCRAFI Facility – PacRIS , Data Collection, Data sharing
 - b. Pillar II: the PCRAFI Technical Assistance Program. The Capacity Building and Update of the Hazard and Exposure Database Project, which the Pacific Community (SPC) is implementing
- Project to be implemented in 14 countries/Island states
 - The Project aims to improve and update PacRIS and contribute towards strengthening the disaster risk finance and insurance capacity of PICs to provide coverage against the potential impacts of natural hazards, through the PCRAFI Program.

For further information on PCRAFI II, please visit:

<https://gem.spc.int/projects/capacity-building-on-the-hazard-and-exposure-database-for-pacific-catastrophe-risk>



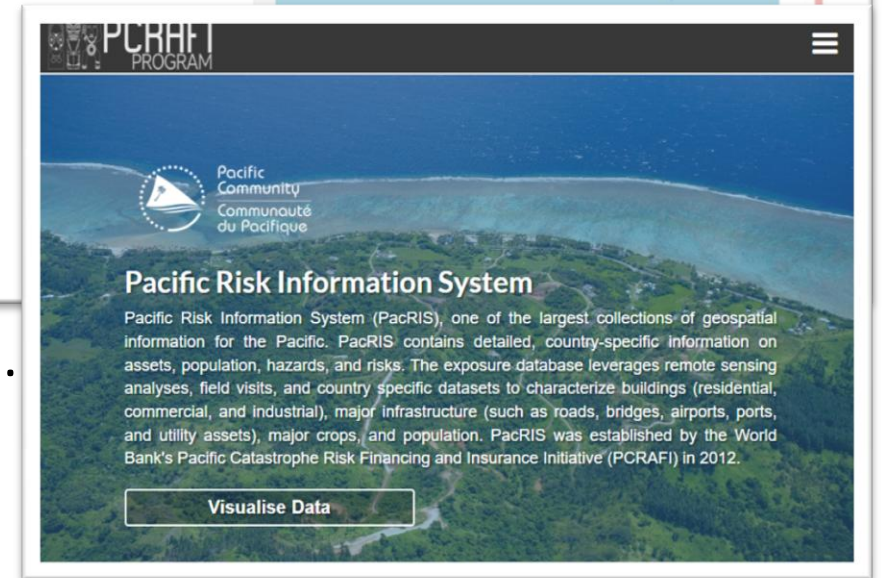
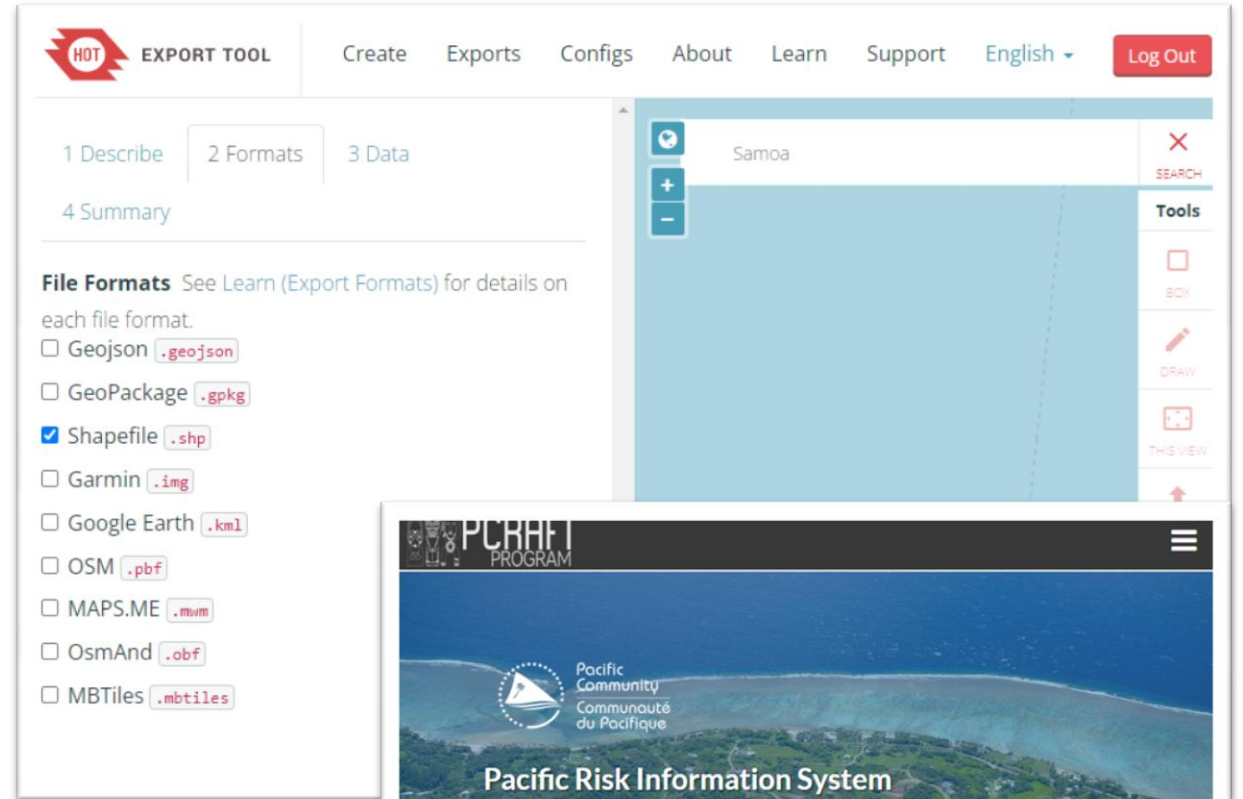
- *Data collection*

- Open data sources: osm (hotosm.org), Pacific Data Hub, PacRIS
- In-country data that are available
- Identifying the gaps where there is no coverage





- *Digitization*


- Use QGIS to digitize buildings in the area where there is no data.
- Focus on the AOI of the country
- Allocate building feature ID




Layers

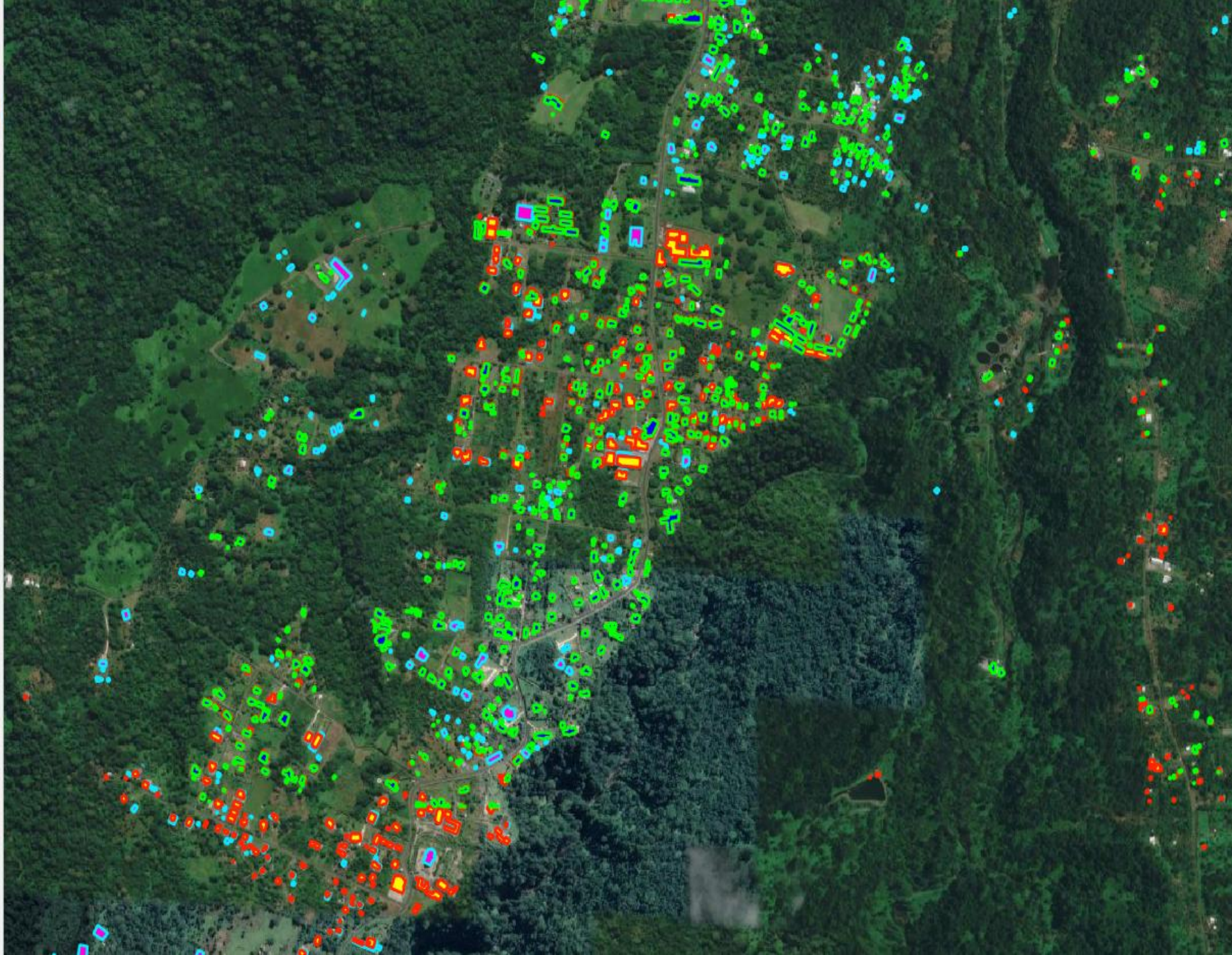
 ws_building_footprints

 osm_buildings

 ws_digitized_bld

 Google Satellite

Example





Layers

- Grids
- Buildings
- Google Satellite



Example

Maps

- Creating survey and Overview Maps of the AOI
- Survey grids are divided based on land blocks and roads





Exposure Data Collection Training


- 3 days training (Understanding 11 Assets Attributes)
- Finalize survey team
- 2 weeks of survey – collecting all assets.

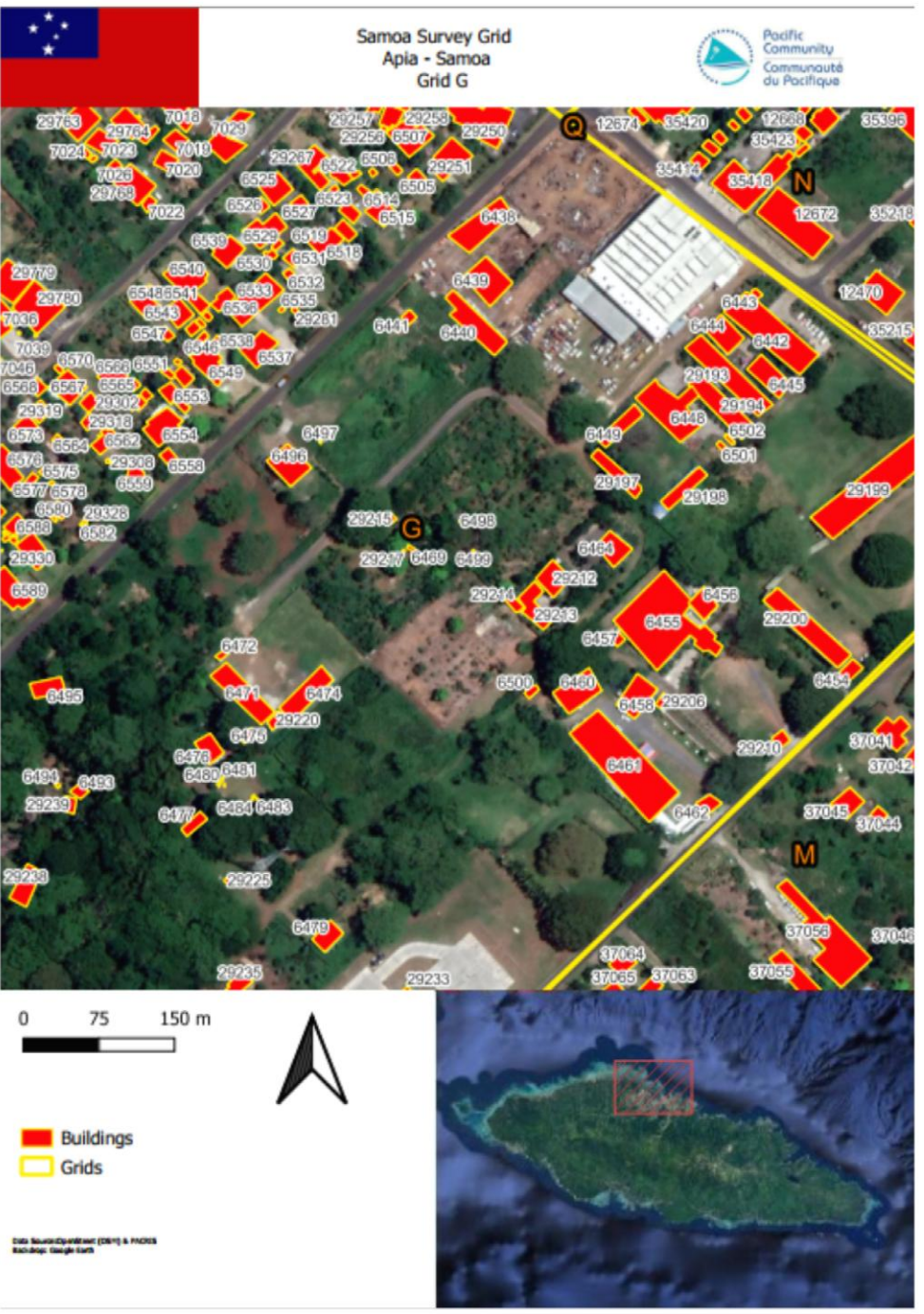
2.1.1 OCCUPANCY CLASS

a. Primary Use

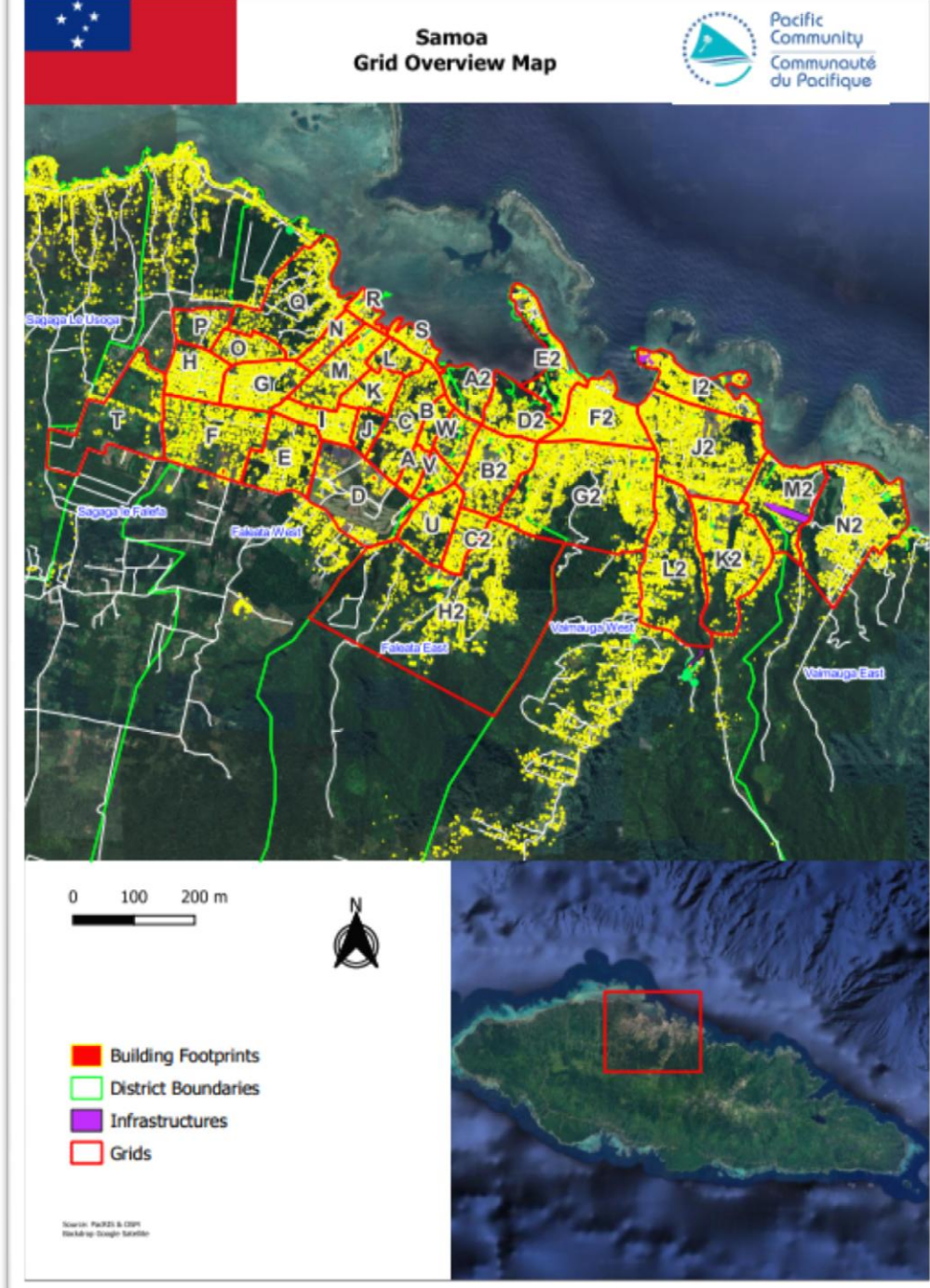
This is defined as the purpose for what the building is currently used for – for over 80% of the time what is the best option that reflects what the building is used for. The enumerator should choose from the list provided the best fit option that best describes the use of the building.

Term	Description	Example
Residential	This refers to dwellings where people live.	
Commercial	The building is used to provide service or supply a good with a view to generate profit; A profit-oriented service or business/trading etc.	
Industrial	The building is utilized for large scale business and/or manufacturing.	
Public	Refers to buildings used for public engagements and services. Examples are: <input type="checkbox"/> Libraries <input type="checkbox"/> Government buildings <input type="checkbox"/> Post Offices <input type="checkbox"/> Health care facilities <input type="checkbox"/> Places of Worships <input type="checkbox"/> Stadiums/Arenas <input type="checkbox"/> Government offices or departments	
Educational	This refers to buildings that are utilised for educational purpose, Universities, Schools, training centers, etc.	

Institutional	The building is used for organisations founded for professional purpose. For example: Financial institutions, Non-Government organisations, Embassy.	
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Example

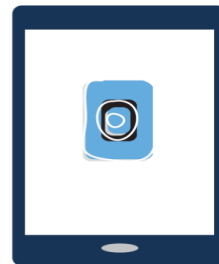


Lessons from the Field

- *KoBo Toolbox*
 - Open Source technology and free for humanitarian use
 - Flexible data collection options



Collect on
paper



Collect on
Tablet



Collect on
Mobile



Key Advantages



Collect GPS locations



Take a photographs



Collect data offline



Sync data immediately or later



Collect data on paper form and data entry on browser






Collect on mobile devices



Design your own digital forms without programming






KoBo Toolbox

PCRAFI II Data Collection Template- Condi...   

*** PLEASE CHOOSE SURVEY FORM**

- Buildings
- Infrastructure - Airport/Airstrip
- Infrastructure - Bridge
- Utilities - Electricity
- Infrastructure - Fuel
- Infrastructure - Port
- Infrastructure - Roads
- Infrastructure - Telecommunication
- Utilities - Water
- Crops - Agriculture - (Refers to Medium to Large Scale)
- Livestock - (Refers to Medium to Large Scale)

PCRAFI II Data Collection Template- Condi...   

Buildings

*** Grid ID**
Enter the survey grid ID.

Feature ID
Enter the building ID

Name/ description of the Building
Record the name or description of the building.

Presence of Building
Refers to presence building.

Yes

No

*** Collect GPS point**
Record Geolocation (Long and Lat - Ensure Location is enabled on device).
Stand not too close to the building. Your view of the Sky above must be clear.

[Start GeoPoint](#)

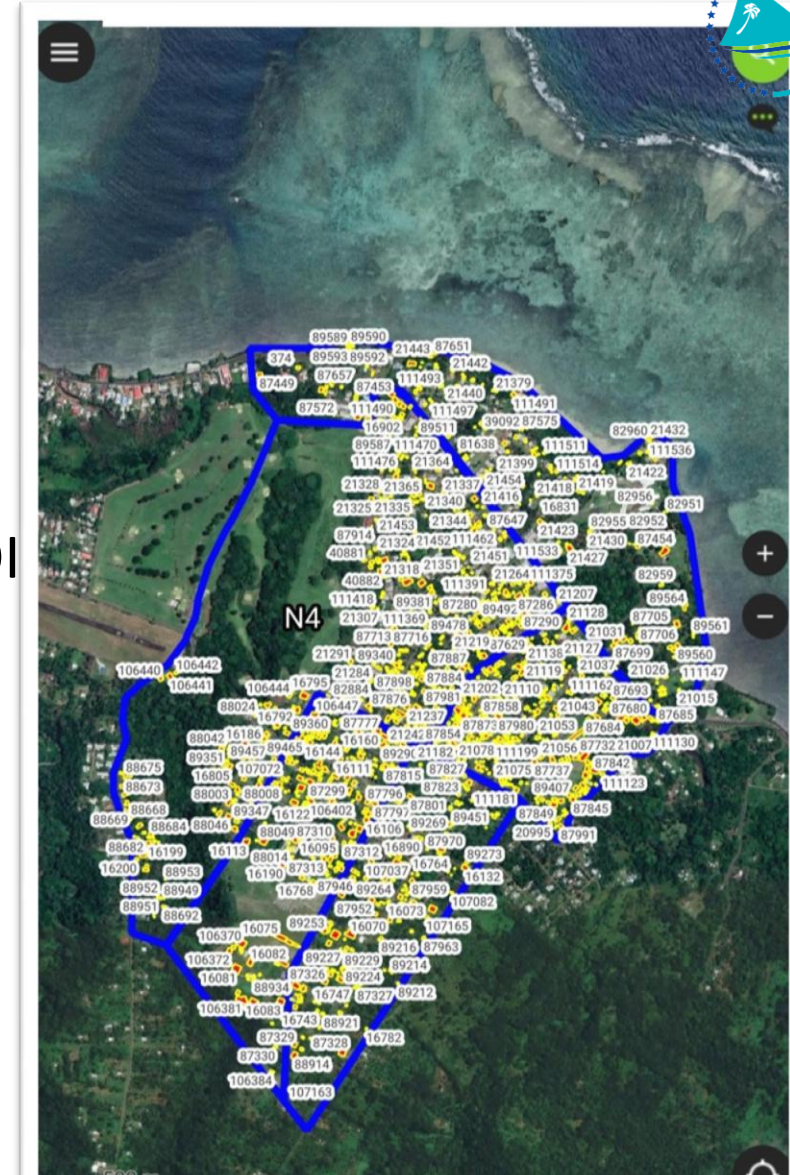
*** Photo of Building 1**
Take a picture from the corner of the building so that both sides of the Walls

Form

App: Kobo Collect

Qfield

- *Package of layers from QGIS and load to Qfield*
- ✓ Layers : building footprints & grids shapefiles
- *Track location*
- ✓ act as a guide/track your exact location within the AOI



Validation Process

- Validate using Kobo
- Digitize new building footprints on qgis and update back on Kobo

Data Cleaning

- Check for data duplicates
- Assign building id's to new building
- Re-factoring – changing of data types (if building building id contains non-numeric)
- Rename headers to have max. of 10 character
- Remove unwanted data from the table

SUMMARY FORM **DATA** SETTINGS

hide fields

1 - 200
12848 results

	Validation	start	end	audit	Choose
<input type="checkbox"/>	On hold	Oct 31, 2022 ...	Nov 1, 2022 1...	audit.csv	buildings
<input type="checkbox"/>	On hold	Oct 31, 2022 ...	Nov 1, 2022 1...	audit.csv	buildings
<input type="checkbox"/>	On hold	Oct 31, 2022 ...	Nov 1, 2022 1...	audit.csv	buildings
<input type="checkbox"/>	On hold	Oct 31, 2022 ...	Nov 1, 2022 2...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 8, 2022 1...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 1, 2022 9...	audit.csv	infra_roads
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Oct 31, 2022 ...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 2, 2022 9...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 2, 2022 9...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 1, 2022 1...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 1, 2022 1...	audit.csv	infra_roads
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 1, 2022 9...	audit.csv	infra_roads
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Oct 31, 2022 ...	audit.csv	buildings
<input type="checkbox"/>	On hold	Oct 31, 2022 ...	Oct 31, 2022 ...	audit.csv	buildings
<input type="checkbox"/>	Approved	Oct 31, 2022 ...	Nov 3, 2022 1...	audit.csv	utilities_...

Data Integration

- Integrating the data into qgis
- Calculate the area of the building (in square meters)
- Spatial join admin boundary layers (Village, District, & Province)
- Calculate length for roads

➤ Submit data for Team leader reviews

➤ Upload to PacRIS (<https://risk.spc.int/>)

Example

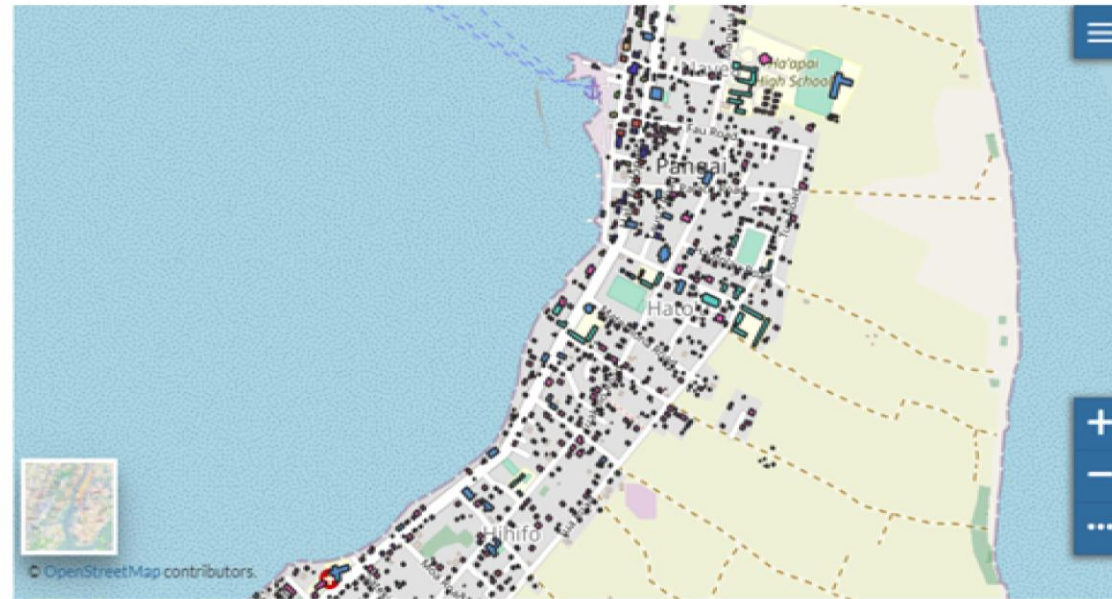
The screenshot displays the QGIS interface. The main map area shows a satellite view of a residential area with numerous buildings outlined in cyan. One building in the center is highlighted in red. The 'Layers' panel on the left shows two layers: 'PCRAFI_II Tonga Buildings' and 'Google Satellite'. The 'Identify Results' panel on the right provides detailed metadata for the selected building.

Feature	Value
PCRAFI_II Tonga Buildings	
name	Church of tonga vavau
(Derived)	
(Actions)	
fid	1607
attribute	Buildings
country	Tonga
district	Neiafu
village	Neiafu
name	Church of tonga vavau
photo1	1658859284021.jpg
url1	https://kc.humanitarianresponse.info/media/original?media_file=tongapcrafi2
photo2	1658859297811.jpg
url2	https://kc.humanitarianresponse.info/media/original?media_file=tongapcrafi2
photo3	NULL
url3	NULL
usage	Public
subuse	None (only one use type)
found_type	Steel pipe
found_brac	Concrete wall
found_cond	(5) Excellent condition: There is no corrosion or holes or wear and tear. The...
min_floor_	>1.0m (50cm increment)
max_floor_	>1.0m (50cm increment)
structure	Unknown/other
comments	NULL

Mode: Top Down, Stop at First
View: Tree

PCRAFI II Tonga Buildings July 2022

Example



Info Attributes Share Ratings Comments

Title PCRAFI II Tonga Buildings July 2022
License Not Specified ⓘ
Abstract PCRAFI II Tonga Buildings July 2022
Publication Date Aug. 31, 2022, 1:02 a.m.
Type Vector Data
Keywords • Tonga
Category Structure ⓘ
Regions Tonga
Responsible sachin
Attribution Pacific Community (SPC)

Download Layer

Metadata Detail

View Layer

Download Metadata

Legend

PCRAFI_II_Tonga_Buildings

- Commercial
- Educational
- Industrial
- Infrastructure
- Institutional
- other
- Out building
- Public
- Residential
- usage is ''

Maps using this layer

This layer is not currently used in any maps.

Styles

The following styles are associated with this layer. Choose a style to view it in the preview map.

Vinaka 